



# Economic and Social Council

Distr.: General  
25 February 2021

Original: English

---

## Economic Commission for Europe

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

**Working Group on Strategies and Review**

**Fifty-ninth session**

Geneva, 18–21 May 2021

Item 3 of the provisional agenda

**Progress in the implementation of the 2020–2021 workplan**

### **Report of the Task Force on Techno-economic Issues\***

#### *Summary*

At its thirty-third session (Geneva, 8–11 December 2014), the Executive Body for the Convention on Long-range Transboundary Air Pollution established the Task Force on Techno-economic Issues (ECE/EB.AIR/127/Add.1, decision 2014/2). In accordance with its revised mandate set out in the annex to decision 2018/7, the Task Force is required to report on progress in its work to the Working Group on Strategies and Review.

The report by the Task Force on Techno-economic Issues contained in the present document presents information on progress in the implementation of the 2020–2021 workplan for the implementation of the Convention (ECE/EB.AIR/144/Add.2) with respect to activities relevant to the Task Force, as well as on the outcomes of the sixth annual meeting of the Task Force (online, 22–23 October 2020).

---

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



## I. Introduction

1. The present document contains information on the outcomes of the sixth annual meeting of the Task Force on Techno-economic Issues (online, 22–23 October 2020) and on the progress made in the implementation of the 2020–2021 workplan for the implementation of the Convention (ECE/EB.AIR/144/Add.2), with respect to the activities relevant to the Task Force.

2. The sixth annual meeting of the Task Force, organized by Italy and France, was held via video conference back-to-back with the informal technical session (online, 21 October 2020) focused on the preparation of the draft guidance document on reduction of emissions from agricultural residue burning and the background technical document on maritime shipping emissions, reduction techniques and determination of their costs.

## II. Sixth annual meeting of the Task Force on Techno-economic Issues

### A. Attendance

3. The Task Force meeting gathered 92 experts,<sup>1</sup> including experts from Austria, Belgium, Canada, European Union, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Portugal, Russian Federation, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Ukraine and the United States of America. An observer from Argentina also attended the meeting.

4. Representatives of the French-German Institute for Environmental Research at the Karlsruhe Institute of Technology (Germany), the German Federal Environment Agency and the Inter-professional Technical Centre for Studies on Atmospheric Pollution (France), in their capacity of members of the technical secretariat of the Task Force, attended the meeting. A representative of the United Nations Economic Commission for Europe (ECE) secretariat joined the meeting. Also present were representatives of scientific centres and other bodies under the Convention, international programmes, academia, non-governmental organizations, the private sector and industrial associations, including: the Task Force on Reactive Nitrogen, the Task Force on Hemispheric Transport of Air Pollutants, The Task Force on Integrated Assessment Modelling, the EMEP<sup>2</sup> Meteorological Synthesizing Centre-West, the Coordinating Group on the promotion of actions toward implementation of the Convention in Eastern Europe, the Caucasus and Central Asia (the Coordinating Group), the Arctic Monitoring and Assessment Programme of the Arctic Council, the Clean Air Task Force, the International Cryosphere Climate Initiative, European Federation of Clean Air and Environmental Protection Associations, the European Cement Association, the European Chemical Industry Council, European Solvents Industry Group, the European Association of Internal Combustion Engine Manufacturers, the European Environmental Bureau, Miami University, NOVA University Lisbon.

5. All the presentations delivered, along with the detailed agenda of the meeting, are available on the Task Force website.<sup>3</sup>

### B. Organization of work

6. Mr. Tiziano Pignatelli (Italy) and Mr. Jean-Guy Bartaire (France), Co-Chairs of the Task Force on Techno-economic Issues, chaired the sixth annual meeting of the Task Force.

---

<sup>1</sup> All participants attended the meeting remotely. The technical support for the meeting was provided by the Inter-professional Technical Centre for Studies on Atmospheric Pollution (France).

<sup>2</sup> The cooperative programme for monitoring and evaluation of the long-rang transmission of air pollutants in Europe.

<sup>3</sup> See <http://tfei.citepa.org/en/6th-tfei-meeting>.

7. The meeting mainly devoted to reporting on progress in the implementation of the activities included in the mandate of the Task Force (decision 2018/7, annex) and in the 2020–2021 workplan for the implementation of the Convention, with a focus on the priorities given by the Executive Body in view of the upcoming review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol), as amended in 2012. Issues addressed included the following:

- (a) Measures to reduce black carbon emissions;
- (b) Measures to reduce methane emissions;
- (c) Emissions from maritime transport;
- (d) Agricultural residue burning;
- (e) Condensable part in emissions of particulate matter;
- (f) Review of technical annexes to the Gothenburg Protocol as amended and related guidance documents;
- (g) Collaboration with other technical bodies of the Convention.

8. The informal technical session allowed to advance preparation of the draft Guidance document on reduction of emissions from agricultural residue burning (ECE/EB.AIR/WG.5/2021/5, forthcoming), developed in cooperation with the International Cryosphere Climate Initiative and the Task Force on Reactive Nitrogen, to analyse the comments received from Parties for reflecting them in the final draft of the document. The informal session also allowed to collect additional elements for the development and finalization of the informal technical document on maritime shipping. The outcomes of the informal technical session were presented at the meeting of the Task Force.

### C. Summary of the main discussion points

9. The representative of the ECE secretariat summarized the outcomes of the thirty-ninth session of the Executive Body (Geneva, 9–13 December 2019), which, among others, included the launch of the review of the Gothenburg Protocol, amended in 2012. The Executive Body tasked the Working Group on Strategies and Review to develop the plan for the review, including its scope and content with a view to conclude the review at the forty-second session of the Executive Body. The plan for the review was going to be submitted to the Executive Body for adoption at its fortieth session (Geneva, 18 December 2020). The secretariat also outlined the main conclusions of the sixth joint Session of the Steering Body to the EMEP and the Working Group on Effects (Geneva, 14–17 September 2020).

10. The Co-Chairs of the Task Force introduced the priority tasks to be carried out in 2021 in accordance with the revised mandate of the Task Force with a specific attention to the review of the technical annexes to the Gothenburg Protocol as amended and related guidance documents. The Co-Chairs solicited cooperation of a wide community of experts composing the network of the Task Force members, Parties' experts and collaborators usually supporting the work of the Task Force. The Co-Chairs highlighted the complexity and the amount of the work foreseen, in particular taking into account the new aspects, such as abatement of black carbon, methane, and emissions from the maritime transport.

11. The Co-Chairs showcased the examples of cooperation with other technical bodies under the Convention, in particular, with the Task Force on Integrated Assessment Modelling, the Task Force on Reactive Nitrogen, the Meteorological Synthesizing Centre-West, the Meteorological Synthesizing Centre-East and the contribution provided to the work of the ad hoc Gothenburg Protocol review group.

12. The Chair of the Coordinating Group informed participants of the latest updates with respect to air quality management in countries of Eastern Europe, the Caucasus and Central Asia noting substantial progress in Georgia, the Republic of Moldova, the Russian Federation, Ukraine and Uzbekistan. He highlighted the efforts made by the secretariat to support capacity building in the sub-region in the area of emission inventories and

projections. He further noted that the discussions among the Coordinating Group members related to the review of the Gothenburg Protocol as amended were in progress.

13. The representative of the Norwegian Meteorological Institute hosting the EMEP Meteorological Synthesizing Centre-West informed participants of the latest developments concerning the condensable organics as part of its work done in cooperation with the Task Force. He underscored the complexity of the issue of condensable part and its contribution to emissions of particulate matter, as it depended on a range of parameters, including the type of the source, measurement conditions, ambient temperature, operating conditions and others. He also noted the lack of uniform approach in different countries, which was causing considerable difference in national reporting of emissions of particulate matter. The key messages from the speaker's presentation included:

(a) The condensable part should be included in future emission inventories and modelling analysis and there was a need to indicate how they were included;

(b) Emission limit values for residential wood burning (for example, EcoDesign requirements<sup>4</sup> did not take into account the condensable part. There was therefore a need for standards aimed at air quality;

(c) The current split between particulate matter and non-methane volatile organic compounds was artificial, and some organic compounds were in between. It was important to capture all compounds in emission inventories;

(d) Reporting the particulate matter components, such as elemental carbon, solid organic matter, condensable organic matter and others, separately could serve as an interim solution.

14. The speaker concluded that additional work was needed in the longer term, envisaging cooperation with other technical bodies, such as the Task Force on Emission Inventories and Projections and the Task Force on Techno-economic Issues.

15. The representative of the European Union outlined the main outputs of the work carried out by the ad-hoc Gothenburg Protocol review group, notably the elements of analysis and questions to be answered during the review with a focus on those of specific relevance for the Task Force. More detailed information was contained in document "Preparations for the review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone as amended in 2012" (ECE/EB.AIR/2020/3-ECE/EB.AIR/WG.5/2020/3).

16. The representative of the European Federation of Clean Air and Environmental Protection Associations delivered a presentation on ultrafine particles and their influence on air quality, human health and climate change. The speaker showcased the main characteristics of ultrafine particles along with possible policy measures to reduce their emissions. He highlighted the role of the Federation in raising awareness of ultrafine particles at the international level and of the benefits of adoption of respective emission reduction measures.

17. The representative of the Best Available Technologies (BAT) Bureau of the Russian Federation described the process of transition to BAT implementation in the industrial sector of the country, which was expected to be completed by 2025 for all key categories of industrial installations, following the adoption and publication of 51 BAT reference documents in 2017. The licencing system, by granting integrated environmental permits since 2019, ensured that standards of adequate environmental performance were respected. The licencing was within the competence of the Ministry for Industry and Trade and supported by the BAT Bureau in consultation with the Interdepartmental Commission, which included a number of ministries and regional governments.

18. The representative of the International Cryosphere Climate Initiative, on behalf of the Arctic Monitoring and Assessment Programme involved in the implementation of the project "European Union Action on Black Carbon in the Arctic", presented the technical guidance report on domestic heating aimed at contributing to the development of collective responses to reduce black carbon emissions in the Arctic. The report was mostly based on the code of

---

<sup>4</sup> European Union Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products.

good practice for wood-burning and small combustion installations (ECE/EB.AIR/2019/5), developed by the Task Force and adopted by the Executive Body (decision 2019/3). The technical guidance was in particular focused on local actors, such as cities and counties, deemed important in the context of domestic heating due to local regulations, measures and enforcement, and public communication. The guidance document aimed at reducing the emissions generated by old stoves by 30–50 per cent, and even up to 80 per cent where "burn very wrong" occurred. The proposed measures also included incentives to buy new stoves and to phase out old ones. The fuel and technology shift, implying the change to other domestic heating systems, such as geothermal, waterborne systems and district heating, was considered as a long-term objective.

19. The Task Force Co-Chair from Italy presented the progress in the preparation of the Guidance document on reduction of emissions from agricultural residue burning (item 2.2.2. of the 2020–2021 workplan for the implementation of the Convention). The Director of the International Cryosphere and Climate Initiative presented the rationale, the content of the document and potential effects of emission reduction from agricultural residue burning, along with considerations on the comments received on the document from experts of Belgium, Canada, Italy, Spain, and the United States of America. The meeting participants were invited to submit further comments by mid-November 2020, so that the final version could be submitted for consideration by the Working Group on Strategies and Review at its fifty-ninth session (ECE/EB.AIR/WG.5/2021/5, forthcoming).

20. An expert of the Inter-professional Technical Centre for Studies on Atmospheric Pollution, member of the Task Force secretariat, presented the outcomes of a study carried out to evaluate technologies to reduce emissions of particulate matter that were also suitable for reduction of black carbon emissions. This study was complementary to the work carried out by the Task Force on Integrated Assessment Modelling in collaboration with the Task Force on Techno-economic Issues on prioritizing reductions of particulate matter to also achieve reduction of black carbon. The study was focused on residential small heating appliances considered as a priority within the Convention, although in the future it was planned to address also other relevant sectors, such as transport (both road and non-road vehicles), flares and others. The study analysed a series of emission factors for particulate matter (PM<sub>2.5</sub>), black carbon, organic carbon and ultrafine particles. The abatement efficiency of different technologies, such as catalysed combustor, electrostatic precipitator, low cost retrofit on conventional wood stoves, on particles of different size have been analysed. The following conclusions were drawn by the speaker:

- (a) A large range of emission factors existed for black carbon and harmonized determination methods should be developed. Brown carbon and the role of condensables should be considered to get the whole picture of carbonaceous species in the atmosphere and to develop efficient air pollution policies;
- (b) Emissions of black carbon and polycyclic aromatic hydrocarbons were reduced with the use of modern devices;
- (c) Non-steady state combustion increased all emissions (see the code of good practice for wood burning and small combustion installations developed by the Task Force);
- (d) The use of catalytic converters was possible in modern stoves;
- (e) The use of pellet stoves should be encouraged to reduce emissions;
- (f) The use of electrostatic precipitator was useful for the solid fraction of particulate matter and black carbon but less useful for its condensable part;
- (g) Emissions of ultrafine particles could not be reduced by advanced technologies abating particulate matter.

21. A representative of the French-German Institute for Environmental Research at the Karlsruhe Institute of Technology, member of the secretariat of the Task Force, presented the results of a study carried out on the methane emissions from network distribution systems and waste storage (landfills), which analysed the characteristics and magnitude of emissions from these sources, available abatement technologies and their specific parameters. The rapporteur concluded that:

(a) In landfills, reduction or banning of landfilled biodegradable waste was the most important measure to reduce emissions in the long term;

(b) Main technologies for mitigating emissions of greenhouse gases included oxidation (bio-covers and bio-filtration), landfill aeration, gas collection and utilization;

(c) In natural gas grids, reduction measures included technical (improvement and replacement of specific devices) and organizational components (maintenance and leak detection);

(d) In biogas facilities, emissions seemed underestimated, especially in countries providing subsidies.

22. An expert of the Inter-professional Technical Centre for Studies on Atmospheric Pollution, member of the secretariat of the Task Force, presented the results of a technical work on shipping emissions. This work aimed at providing guidance to Parties in identifying the best abatement options for emissions from shipping and assisting them in meeting their obligations to reduce emissions of sulphur dioxide, nitrogen oxides, particulate matter and black carbon. The document would provide an overview of primary and secondary techniques, their efficiency and cost estimations. Among primary measures, the switch to distillate fuels, water-in-fuel emulsions, bio-fuels or methanol, slow steaming or new propulsion modes were mentioned. Some of those measures targeted several pollutants, whereas others focused on specific pollutants. Secondary measures included exhaust gas recirculation, selective catalytic reduction, diesel particulate filters and different types of scrubbers. The work was expected to be further expanded in the future, for example, to inland waterway shipping.

23. The representative of the Clean Air Task Force presented CoMAT (the Country Methane Abatement Tool) used to estimate national methane emissions reduction potential from oil and production and distribution network. The tool was an open source and adaptable to countries' specific characteristics.

24. The expert of a private company, involved in consulting and service activities in several industry sectors, delivered a presentation on ultra-low nitrogen oxides burners in stationary installations. He noted the significant technological progress with respect to the techniques used as a basis for annex V to the Gothenburg Protocol as amended, including both primary and secondary techniques. New techniques allowed further emission reductions, ranging between 50 and 80 per cent, and even more with the selective catalytic reducer. Examples of evaluation of abatement costs were also provided. Such technological progress was also facilitated by the initiative of a number of companies to introduce an environmentally virtuous approach in their projects. The presenter concluded that:

(a) Ultra-low nitrogen oxides burners were ready, reliable and available to significantly decrease emissions of nitrogen oxide;

(b) Access to ultra-low nitrogen oxides technology was not cost-prohibitive;

(c) Many industrial references were operational across the world;

(d) The current nitrogen oxides related regulations for combustion plants were not in line with the technological advancement of 2020.

25. The expert of a private company presented an overview of BAT performance in the BAT reference documents of the European Union, including their latest revisions for waste incineration. He also shared experience in using technologies to reduce emissions of sulphur oxides and nitrogen oxides in maritime activities. The expert noted the new requirements of the Industrial Emission Directive (2010/75/EU) in comparison with the latest changes introduced in the BAT reference document for waste incineration in 2019. The speaker furthermore presented a comparison of the exhaust gas cleaning systems and fuel change options for the maritime sector, considering their advantages and disadvantages, including related market price.

### III. Progress in the implementation of the 2020–2021 workplan

26. The present section summarizes the review of progress made in the activities outlined in the 2020–2021 workplan, ordered by workplan item.<sup>5</sup>

#### **Item 2.1.6: Review of control costs currently used and update**

27. The work carried out by the Task Force on Techno-economic Issue in collaboration with the Task Force on Integrated Assessment Modelling through a regular update of technical and cost parameters where possible, sector by sector, according to the priorities established under the Convention. The new data are regularly made available through technical reports published at the Clearing House of Control Technologies<sup>6</sup> and the website of the Task Force and shared with the community of concerned experts, especially those of the Task Force on Integrated Assessment Modelling. All informal technical background documents developed by the Task Force on Techno-economic Issues (see para 28) are also shared with the Task Force on Integrated Assessment Modelling and other technical bodies of the Convention through the website of the Task Force. Further progress will depend on contributions provided by national experts and be presented at the meetings of the Task Force on Techno-economic Issues and/or of the Task Force on Integrated Assessment Modelling.

#### **Item 2.1.7: Report for policymakers that sets out the costs of control versus the costs of inaction**

28. The present activity, assigned to the Task Force on Integrated Assessment Modelling and the Task Force on Techno-economic Issues, has resulted in the informal document “Informal document on costs of inaction on air pollution”<sup>7</sup> presented to the Working Group on Strategies and Review at its fifty-eighth session (14,15 and 17 December 2020). The document will be finalized and presented to the Working Group on Strategies and Review at its fifty-ninth session for consideration.

#### **Item 2.1.8: Carry out other tasks specified in the mandate**

29. In line with the institutional task of the Task Force on Techno-economic Issue to develop, collect, validate and update information on abatement technologies in relevant sectors, the Task Force prepared a number of informal technical background documents, as listed below, which were made available for the Working Group on Strategies and Review at its fifty-eighth session<sup>8</sup>:

- (a) Background informal technical document on techniques to reduce emissions from aluminium production;
- (b) Background informal technical document on techniques to reduce pollutant emissions from cement production and determination of their costs;
- (c) Background informal technical document on techniques to reduce methane emissions in Europe from landfill gases, the natural gas supply system and biogas facilities;
- (d) Background informal technical document on maritime shipping emissions, reduction techniques and determination of their costs,
- (e) Review on black carbon and polycyclic aromatic hydrocarbons emission reductions induced by particulate matter emission abatement techniques.

<sup>5</sup> In several cases, the titles abbreviate or summarize much longer workplan items. For the full text of each item, see ECE/EB.AIR/144/Add.2.

<sup>6</sup> See <https://tfei.citepa.org/en/clearing-house>.

<sup>7</sup> See:

[https://unece.org/fileadmin/DAM/env/documents/2020/AIR/WGSR/Cost\\_of\\_inaction\\_TFIAM\\_two\\_pager.pdf](https://unece.org/fileadmin/DAM/env/documents/2020/AIR/WGSR/Cost_of_inaction_TFIAM_two_pager.pdf).

<sup>8</sup> See <https://unece.org/environmental-policy/events/working-group-strategies-and-review-fifty-eighth-session>.

30. The above listed documents will be used in 2021 as technical background for the review of the annexes and guidance documents to the Gothenburg Protocol as amended.

**Item 2.1.9: Input provided to support the review of the Gothenburg Protocol**

31. The Task Force Co-Chairs participated as advisors in the work of the ad hoc Gothenburg Protocol review group convened by the Chair of the Working Group on Strategies and Review during the period March-December 2020. The Group produced the document entitled "Preparations for the review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone as amended in 2012" and the informal document on non-technical and structural measures<sup>9</sup>. With the above-mentioned informal technical background documents (see para 28), the Task Force provided Parties with basic information on sources and technology characteristics that can be used both for the review of the Gothenburg Protocol and at national level. In 2021, the Task Force will contribute to the review process through an in-depth analysis of the technical annexes to the Gothenburg Protocol as amended and of related guidance documents. The results of such analysis will be part of the final report on the review (see "Preparations for the review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone as amended in 2012"), and the needs for potential updates of sections in annexes will be identified. For annexes IV, V, VI, VIII, X and XI to the Protocol, sector by sector, the availability of both upgraded and new technologies will be searched and reported, providing a concise description of improved or new technologies. The review will be also aimed at identifying gaps, redundancies, and the need for simplification in the annexes to the Protocol and related guidance documents. The collected information will serve as a technical basis to answer the questions in annex I to the "Preparations for the review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone as amended in 2012", in particular its section 1.6, which directly engages the Task Force, together with other questions in the annex to be answered in collaboration with other technical bodies.

**Item 2.2.1: Guidance in relation to prioritizing reductions of particulate matter in its sources that are also significant sources of black carbon**

32. The work was carried out by the Task Force on Integrated Assessment Modelling, in collaboration with Task Force on Techno-economic Issues. The draft document has been reviewed by the Task Force on Techno-economic Issues and was presented to the Working Group on Strategies and Review at its fifty-eighth session. The final draft will be presented to the Working Group at its fifty-ninth session (ECE/EB.AIR/WG.5/2021/8, forthcoming).

**Item 2.2.2: Guidance on reduction of emissions from agricultural residue burning**

33. The document, developed in collaboration with the International Cryosphere Climate Initiative and the Task Force on Reactive Nitrogen, incorporates the comments received from Parties to the first draft version. It was presented and discussed during the informal technical session held back to back with the sixth annual meeting of the Task Force (see para 18). Following the annual meeting of the Task Force, another round of comments was collected to include considerations from different perspectives. The final draft is submitted to the Working Group on Strategies and Review for consideration at its the fifty-ninth session.

## **IV. Annual meetings of the Task Force**

34. The seventh annual meeting of the Task Force is tentatively planned to be held in Warsaw in October 2021, should the in-person meetings be allowed.

---

<sup>9</sup> *ibid.*