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

Twenty-eighth session
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Report of the Executive Body on its twenty-eighth session

Addendum

2011 Workplan for the implementation of the Convention

Contents

1. Strategies and policies

1.1 Strategies and review

Description/objectives: To assess ongoing scientific and technical activities for the review of existing protocols or the preparation of new ones; to negotiate revisions of protocols, including their annexes; to promote the exchange of technology; and to prepare proposals for strategic developments under the Convention. The Working Group on Strategies and Review will assist the Executive Body in all policy-related issues.

Main activities and time schedule: Taking into account relevant activities under the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) and the Working Group on Effects, as well as the initiatives of the European Union (EU) and other Parties, and on the basis of information received from its expert groups and task forces, the Working Group on Strategies and Review will, in particular:

(a) Continue negotiations on the revision of the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) based on the decisions of the Executive Body;

(b) If appropriate, assess work on the review of, and possible amendments to, the Protocol on Persistent Organic Pollutants (Protocol on POPs);

(c) Continue negotiations on proposed amendments to the Protocol on Heavy Metals as mandated by the Executive Body in 2010 (ECE/EB.AIR/106, para. 57);

(d) Review progress in the exchange of information and technology, including work carried out under item 1.5 (techno-economic issues), and review information received and progress in other work carried out under item 1.6 (exchange of information and technology);

(e) Encourage further ratifications and explore ways to support and facilitate countries' efforts towards the implementation and ratification of the protocols;

(f) Hold its forty-eighth session from 11 to 15 April 2011, and its forty-ninth session from 12 to 16 September 2011.

1.2 Compliance review

Description/objectives: Review of compliance by the Parties with their obligations under the Protocols to the Convention.

Main activities and time schedule: Any submission or referral made under paragraph 3 (b) of the Implementation Committee's functions will be dealt with as a priority, and the Committee may have to adjust its workplan and time schedule accordingly. In this regard, the Committee will continue to review the progress made by the Parties in response to decisions taken by the Executive Body based upon the Committee's recommendations, as well as the need for possible additional measures for dealing with non-compliance on a case-by-case basis. The Committee will also evaluate the reporting by the Parties on their emission data and their strategies and policies, including the reporting on technology-related obligations. It may continue to consider the methodology and timing for carrying out in-depth reviews of implementation of the protocols in the future and more carefully review the reporting under the Protocol on POPs in the context of specific referrals. The Committee will continue its dialogue with appropriate bodies and experts. Furthermore, it

will hold its twenty-seventh and its twenty-eighth meetings, tentatively scheduled for May and September 2011. The fourteenth report by the Implementation Committee will be submitted to the Executive Body at its twenty-ninth session in 2011.

1.3 Reviews of strategies and policies for air pollution abatement

Description/objectives: To create an overview of air pollution abatement in the United Nations Economic Commission for Europe (UNECE) region, giving a comprehensive description of national and international strategies and policies, including legislation in force, emission levels and future priorities; and to provide, together with emission data, a basis for the Implementation Committee to review compliance by Parties with their obligations under the protocols to the Convention. Reviews for purposes of compliance are carried out every two years and a general policy review is carried out every four years.

Main activities and time schedule: Based on the approval of and taking into accounts comments made by the Executive Body at its twenty-eighth session, the 2010 review of strategies and policies for air pollution abatement will be published and made available on the Convention website.

1.4 Economic assessment of benefits from air pollution abatement and economic instruments

Description/objectives: To develop further the work on benefits and economic instruments and to enable economic considerations to be taken into account in the discussion/review of the protocols to the Convention.

Main activities and time schedule: The Network of Experts on Benefits and Economic Instruments, led by the United Kingdom of Great Britain and Northern Ireland, will provide the framework and expertise for a series of workshops. The Network will meet only on the occasion of planned workshops and will include not only economists, but also representatives from other specialist groups. The Network will assess experiences of Parties in using economic instruments for reducing air pollution and will update the Guidance Document on Economic Instruments to Reduce Nitrogen Oxides, Sulphur, Volatile Organic Compounds and Ammonia (EB.AIR/1999/2, chap. VI) in the revision process for the Gothenburg Protocol. It will contribute to cost-benefit analysis carried out for scenarios developed for the revision of the Gothenburg Protocol. It will conduct work pursuant to decision 2010/2.

1.5 Techno-economic issues

Description/objectives: To explore further best available techniques (BAT) for emission abatement, including their efficiencies and costs; to continue to develop a techno-economic database (ECODAT) and methodologies for evaluating uncertainties; and to draw up draft revisions of techno-economic items in annexes to protocols.

Main activities and time schedule: The Expert Group on Techno-economic Issues, with France and Italy as lead countries, will:

(a) Provide a list of amendments to the draft revised annexes IV, V, VI, VIII and XI to the Gothenburg Protocol, including a new annex on particulate matter reflecting the results of the work of the ad hoc group of technical experts in parallel to the forty-sixth and forty-seventh sessions of the Working Group, taking into account the outcome of the work on small combustion installations;

(b) Carry out work to estimate the costs of reduction techniques associated with the options proposed by the Expert Group in the draft revised annexes;

(c) Continue to cooperate with the Centre for Integrated Assessment Modelling (CIAM) on improving the representation of large combustion plants (LCP) and steel industry sectors in Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) models, and explore the possibility of case studies in the United Kingdom, France, Germany and Italy;

(d) Continue to update its methodology for LCP;

(e) Continue to cooperate with the European Integrated Pollution Prevention and Control Bureau, including for updating cost data of BAT reference documents for some sectors such as steel, cement and other relevant industries;

(f) Explore possibilities for cooperating with the Coordinating Group for Eastern Europe, the Caucasus and Central Asia;

(g) Continue the work on emerging technologies for combustion plants lower than 500 MW;

(h) Provide information on black carbon mitigation to the Working Group on Strategies and Review, and conduct further work pursuant to decision 2010/2;

(i) Report on progress to the Working Group on Strategies and Review;

(j) Hold its nineteenth and twentieth meeting, tentatively scheduled to be held in France and Italy in spring and in autumn 2011.

1.6 Exchange of information and technology

Description/objectives: To create favourable conditions for implementing technology-related obligations of the Convention and its protocols; to facilitate the implementation of existing protocols and the accession of non-Parties, particularly countries with economies in transition; and to examine the needs for updating technical annexes and guidance documents to the protocols.

Main activities of the Working Group on Strategies and Review: The Working Group on Strategies and Review will Review the implementation of the revised Action Plan to involve the countries of Eastern Europe, the Caucasus and Central Asia in the work of the Convention (ECE/EB.AIR/WG.5/2007/17).

Main activities of the Coordinating Group: The Coordinating Group for Eastern-Europe, the Caucasus and Central Asia will convene its meetings and organize its work to make fullest contribution possible in line with the priorities of the Convention.

1.7 Reactive Nitrogen

Description/objectives: To develop an integrated approach towards controlling nitrogen pollution in the framework of the Convention, and to improve coordination between the work of various Convention bodies on nitrogen compounds. The Task Force on Reactive Nitrogen, led by the Netherlands and the United Kingdom, will carry out the tasks as outlined in decision 2007/1 of the Executive Body.

Main activities and time schedule: The Task Force on Reactive Nitrogen (TFRN) will:

(a) Continue improving coordination of activities across and outside the Convention and will collaborate with subsidiary bodies under the Convention to complement their work, in particular:

(i) The International Cooperative Programme (ICP) on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends, including the development of indicators through the use of nitrogen budget approaches and links between nitrogen and climate;

(ii) The Task Force on Emission Inventories and Projections (TFEIP), investigate holding a joint workshop on agricultural emission projections and continue ensuring consistency between development of emission estimates and the estimation of efficiencies of agricultural emissions abatement;

(iii) The Task Force on Integrated Assessment Modelling (TFIAM), participating in relevant meetings, in particular providing advice to avoid pollutant-swapping and considering aspirational targets and effects of human behaviour, including dietary choices;

(b) Continue the work of the former Expert Group on Ammonia Abatement, i.e., develop technical and scientific information on an integrated approach to mitigation of agricultural nitrogen emissions with particular reference to the revision of the Gothenburg Protocol; finalize the update of the Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia and work on updating the Framework Code on Good Agricultural Practice for Reducing Ammonia; inform the Working Group on Strategies and Review's deliberations on revisions to annex IX to the Gothenburg Protocol; and take account of reference documentation on the application of best available techniques (BAT);

(c) Continue providing technical information on making and using nitrogen budgets and estimating nitrogen emissions at various spatial scales and for various system boundaries;

(d) Continue developing and providing technical and scientific information to support the revision of the Gothenburg Protocol in relation to the whole nitrogen cycle;

(e) Request the national focal points to report their experiences, including any difficulties in developing and implementing an integrated approach;

(f) Further consider the results from the European Nitrogen Assessment;

(g) Provide technical information on the effects of human diets on nitrogen use and emissions;

(h) Liaise with CIAM to examine the costs and benefits of ammonia emissions abatement measures and the interactions between nitrogen and climate change;

(i) Liaise with the countries of Eastern Europe, the Caucasus and Central Asia in the development of approaches for managing reactive nitrogen in industry and agriculture;

(j) Prepare an informal document on the vision and future possibilities for integrating nitrogen management within the Convention and in relation to other international conventions;

(k) Hold its sixth and seventh meeting, tentatively scheduled to be held in May and autumn 2011, and submit its report.

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

2.1 Emissions

Description/objectives: To further develop emission inventories; to improve the quality, transparency, consistency, completeness and comparability of reported emission and projection data; to support the review of compliance; and to assist Parties with their emission reporting. The TFEIP, led by the United Kingdom and co-chaired by Finland and the European Environment Agency (EEA), provides a technical forum for sharing information, harmonizing emission factors, establishing methodologies for the evaluation of emission data and projections, and identifying and resolving reporting problems, with a view to harmonizing as far as possible reporting requirements with other bodies, including in particular the United Nations Framework Convention on Climate Change (UNFCCC) and the EU National Emission Ceiling (NEC) Directive. The EMEP Centre on Emission Inventories and Projections (CEIP), hosted by Umweltbundesamt Vienna, collects and archives the data submitted by Parties, develops and maintains the database and tools, and prepares data sets and information for modellers and the Implementation Committee.

Main activities by Parties within the geographic scope of EMEP: The Parties will:

(a) Submit emission data for 2009 and projections and updates regarding data for earlier years by 15 February 2011 and gridded data, large point sources (LPS) data and Informative Inventory Reports by 15 March 2011, in accordance with the *Guidelines for Estimating and Reporting Emission Data under the Convention on Long-range Transboundary Air Pollution* (Emission Reporting Guidelines) (ECE/EB.AIR/80);

(b) Support the stage 3 review of emission data according to the methods and procedures for technical review of emission inventories through communication with the expert review teams and by nominating and funding participation of reviewers in the review teams;

(c) Maintain and establish, where appropriate, national activities to improve the compilation of information on emissions, projections, gridded data and LPS data;

(d) Support maintaining and updating of the *EMEP/EEA Air Pollutant Emission Inventory Guidebook* (EMEP/EEA Guidebook).

Main activities by the EMEP centres: The centres will:

(a) Compile revised emission data, update the inventory database and make it available at http://www.emep-emissions.at/emission-data-webdab/ by 16 June 2011, and update the database with the late submissions from Parties by 1 December 2011 (CEIP);

(b) Review reported national emission data in line with the stage 1 and stage 2 review procedures with the objective of improving the quality, transparency, consistency, completeness and comparability of reported emission, projection and activity data; produce country-specific "Stage 1 status reports" by 31 March 2011 and "Stage 2 Synthesis and assessment reports" by 31 May 2011 for data received from Parties (CEIP in cooperation with EEA for the stage 2 review); and publish summary information on stage 1 and stage 2 reviews (EEA), as well as the CEIP Inventory review report 2011;

(c) Support implementation of the Emission Reporting Guidelines by assisting national inventory experts, with a particular focus on countries in Eastern Europe, the Caucasus and Central Asia, Turkey and South-Eastern Europe;

(d) Provide technical and secretariat support to the stage 3 review process, coordinate the review process, maintain the list of eligible reviewers and set-up review teams; make completed review reports available online; and implement the agreed schedule of reviews (CEIP);

(e) Elaborate data sets of validated and complete emission data up to the reporting date of 2009 by 16 April 2011 to be used in the EMEP 2009 assessments; continue to update historical gridded emissions to achieve consistency with recalculated national submissions; further increase the transparency in the use of non-Party estimates for modelling (CEIP, the Meteorological Synthesizing Centre-West (MSC-W) and the Meteorological Synthesizing Centre-East (MSC-E));

(f) Support the Convention secretariat and the Implementation Committee by providing overviews of emission data reported by Parties to the Protocols by 30 March 2011 (CEIP);

(g) Consider further technical improvements to the data system at CEIP aimed at providing consistent information in a timely and transparent manner; continue the adaptation of the CEIP emission database and webpage to facilitate implementation of the revised Emission Reporting Guidelines (CEIP, TFEIP); continue to develop the CEIP website with a view to supporting above all national inventory experts and modellers; disseminate information to stakeholders and public (CEIP);

(h) Start developing a new gridding system for emission data reported in 2012 with the aim of improving the transparency and robustness of gridded data; consider options to grid emissions on a higher resolution (20 x 20 km or 10 x 10 km grid) and replace the existing EMEP polar stereographic projection with a geographical projection; and explore potential data sources for gap-filling reported emission data (CEIP, CIAM, MSC-W, MSC-E);

(i) Enhance the dialogue with modelling groups outside the Convention/EMEP (e.g., the Monitoring Atmospheric Composition and Climate (MACC) project, the Joint Research Centre (JRC), Stuttgart University, the Netherlands Organisation for Applied Scientific Research (TNO)) and the European Commission), with a focus on assessing options for sharing information in order to improve the quality of the spatial distribution of emissions used in EMEP models.

Main activities by the Task Force on Emission Inventories and Projections: TFEIP will:

(a) Encourage increased levels of national support for the activities of TFEIP;

(b) Taking into account the feedback from the EMEP Steering Body at its thirty-fourth session in 2010, undertake tasks in the maintenance and improvement plan for the EMEP/EEA Guidebook;

(c) Support the stage 2 and 3 review processes by liaising with CEIP, and actively encourage nominations to the roster of experts for the stage 3 reviews;

(d) Support activities under the Convention associated with countries in Eastern Europe, the Caucasus and Central Asia, where possible, including the translation of the Guidebook into Russian;

(e) Provide a forum for sharing new research findings on metal and POP emissions, to facilitate improvements to national emission estimates;

(f) Hold a workshop on gridding and mapping emission estimates to facilitate improvements to the reporting of gridded emission data;

(g) Investigate holding a joint workshop on agricultural emissions and projections with TFRN;

(h) Continue to target specific contributions from industry and explore opportunities for the Expert Group on Techno-economic Issues to contribute to the maintenance and improvement of the Guidebook;

(i) Provide support to the Gothenburg Protocol revision, in particular proposing technical guidance on how emission inventories may be developed and reported to the Convention to reflect a possible flexibility mechanism in assessing national totals against ceilings, and to report back to the EMEP Steering Body in September 2011 and other work pursuant to decision 2010/2;

(j) Hold its twenty-fourth meeting, jointly with the European Environment Information and Observation Network (EIONET) of the EEA, scheduled to be held in spring 2011 in Stockholm, and submit a report to the EMEP Steering Body.

2.2 Atmospheric measurements and modelling

Description/objectives: To support the implementation of protocols to the Convention; provide the measurement and modelling tools necessary for further abatement policies; to compile and evaluate information on transboundary air pollution; and to implement the EMEP monitoring strategy. The Task Force on Measurements and Modelling, led by France and co-chaired by the World Meteorological Organization (WMO), reviews and assesses the scientific and operational activities of EMEP related to monitoring and modelling, evaluates their contribution to the effective implementation and further development of the protocols and reviews national activities related to measurement, modelling and data validation.

Main activities by the Task Force on Measurements and Modelling (TFMM): The Task Force will:

(a) Build up the appropriate framework and support for the implementation of the updated EMEP monitoring strategy, including:

(i) Assistance and exchange of experiences in order to clarify and facilitate implementation of the revised monitoring strategy (Chemical Coordinating Centre (CCC)/TFMM/Parties);

(ii) Enhancing the dialogue with the satellite and remote sensing community, through setting up a joint working group including Task Force members and experts from that community;

(b) Contribute to the analysis and promotion of the EMEP field measurement campaigns; encourage utilization of their results; and invite Parties to use relevant data for national air quality assessments and analyses (CCC/Parties/TFMM);

(c) Contribute to the development of a framework and a workplan for the next EMEP field campaigns, scheduled for winter and summer periods in 2012 and 2013, respectively, and present the draft workplan to the EMEP Steering Body (CCC/TFMM);

(d) Provide guidance for the implementation of the six case studies on heavy metal pollution assessment (in the Czech Republic, Croatia, the Netherlands, Spain, Italy and Slovakia), aimed at bringing together the know-how for policy support from the emission, measurement and modelling communities, and assess and analyse the results of the exercise (MSC-E/TFMM);

(e) Organize and coordinate the EURODELTA follow-up modelling exercise with the assistance of the EU Joint Research Centre (JRC), focusing on the evaluation of the ability of models (especially the EMEP model) to simulate fine resolution atmospheric processes, with emphasis on the development of common model intercomparison protocols,

model-to-observation performance indicators and criteria for evaluating the state of the art of the EMEP model, and its ability to reproduce past trends in air pollutant concentrations;

(f) Contribute to the ongoing EU modelling initiatives (e.g., European Consortium for Modelling of Air Pollution and Climate Strategies (EC4MACS), the EEA Forum for Air Pollution Modelling (FAIRMODE) and the Air Quality Model Evaluation International Initiative (AQMEII));

(g) Consider options and opportunities for enhancing the visibility and promotion of TFMM work (e.g., newsletters and conferences) (TFMM, Parties, centres);

(h) Hold its twelfth meeting in May 2011 in Zurich, Switzerland, and submit a report to the EMEP Steering Body.

Main annual activities in monitoring: The Parties, centres and task forces will:

(a) Operate monitoring sites, conduct monitoring as defined by the EMEP monitoring strategy and submit observation data for 2010 to CCC by 31 July 2011 (Parties);

(b) Review, store and make available these monitoring data for the modelling centres and Parties (CCC);

(c) Continue efforts to establish near-real-time data access to observations at EMEP sites to support Global Monitoring for the Environment and Security (GMES)/ Global Earth Observation System of Systems (GEOSS) implementation, with a major focus on level 2 sites;

(d) Publish the validated 2009 data and contribute to preparation, review and assessments of observation data presented in the series of EMEP reports (CCC);

(e) Provide training/guidance to Parties to establish monitoring activities in compliance with the EMEP monitoring strategy (CCC);

(f) Arrange laboratory intercomparisons for main components, heavy metals and elemental carbon/organic carbon (EC/OC); and use the results from the EMEP and the Arctic Monitoring and Assessment Programme (AMAP) 2010 laboratory intercomparison of POPs together with field intercomparison between passive and active sampling to assess the uncertainties in the POP measurements;

(g) Address global scale integration of quality assessment/quality control (QA/QC) activities of regional monitoring programmes, including standards for metadata provision and intercomparisons (CCC, Task Force on Hemispheric Transport of Air Pollution (TFHTAP));

(h) Maintain close interaction with relevant organizations and bodies in relation to integration of observations, including monitoring efforts under other Convention bodies (e.g., the ICPs and national monitoring obligations to European Commission Directives, as well as activities undertaken by EEA, WMO, the OSPAR Commission, the Baltic Marine Environment Protection Commission (HELCOM), the United Nations Environment Programme (UNEP), AMAP, Nitrogen in Europe(NinE), GMES/GEOSS and others.

Main activities in monitoring (new developments): The Parties, centres and task forces will:

(a) Improve the EMEP database to include more statistical opportunities for aggregated data, further develop the plotting routines and develop improved export routines for data download for modellers (CCC);

(b) Use integrated data sets from satellite and ground-based remote sensing, with a particular focus on Eastern Europe, in collaboration with ongoing research efforts (CCC, MSC-W);

(c) Explore the use of passive POP measurements to validate the EMEP model and other transport models to evaluate source contribution (CCC, MSC-E);

(d) Evaluate the EMEP intensive data from 2008–2009 to improve the understanding of sources, temporal and spatial variations, and with special focus on ammonia and carbonaceous matter (Parties, CCC, MSC-W);

(e) Evaluate new measurements data of POPs and EC/OC from Eastern Europe, the Caucasus and Central Asia to assess the relative importance of the different pollutants and the main source regions (Parties, CCC, MSC-W, MSC-E);

(f) Contribute to the development of standard methods and QA/QC procedures in relation to the new parameters included in the monitoring requirements of the 2010–2019 strategy, and update the EMEP manual for sampling and chemical analysis in accordance with those outputs (Parties, CCC).

Main activities on acidification, eutrophication, photo-oxidants and particulate matter (PM): The centres and task forces will:

(a) Further develop the Unified EMEP model code to ensure that it is kept state of the art, and release updated version of the open source code online, including documentation of model changes and the effect on the results (MSC-W);

(b) Prepare and process meteorological data for 2009 (MSC-W);

(c) Process and prepare emission data (model input) for 2009 (MSC-W, CEIP);

(d) Calculate photochemical compounds, sulphur, nitrogen, PM air concentrations and deposition fields and source-receptor matrices for the extended EMEP area for 2009 (MSC-W);

(e) Calculate indicators for health (SOMO35) and ecosystem damage (exceedances of critical loads), and ozone (O_3) fluxes to forest and crops (MSC-W, Coordinating Centre for Effects (CCE));

(f) Evaluate modelling results against EMEP measurements for 2009 using standardized matrix, indicators and criteria for the assessment of model performance (MSC-W, CCC);

(g) Prepare individual country reports and make results of model and trajectory calculations available online for use by Parties (MSC-W);

(h) Contribute to the work of the subsidiary bodies and task forces by reporting on the results and on the research activities and developments (MSC-W);

(i) Cooperate with AMAP, HELCOM, the OSPAR Commission and national experts;

(j) Provide support to the Gothenburg Protocol revision pursuant to decision 2010/2.

Main activities by the Meteorological Synthesizing Centre West (Research and development activities): MSC-W will:

(a) Carry out a pilot study: investigate the contribution from European emissions of short-lived climate forcers to radiative forcing on a hemispheric (global) scale; use the EMEP global model to estimate the effect of the emissions from countries in the EMEP region on the total global burden of short-lived climate forcers (black carbon, particulate organic carbon, other aerosol components, and ozone); and use the results for (normalized) radiative forcing calculations to obtain first estimates of the effect of emissions from different EMEP countries on global radiative forcing related to short-lived climate forcers;

(b) Continue the work on air quality and climate interactions; apply new Intergovernmental Panel on Climate Change (IPCC) future climate projections (CMIP5) as meteorological input (~1950–2100) to the EMEP model and analyse changes in concentrations/depositions; use different emission scenarios/climate model projections to give a better estimate of the effect of climate change on long-range transport of air pollution; perform a feedback analysis of climate and air quality change focusing on the response of biogenic emissions and uptake by vegetation to climate change; apply the Norwegian Earth System Model to calculate dynamical responses to radiative forcing;

(c) Explore the use of particle-dynamics models within the Unified EMEP model, considering the existing multi-mono approach and new approaches such as sectional models, including with the addition of organic aerosol, using improved estimates of particle number emissions;

(d) Investigate the transport of particles from Europe to the Arctic area to improve understanding of the links between regional and hemispheric scale transport; extend the previous year's assessment, performed by running the EMEP model on a regional scale in the EMEP domain, to include the full hemisphere using the global EMEP model branch; and assess the model performance in the Arctic using available campaign measurement data in combination with measurements from the HTAP database;

(e) Participate in the model intercomparison exercise performed under TFMM using data from the intensive EMEP measurement periods; in the first phase, use data to evaluate and get a better process understanding of inorganic aerosols in the different models; investigate, in particular, the performance of gas-particle equilibrium of nitrogen species; and carry out a study of the trends (1990–present);

(f) Continue to develop the secondary organic aerosols (SOA) module in the EMEP model using EMEP intensive measurements (2009) and other data (MSC-W, CCC); compare results from the EMEP EC/OC model (with various SOA modules) to data from the EMEP intensive measurement periods and other available data; and extend this analysis to include data from the latest measurement campaigns and explore more detailed volatility-based approaches to SOA formation;

(g) Further develop the global version of the Unified EMEP model and increasingly use this to assess couplings between different spatial scales (local-regional-global); further refine the convection parameterization in the EMEP model; and address air quality issues at global scale, using the best-estimate emissions and land use data for different world regions (MSC-W, MSC-E).

Main annual activities by the Meteorological Synthesizing Centre-East on heavy metals and persistent organic pollutants: MSC-E will:

(a) Prepare meteorological data for operational modelling based on the European Centre for Medium-Range Weather Forecasts analysis, and continue work on/update development of the meteorological drivers;

(b) Prepare anthropogenic heavy metal and POPs emissions data as input for operational modelling based on gridded emission dataset provided by CEIP;

(c) Calculate heavy metal (lead, cadmium and mercury) and POP (polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), and hexachlorocyclohexane (γ-HCH) air concentrations and ecosystem-dependent deposition fluxes over the extended EMEP domain for 2009;

(d) Compute country-to-country deposition matrices for heavy metals and POPs (benzo[a]pyrene (B[a]P), PCDD/Fs and PCBs) for 2009;

(e) Estimate heavy metal and POP deposition to regional seas (the Baltic, Black, Caspian, Mediterranean and North Seas);

(f) Analyse the agreement between measured and modelled pollution levels using standardized matrix and criteria for the evaluation of model performance;

(g) Calculate mercury and POP (PCBs, PCDD/Fs, γ-HCH) dispersion on a hemispheric/global scale for evaluation of contributions of intercontinental transport to regional pollution levels;

(h) Prepare individual country status reports in English and Russian for the countries of Eastern Europe, the Caucasus and Central Asia, and make results of model calculations available online for use by Parties;

(i) Contribute to the work of the subsidiary bodies and task forces:

(i) Working Group on Effects: Continue collaboration with ICP Vegetation on evaluation of heavy metal pollution levels in Europe using modelling results and measurements in mosses;

(ii) Working Group on Strategies and Review: support the work of the Task Force on POPs in the evaluation of new POPs candidates;

(iii) TFMM, TFHTAP: Continue cooperation in the field of heavy metal and POP modelling on regional and global scales (contribute to work on intercontinental transport of mercury and POPs on the global scale);

(j) Cooperate with AMAP, UNEP, the Stockholm Convention, the EU (in particular regarding the EU regulation on registration, evaluation, authorization and restriction of chemical substances (REACH)), HELCOM, the OSPAR Commission and national experts;

(k) Disseminate results (e.g., via status reports, technical notes, the website, publication in peer-reviewed journals).

Main research and development activities by the Meteorological Synthesizing Centre-East: MSC-E will:

(a) Continue work on the EMEP case study aimed at the improvement of the quality of heavy metal pollution assessment, including:

(i) Collection, analysis and processing of country-specific data on emission, monitoring, land-cover, concentrations in soils, meteorology, etc.;

(ii) Adaptation of the MSC-E heavy metals model for simulations at national and local scales, including the model code modification and preparation of meteorological data with finer resolution;

(iii) Model assessment of pollution levels with finer resolution based on detailed country-specific data;

(iv) Initiation of a joint analysis of the results, in cooperation with national experts and EMEP Centres;

(b) Develop global-scale modelling, including:

(i) Further developing and testing the global modelling framework (GLEMOS) in application to simulation of heavy metals and POPs, including improvement of the modular architecture, elaboration of the multimedia approach and refinement of the pollutant-specific processes;

(ii) Coordinating research efforts with MSC-W on the development of the EMEP global modelling framework;

(c) Continue work on the refinement of the mercury (Hg) chemical scheme for regional and global modelling, including evaluation of the role of different oxidation mechanisms in the atmosphere;

(d) Continue to analyse the effect of altering meteorological parameters associated with climate change on heavy metal and POP pollution levels in Europe;

(e) Continue the elaboration of the integrated monitoring/modelling/emission approach based on back trajectory analysis and simplified adjoint models;

(f) Investigate seasonal variations of emissions for B[a]P and PCDD/Fs based on calculations with different emission scenarios;

(g) Continue to investigate hexachlorobenzene (HCB) contamination within the EMEP domain based on experimental calculations with emission;

(h) Participate in the elaboration of criteria and metrics for evaluation of modelling results.

2.3 Integrated assessment modelling

Description/objectives: To analyse scenarios on cost-effective reduction of acidification, eutrophication, tropospheric ozone, PM exposure and short-term regional radiative forcing. Modelling will cover: (a) abatement options for reducing sulphur, nitrogen oxides, ammonia, VOCs, methane, primary PM, organic and black carbon and carbon monoxide, including structural measures in energy, transport and agriculture, as well as their costs; (b) projections of emissions; (c) assessments of the atmospheric transport of substances; and (d) analysis and quantification of environmental and health effects and benefits of emission reductions. The TFIAM, led by the Netherlands, will guide the work of CIAM and will encourage and support national modelling activities by its National Focal Points.

Main activities by Parties: The Parties will:

(a) Participate in the review of the GAINS model results;

(b) Share experiences in integrated assessment modelling via the Network for National Integrated Assessment Modelling.

Main activities by the Centre on Integrated Assessment Modelling: CIAM will:

(a) Support the revision of the Gothenburg Protocol via analyses of policy strategies, as requested by the Working Group on Strategies and Review and pursuant to decision 2010/2;

(b) Carry out sensitivity analyses and report on the robustness of modelling results to TFIAM;

(c) Continue the development of the GAINS modelling framework for the purpose of estimating co-benefits of air pollution abatement strategies to reduce ozone and PM for radiative forcing and black carbon deposition in the Arctic.

Main activities by the Task Force for Integrated Assessment Modelling: TFIAM will:

(a) Contribute to the revision of the Gothenburg Protocol, in particular by preparing alternative scenarios based on the baseline projections and by providing information pursuant to decision 2010/2 (TFIAM, CIAM, Parties, Network for National Integrated Assessment Modelling);

(b) Collaborate with the Working Group on Effects, TFRN, TFHTAP, the Expert Group on Techno-economic Issues and the Network of Experts on Benefits and Economic Instruments;

(c) Contribute to the further development of the GAINS model, assess new findings on the interrelationships between air and climate policy, and collaborate with authors contributing to reports of the IPCC and UNEP;

(d) Hold its thirty-ninth and fortieth meeting, tentatively scheduled to be held in February and May 2011, respectively;

(e) Hold a workshop, jointly with the Working Group on Effects, on the costs and impacts of a revised protocol, tentatively to be held in October 2011;

(f) Submit an annual progress report and appropriate reports to the EMEP Steering Body, the Working Group on Strategies and Review and the Working Group on Effects.

2.4 Hemispheric transport of air pollution

Description/objectives: To develop a fuller scientific understanding of the hemispheric transport of air pollution and estimate the hemispheric transport of specific air pollutants, TFHTAP, led by the United States and the EU, coordinates activities, including collaboration with other international bodies, programmes and networks, both within and outside the UNECE region, with related interests.

Main activities by Parties: Parties will:

(a) Contribute with expertise on monitoring, emission estimates and modelling relevant to the policy relevant science questions identified by TFHTAP;

(b) Actively support the participation of modelling groups in the model intercomparison for the EMEP geographical region;

(c) To the extent possible, conduct projects that contribute to the objectives of TFHTAP, such as the development of databases for global emissions (EDGAR HTAP), relevant ground-based observations (EBAS-HTAP), aircraft measurements (the National Aeronautics and Space Administration's Unified Airborne Database), satellite observations (GIOVANNI-HTAP) and modelling experiments (Juelich HTAP Data Server) and the development of interfaces and connections between those databases.

Main activities by the centres: The centres will:

(a) Continue cooperation with TFHTAP on the development and evaluation of the modelling approaches, as well as evaluation of pollutants' transport on hemispheric and global scales;

(b) Participate in the TFHTAP model intercomparison studies;

(c) Coordinate research efforts to develop the EMEP global modelling framework;

(d) Evaluate the new EDGAR HTAP global emission data in comparison with other available expert estimates (CEIP, MSC-W, MSC-E).

(e) Develop a multi-year plan for tasks identified in decisions 2010/1 and 2010/2, and report back to the EMEP Steering Body and the Executive Body in 2011 for consideration in the 2012 workplan.

Main activities by the Task Force on Hemispheric Transport of Air Pollution: TFHTAP will:

(a) Pursue efforts for an increased understanding of the role of hemispheric transport of air pollution and, in particular:

(i) Continue to plan, conduct and analyse multi-model experiments to evaluate the importance of intercontinental transport of air pollution, and in particular the linkages to short-lived climate forcers (particularly methane and black carbon) and climate change in conjunction with other internationally coordinated studies;

(ii) Support the development of an electronic information network, to facilitate the integration and interoperability of relevant data on emissions, observations and modelling information for the assessment of intercontinental transport (including the HTAP Modelling Data Server, EDGAR-HTAP, EBAS-HTAP, and GIOVANNI-HTAP), and make available for all interested Parties, task forces, and EMEP centres, data and tools related to the 2010 assessment;

(iii) Improve the linkages between modelling efforts at the global and regional scales;

(b) Organize an annual meeting and workshop jointly with other international organizations to discuss the findings of the 2010 HTAP Assessment Report and other recent related assessments and discuss plans for continued work, tentatively in May 2011;

(c) Continue the cooperation with the EMEP centres and individual Convention task forces, including TFMM, TFEIP, TFIAM and TFRN;

(d) Continue and increase outreach efforts directed at experts from outside the UNECE region and international organizations dealing with global and regional air pollution.

2.5. Cooperation with countries in Eastern Europe, the Caucasus and Central Asia and South-Eastern Europe

Description/objectives: To enhance cooperation with countries in Eastern Europe, the Caucasus and Central Asia and South-Eastern Europe; to involve them in the activities of the EMEP Steering Body and provide them with assistance, as needed; and to implement the EMEP programme, in particular with a view to obtaining emission data from these countries, as well as establishing monitoring and modelling activities.

Main activities by Parties: Parties will:

(a) Explore opportunities for providing bilateral assistance to these countries in the field of emission inventories, monitoring and modelling;

(b) To the extent possible, contribute financial support to representatives from these countries so that they may attend the meetings and workshops organized under the Convention;

(c) Seek to take part in the activities of the EMEP Steering Body, including through active participation in meetings of the Steering Body and its task forces, and use every opportunity to voice needs and to seek donor assistance, inter alia, through formulating project proposals for capacity-building (all Parties).

Main activities by the centres and task forces: They will:

(a) Prepare, in cooperation with the countries of Eastern Europe, the Caucasus and Central Asia and South-Eastern Europe, an action plan for EMEP, with a time frame and cost estimates for future steps to be taken;

(b) Explore opportunities for organizing subregional workshops to explain methodologies and to build capacity with respect to emission inventories, monitoring and modelling;

(c) Prepare individual country reports for the countries of Eastern Europe, the Caucasus and Central Asia in Russian.

3. Effects of major air pollutants on human health and the environment

3.1 Review of effects of major air pollutants

Description/objectives: Annual review of activities and results of the ICPs and the Task Force on the Health Aspects of Air Pollution (Task Force on Health). Provide appropriate reports to the sessions of the Executive Body on the reviews and revisions of Convention's protocols.

Main activities and time schedule:

(a) Submission of relevant information and reports by the ICPs and the Task Force on Health to the secretariat, in particular the contributions to the revision of the Gothenburg Protocol (April/May 2011);

(b) Submission of results to the secretariat for the 2011 joint report of the ICPs, the Task Force on Health and the Joint Expert Group on Dynamic Modelling under the Working Group on Effects (May 2011);

(c) Submission of appropriate reports to the sessions of the Working Group on Effects and the Executive Body;

(d) Submission of reports on the activities common to all ICPs, the Task Force on Health and the Joint Expert Group on Dynamic Modelling, namely:

(i) Report on the further implementation of the Guidelines on Reporting of Monitoring and Modelling of Air Pollution Effects;

(ii) Report on the heavy metals baseline assessment;

(iii) Reports on the comparison of activities across continents and regions (North America, Western Europe, and South-Eastern Europe, Eastern Europe, the Caucasus and Central Asia);

(iv) Report on ex post analysis by the Working Group on Effects.

3.2 International Cooperative Programme on Effects of Air Pollution on Materials, including Historic and Cultural Monuments

Description/objectives: Quantification of the multi-pollutant effects on the corrosion and soiling of selected materials under different environmental conditions, inter alia, as a basis for economic evaluation of air pollution damage. A Programme Task Force led by Sweden and co-chaired by Italy, in cooperation with the Programme's main research centre (the

Corrosion and Metals Research Institute, Stockholm), is responsible for the detailed planning and coordination of the Programme.

Main activities and time schedule:

(a) Report on trends in pollution, corrosion and soiling 1987–2009;

(b) Report on environmental data from the 2008–2009 exposure programme for trend analysis;

(c) Report on pilot study on inventory and condition of stock of materials at risk at United Nations Educational, Scientific and Cultural Organization (UNESCO) cultural heritage sites;

(d) The twenty-seventh meeting of the Programme Task Force, tentatively scheduled for April 2011 in Prague, and the submission of its report;

(e) Conduct work pursuant to decision 2010/2.

3.3 International Cooperative Programme on Assessment and Monitoring of Acidification of Rivers and Lakes

Description/objectives: Identification of the state of surface water ecosystems and their long-term changes with respect to the regional variation and impact of selected air pollutants, and including effects on biota. A Programme Task Force led by Norway, which also provides the Programme's centre (the Norwegian Institute for Water Research, Oslo), is responsible for the detailed planning and coordination of the Programme.

Main activities and time schedule:

(a) Final report on recovery from acidification, trends in surface water chemistry and biology up to 2008;

(b) Draft report on air pollution effects on aquatic biodiversity;

(c) The twenty-seventh meeting of the Programme Task Force, tentatively scheduled to be held in autumn 2011, and the submission of its report;

(d) Conduct work pursuant to decision 2010/2.

3.4 International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests

Description/objectives: Collection and assessment of comprehensive and comparable data on changes in forests under actual environmental conditions (in particular, air pollution, including acidifying and eutrophying deposition as well as other stresses), and the determination of cause-effect relationships. A Programme Task Force led by Germany, in cooperation with the Programme's main coordinating centre (the Federal Research Centre for Forestry and Forest Products, Hamburg, Germany), is responsible for the detailed planning and coordination of the Programme. Extensive large-scale monitoring (level I), intensive monitoring of forest ecosystems on the permanent sample plots (level II) and integrated evaluation of results will be carried out.

Main activities and time schedule:

(a) Report on forest soil condition at European scale;

(b) Report on relationships between exceedance of critical limits and forest vegetation response;

(c) Report on development of forest biodiversity under different deposition scenarios;

(d) The twenty-seventh meeting of the Programme Task Force, scheduled to be held in May 2011 in Copenhagen, and the submission of its report;

(e) Conduct work pursuant to decision 2010/2.

3.5 International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops

Description/objectives: Evaluate the effects of air pollutants and other stresses on (semi-)natural vegetation and crops. For ozone: identify dose-response functions; assess economic losses on crops; validate critical levels for (semi-)natural vegetation and crops and further develop the flux-based approach; and evaluate (semi-)natural vegetation and crops as indicators of potential damage to natural ecosystems. Evaluate and map heavy metal deposition on vegetation. Evaluate the impacts of nutrient nitrogen on (semi-)natural vegetation. A Programme Task Force led by the United Kingdom, with the cooperation of the Programme's coordination centre (the Centre for Ecology and Hydrology, Bangor, United Kingdom), is responsible for the detailed planning and coordination of the Programme.

Main activities and time schedule:

(a) Report on the 2010 biomonitoring exercise for ozone;

(b) Report on ozone impacts on food security;

(c) Progress report on European heavy metals and nitrogen in mosses survey 2010–2011;

(d) Report on mosses as biomonitors of POPs;

(e) The twenty-fourth meeting of the Programme Task Force, tentatively scheduled to be held in January/February 2011 in Rapperswil, Switzerland, and the submission of its report;

(f) Conduct work pursuant to decision 2010/2.

3.6 International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems

Description/objectives: Determination and prediction of the state of ecosystems and their long-term changes with respect to the regional variation and impact of selected air pollutants, with special attention to effects on biota. A Programme Task Force led by Sweden is responsible for planning, coordinating and evaluating the Programme. The Programme's centre (Finnish Environment Institute, Helsinki) is entrusted with collecting, storing, processing and analysing data from countries taking part in the Programme.

Main activities and time schedule:

(a) Interim report on biodiversity;

(b) Report on the results from collaboration with the Long-Term Ecological Research (LTER) network;

(c) Report on updated heavy metal budgets and critical loads;

(d) Nineteenth meeting of the Programme Task Force, tentatively scheduled to be held in May 2011, and the submission of its report;

(e) Conduct work pursuant to decision 2010/2.

3.7 International Cooperative Programme on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends

Description/objectives: Determine critical loads and levels and their exceedance for selected pollutants. Develop and apply other methods for effects-based approaches, such as dynamic modelling. Model and map the present status of and trends in impacts of air pollution. A Programme Task Force led by France is responsible for the detailed planning and coordination of activities. The Task Force uses available and accepted data drawing on the work of other task forces, ICPs and EMEP. CCE (at the RIVM, Bilthoven, Netherlands) provides scientific and technical support to the Task Force and to other effects-related activities. It develops methods and models for calculating critical loads and levels and for other effects-based approaches, and produces maps of critical loads and levels and their exceedance and other risk parameters related to potential damage and recovery.

Main activities and time schedule:

(a) Report on the development and implementation of modelling and mapping methodologies in ex post integrated assessment modelling, including in support of the revision of the Gothenburg Protocol;

(b) Report on the results of using the update of empirical critical loads and levels and dose-response functions in scenario assessments of regional changes of plant species diversity;

(c) Report on the revision of the critical loads database to:

(i) Include updated empirical critical loads, as revised by the national focal centres (NFCs), in the CCE database and use in the ex post assessment;

(ii) Request and aggregate data from the NFCs in all recent grid systems used by EMEP deposition models;

(iii) Encourage harmonization of data compatibility, processes and synergies between the NFCs and experts working with the EU Habitat Directive;

(iv) Complement results for NFCs on site-specific dynamic modelling of vegetation changes, including an updated version of the extended very simple dynamic model (VSD+) and increased number of sites;

(d) The twenty-seventh meeting of the Programme Task Force and the twenty-first CCE workshop, to be held in April 2011 in Bilthoven, the Netherlands, and the submission of the two respective meeting reports.

3.8 Effects of air pollutants on human health

Description/objectives: Preparation of state-of-the-art reports on the direct and indirect effects of long-range transboundary air pollution on human health:

(a) The World Health Organization (WHO) is invited to present relevant progress and technical reports to the Working Group on Effects, so that knowledge acquired by WHO can be applied in the further implementation of the Convention. Additional information/reports should be provided, when appropriate, by other international

organizations, interested Governments and/or other subsidiary bodies under the Convention;

(b) To support the Working Group on Effects and the Executive Body in preparing and substantiating new and/or updating existing protocols, the joint Task Force of WHO/European Centre for Environment and Health (ECEH) and the Executive Body, led by the WHO/ECEH Bonn Office, evaluates and assesses the health effects of long-range transboundary air pollution and reports on the subject.

Main activities and time schedule:

(a) Progress report on health impacts of PM and ozone;

(b) Feasibility study of the assessment of health impacts of PM and health benefit analysis of PM reduction in countries of Eastern Europe, the Caucasus and Central Asia;

(c) Review of methods of communication on the health significance of air quality and assessment of feasibility for harmonization of the information;

(d) The fourteenth meeting of the Task Force on the Health Aspects of Air Pollution, tentatively scheduled to be held in May 2011 in Bonn, Germany, and the submission of its report;

(e) Conduct work pursuant to decision 2010/2.

3.9 Dynamic modelling

Description/objectives: Recovery of ecosystems is an important consideration for the development of air pollution strategies, and work on various ecosystems at different scales is carried out by several ICPs. The Joint Expert Group on Dynamic Modelling, led by the United Kingdom and Sweden, brings together experts from these programmes to share knowledge and produce joint reports on all aspects of dynamic modelling.

Main activities and time schedule:

(a) Report on progress in dynamic modelling of acidification and nutrient nitrogen, including the interactions between climate change, air pollution and biological responses;

(b) Report of the eleventh meeting of the Joint Expert Group to the thirtieth session of the Working Group on Effects in September 2011;

(c) The twelfth meeting of the Joint Expert Group, tentatively scheduled to be held in autumn 2011.