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## 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

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**Draft 2020–2021 workplan for the implementation  
of the Convention (science part)**

### **Draft 2020–2021 workplan for the implementation of the Convention (science part)\***

#### *Summary*

The present document has been compiled by the chairs of the Working Group on Effects and the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) based on the contributions submitted by the centres and task forces under the two scientific bodies of the Convention on Long-range Transboundary Air Pollution. The document contains the elements related to science of the draft 2018–2019 workplan for the implementation of the Convention.

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\* The present document is being issued without formal editing.



## **I. Introduction**

1. The workplan for the implementation of the Convention on Long-range Transboundary Air Pollution translates the vision, objectives and strategic approaches set out in the Long-term strategy for the Convention on Long-range Transboundary Air Pollution for 2020–2030 and beyond (Executive Body decision 2018/5). The workplan structure builds on the primary needs of the Convention and its Parties, relating to five main areas: science; policy; compliance; capacity-building; and communication and outreach. For each area a table presents the specific activities planned, deliverables, the lead body or bodies and resource requirements or funding source.

2. This approach to structuring the workplan allows Parties to better assess the work of the different subsidiary bodies and their deliverables in meeting the Convention's needs and ensuring progress in realizing the vision set out in the Long-term Strategy. The draft workplan includes activities that should be completed in the 2020–2021 period. Long-term activities and related deliverables are set out in the mandates (terms of references) for the task forces and centres under the Convention.

## II. Science

3. Science project activities in the 2020–2021 period are presented in the table below.<sup>1</sup>

Table  
Science

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
<b>1.1 Improving tools to assess air pollution and its effects in the ECE region</b>				
<b>1.1.1 Monitoring and modelling tools</b>				
1.1.1.1	Assessment of PAH pollution levels, key sources and trends: contribution to the analysis of population exposure to PAHs	Multi-model analysis of BaP pollution levels in framework of EMEP EuroDelta-Carb intercomparison exercise  Detailed assessment of PAH pollution in Poland with emphasis to evaluation of national emissions and exceedances of air quality guidelines  Model assessment of key source categories and analysis of PAH pollution levels in the EMEP region  Technical report on assessment of PAH pollution on national and regional scales as contribution to analysis of the effectiveness of the POP Protocol (2021)	MSC-E in collaboration with TFTEI and Task Force on Health	Covered by the EMEP budget
1.1.1.2	Harmonise and improve approaches to PM inventory emissions and modelling, accounting for so-called condensable compounds	Expert workshop on condensable (2020)  Minutes and report to EMEP SB (2020)	MSC-W in co-operation with CEIP, TFMM, TFEIP, TFIAM	Funding from Nordic Council of Ministers or other sources
1.1.1.3	Black carbon assessment (will also be part of a EuroCarb study)  Provide background information for inclusion of black carbon in a revised Gothenburg Protocol	Take stock of the joint EMEP/ACTRIS/COLOSSAL winter 2017/2018 field campaign by launching a dedicated model intercomparison exercise (Eurodelta-Carb, in collaboration with the CAMS) focusing on black carbon, organic aerosols and BaP	TFMM, MSC-W, CCC in cooperation with CAMS, ACTRIS, COLOSSAL, IPCC, AMAP, TFEIP	Need for voluntary (in-kind) contributions from interested countries (participants to the Euro carb field campaign?)

<sup>1</sup> For abbreviations and acronyms used, please see list at the end of the table.

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
		First report and publications (2020)		
		Assessment of the relative importance of residential wood burning and road transportation for black carbon from both models and measurements (2021)		
1.1.1.4	Investigating monitoring of chemicals of emerging concern	Review of the main stakes (2020) Report in 2021	CCC with TFMM	
1.1.1.5	Monitoring and assessment of the impact on the environment of corrosion and soiling effects on materials and their trends	Environmental data report (2020) Report of trends in corrosion, soiling and pollution 1987–2019 (2020) Technical manual 2017–2021 (2021) Revision of the mapping manual to include soiling (2021)	ICP Materials	
1.1.1.6	Gathering information on policy-relevant user friendly indicators to evaluate air pollution effects on materials by conducting case studies on UNESCO cultural heritage sites	Call for data on UNESCO sites Report focused on the relative importance of individual pollutants on the cost of damage for selected UNESCO sites (2020) Report on application of models with increased resolution (1km x 1km) at selected UNESCO sites (2021)	ICP Materials	
1.1.1.7	Thematic report on reactive nitrogen (special attention to nitrogen saturation and influences of nitrogen downstream of headwaters)	Final Report (2020)	ICP Waters in cooperation with ICP Integrated Monitoring and other bodies, under the Convention, if possible	Covered by recommended contributions
1.1.1.8	Thematic report on biological recovery and responses to changing water chemistry (to be discussed at the Task Force meeting in 2020)	Final Report (2021)	ICP Waters with possible contributions from other bodies under the Convention	Covered by recommended contributions

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1.1.1.9	Review of interactive impacts of ozone and nitrogen on vegetation	Report (2020)	ICP Vegetation	Covered by the United Kingdom of Great Britain and Northern Ireland, Sweden and other interested countries
1.1.1.10	Ozone flux-response relationships by means of DO3SE model (ICP Vegetation) and ICP Forests ozone data and response parameters	Ozone effect on radial tree growth across Europe (2021)	ICP Forests	National funding
1.1.1.11	Nitrogen deposition and its effects on forest vegetation (monitoring activities according to the ICP Forests Manual)	Reports about status and trends of N levels in European forests (2020, 2021)	ICP Forests	
1.1.1.12	Status and trends of heavy metals in forest ecosystems	Maps of heavy metal concentrations across Europe for two different survey periods (2020)  Scientific paper or report (2021)	ICP Forests	22,000 US\$
1.1.1.13	Steady-state Critical Loads: (a) update of National Critical Loads by National Focal Centres  (b) establish European Background Database by CCE	Database (2020/2021) for Critical Loads for acidification and eutrophication; Report	CCE and ICP Modelling and Mapping	Funding covered by CCE National Focal Centres and Germany
1.1.1.14	Empirical Critical Loads: Validation and revision of the empirical Critical Loads published in 2011	Report on empirical Critical Loads in Europe (2021)	CCE and ICP Modelling and Mapping	Funding covered by CCE, CCE National Focal Centres and by recommended contributions
1.1.1.15	Scientific paper on impacts of internal catchment-related nitrogen parameters to total inorganic nutrient nitrogen (TIN) leaching.	Scientific paper (2020)	ICP Integrated Monitoring	
1.1.1.16	Report on Hg and HM trends in concentrations and fluxes across ICP Integrated Monitoring sites in Europe.	Report (2021)	ICP Integrated Monitoring	
1.1.1.17	Scientific paper on effects of nitrogen enrichment on forest vegetation. A co-operation between ICP Integrated Monitoring and ICP Forests.	Scientific paper (2020)	ICP Integrated Monitoring	

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
1.1.1.18	Consolidate existing evidence on health outcomes of exposure to air pollution	Update of the evidence on the health impact of ozone, PM, nitrogen dioxide, sulphur dioxide and carbon monoxide  A (scoping) report on emerging issues and methods for health risk/impact assessment of air pollution and cost benefit analysis (pending availability of resources)	Task Force on Health	Partly covered by the European Commission and other potential donors; further funding needed
1.1.1.19	Evaluate the current knowledge on the health risk of polycyclic aromatic hydrocarbons and identify critical gaps; assess feasibility of continuing the work under the Task Force on Health	Technical report on health risks of polycyclic aromatic hydrocarbons	Task Force on Health	Covered by Norway and Sweden with support from Finland, Switzerland, United Kingdom and Canada
<b>1.1.2 Emission and projection tools</b>				
1.1.2.1	Detailed analysis of the status of inclusion of the condensable component in PM emissions reported by Parties based on the data provided by Parties in their Informative Inventory Reports and on direct communication with Parties for selected Nomenclature For Reporting categories (case studies).	Status report (2020)	CEIP and TFEIP in collaboration with MSC-W and TFMM	Covered by the EMEP budget
1.1.2.2	Improving gap filling and gridding processes of black carbon emissions data by using new data sources (International Institute for Applied Systems Analysis, corine land cover, population statistics)	Updated black carbon emission inventories (2020–2021)  New TFEIP black carbon working group	CEIP in cooperation with CIAM  TFEIP in cooperation with IPCC	Need to find complementary resources
1.1.2.3	Improvement of data for the modelers: comparison of EMEP gridded emissions with other sources (CAMS, Fairmode)	Status report and recommendation for further improvement of EMEP gridded emissions (2021)	CEIP in collaboration with MSC-W and CAMS, JRC, Fairmode	Covered by the EMEP budget
1.1.2.4	Drafting a paper on opportunities arising from earth observation	First draft in 2020  Final paper in 2021	TFEIP in cooperation with CAMS	
1.1.2.5	Dealing with fine timescale emission estimates	Draft guidance in 2021	TFEIP in cooperation with TNO	

### 1.1.3 Integrated assessment tools

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
1.1.3.1	<p>Integrated Assessment Modelling-Framework for the review of the amended Gothenburg Protocol</p> <p>Assessment to what extent the long-term targets will be met (in 2020-2030-2050), when technical annexes of the amended Gothenburg Protocol will be implemented completely</p>	<p>Position paper for the review of the amended Gothenburg Protocol (2020)</p> <p>Data and scenario analyses (2021)</p>	TFIAM and CIAM	Covered by the EMEP budget
1.1.3.2	<p>Assessing observed trends in air pollution at the various scales</p> <p>Follow-up on the measurement (twin-sites) and modelling approaches to assess the long-range contribution to urban air pollution</p> <p>Linkages between global and regional air pollution</p>	Note as a contribution to the review of the amended Gothenburg Protocol (2020)	TFMM, TFHTAP, TFIAM and MSC-W	
1.1.3.3	Ammonia: Contribute to improve understanding of expected benefit of ammonia mitigation in terms of wet and dry nitrogen deposition (including at high spatial resolution), long-term trends, chemical regimes of secondary inorganic aerosol formation	Ammonia assessment report in 2020	TFIAM with support from TFMM and countries experts (France and Netherlands)	
<b>1.1.4 Linking the scales</b>				
1.1.4.1	Expert Panel on clean air cities (EPCAC) road map	<p>Position paper on multiscale interactions (2020)</p> <p>Two annual meeting of EPCAC (2020 and 2021)</p>	TFIAM with nominated experts	Covered by in-kind contributions from participating countries
1.1.4.2	<p>Downscaling of EMEP/MS-CW modelling results to fine scale, while keeping the consistency to the larger scale (e.g. that reductions done on larger scale will affect the fine scale in a consistent way). Evaluate the approach for countries that have detailed emission/proxy data as well as measurements data (e.g. Netherlands, the United Kingdom, Switzerland) together with the countries</p> <p>Develop methodology for downscaling of deposition, with a focus on reduced nitrogen.</p>	<p>Results for PM and nitrogen dioxide report (2020)</p> <p>Maps for reduced nitrogen deposition for selected countries, report (2021).</p>	MS-CW with TFMM and national experts	Depend on external funding (which MS-CW will apply for)

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
1.1.4.3	Attribution of long-term changes of Hg and POP pollution to regional and extra-regional (global, secondary) sources	Analysis of available global Hg and POP emissions inventories (e.g. EDGAR, UNEP) for evaluation of long-term pollution changes  Model assessment of the role of regional, global, and secondary sources in long-term changes of Hg and POP pollution on a global scale with focus on the EMEP region.  Technical Report on source attribution of long-term changes of Hg and POP pollution (2021)	MSC-E  TFHTAP, AMAP, UNEP, Stockholm Convention and Minamata Convention	EMEP Budget and other resources if possible
1.1.4.4	Investigations on global scenarios and assessment of global sectoral mitigation measures	Report (2021)	TFIAM and TFHTAP	
1.1.4.5	Organize the development of an updated global emissions mosaic to support future modeling efforts to quantify extra-regional contributions to air quality and deposition.	Data set (2021)	TFHTAP in cooperation with CAMS	Covered by Parties in-kind contributions
1.1.4.6	Continue development of the openFASST tool for screening analysis of future scenarios and implications of global and regional model uncertainties	Tool updates (2020, 2021)	TFHTAP	Covered by Parties in-kind contributions
1.1.4.7	Organize analysis and model improvements needed to improve the estimation of the health and environmental benefits of decreasing ozone through mitigation of methane emissions	Workshop (2020)	TFHTAP with MSC-W, ICP Vegetation, TFEIP, TFTEI and TFMM	Covered by Parties in-kind contributions

## 1.2 Cooperation with Parties

1.2.1	Downscaling of HM pollution assessment from regional to national and local levels (country-scale studies)	Detailed evaluation of heavy metal (lead, cadmium, Hg) pollution levels in a selected country (Germany) involving variety of national data  Evaluation of national emissions using modeling results and observations	MSC-E in collaboration with TFMM and Germany (UBA)	Partly funded by Germany (28 000 US\$)
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<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
		Recommendations for improvement of the assessment quality both on national and regional scales		
		Joint report on heavy metal (lead, cadmium, Hg) pollution of Germany (2020)		
1.2.2	Capacity building for the health impact assessment of air pollution at regional and sub-regional levels	Development and implementation of the capacity building curriculum to address different needs	Task Force on Health	Expected to be covered by recommended contribution and other potential donors
<b>1.3 Cooperation with other projects and bodies (outreach activities)</b>				
1.3.1	Cooperation with CAMS	Implementation on near real time (NRT) facilities to report observations (2020)	CCC	Budget provided by CAMS
1.3.2	Cooperation with Climate & Clean Air Coalition	Strategy to deal with emission reporting at the global scale and with black carbon control strategy  Common strategy in 2020	EMEP with support from TFEIP, TFHTAP, TFMM	
1.3.3	Cooperation with Arctic Council and AMAP	Focus on black carbon in the framework of a European Union contract	CEIP, CIAM, MSC-W	Budget provided by AMAP (European Union contract)
1.3.4	Support Stockholm Convention in relation to atmospheric observations and data management within the ECE region	Report to annual joint sessions of Steering Body to EMEP and WGE	MSC-E	
1.3.5	Further develop methodologies for assessment of direct and indirect impacts of long-range transboundary air pollution on human health	Update of tools for quantification of the health burden of air pollution; also linking to climate change mitigation	Task Force on Health	Expected to be covered by recommended contribution and other potential donors
1.3.6	Development of communication strategies for health messages related to air pollution in Europe	Workshop on communication strategy; regional input to the global activity coordinated by WHO Headquarters	Task Force on Health	Expected to be covered by recommended contribution and other potential donors

#### **1.4 Improving the functioning of WGE and EMEP and their subsidiary bodies**

<i>Workplan item</i>	<i>Activity description / objective</i>	<i>Expected outcome / deliverable</i>	<i>Lead body(ies)</i>	<i>Resource requirements and/or funding source</i>
1.4.1	Ozone flux-based risk assessment for vegetation at various air pollution scenarios (for a potential review of the amended Gothenburg Protocol)	Maps and report (2021)	MCS-W, ICP Vegetation and TFMM	
1.4.2	Ozone flux-based risk assessments adapted for vegetation in soil moisture limited areas	Maps and report (2020)	MCS-W, ICP Vegetation and TFMM	

*Abbreviations:* ACTRIS = Aerosols, Clouds, and Trace gases Research InfraStructure Network; Alterra = Wageningen Environmental Research; AMAP = Arctic Monitoring and Assessment Programme; BaP = benzo[a]pyrene; CAMS = Copernicus Atmosphere Monitoring Service; CCC = Chemical Coordinating Centre; CCE = Coordination Centre for Effects; CEIP = Centre on Emission Inventories and Projections; CIAM = Centre for Integrated Assessment Modelling; EDGAR = Emission Database for Global Atmospheric Research; EEA = European Environment Agency; Gothenburg Protocol = Protocol to Abate Acidification, Eutrophication and Ground-level Ozone; Hg = mercury; HM = heavy metal; ICP = International Cooperative Programme; ICP Forests = ICP on Assessment and Monitoring of Air Pollution Effects on Forests; ICP Integrated Monitoring = ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems; ICP Materials = ICP on Effects of Air Pollution on Materials, including Historic and Cultural Monuments; ICP Modelling and Mapping = ICP on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends; ICP Vegetation = ICP on Effects of Air Pollution on Natural Vegetation and Crops; ICP Waters = ICP on Assessment and Monitoring of Acidification of Rivers and Lakes; JEG = Joint Expert Group on Dynamic Modelling; JRC = Joint Research Centre of the European Commission; LRT = long-range transport (of pollutants); Minamata Convention = Minamata Convention on Mercury; Modelling and Mapping Manual = Manual on Methodologies and Criteria for Modelling and Mapping Critical Loads and Levels and Air Pollution Effects, Risks and Trends; MSC-E = Meteorological Synthesizing Centre-East; MSC-W = Meteorological Synthesizing Centre-West; N = nitrogen; PAH – polycyclic aromatic hydrocarbon; PM = particulate matter; POPs = persistent organic pollutants; S = sulphur; SOA = secondary organic aerosol; Stockholm Convention = Stockholm Convention on Persistent Organic Pollutants; Task Force on Health = Joint Task Force on the Health Aspects of Air Pollution; TFEIP = Task Force on Emission Inventories and Projections; TFHTAP = Task Force on Hemispheric Transport of Air Pollution; TFIAM = Task Force on Integrated Assessment Modelling; TFMM = Task Force on Measurements and Modelling; TFRN = Task Force on Reactive Nitrogen; TFTEI = Task Force for Techno-economic Issues; TNO = Netherlands Organisation for applied scientific research; UNEP = United Nations Environment Programme; UNESCO = United Nations Educational, Scientific and Cultural Organization; WGE = Working Group on Effects; WGSR = Working Group on Strategies and Review; WMO = World Meteorological Organization.