

Informal document no. 1
Fifty-seventh session of the Working Group on Strategies and Review
Agenda item 4
Policy discussions to inform any future review of the Protocol
to Abate Acidification, Eutrophication and Ground-level Ozone

**Submission of views on issues for policy discussions pursuant to item 2.1.3 of
the 2018-2019 workplan for the Convention
(compiled by the secretariat on 28 March 2019)**

Scientific and technical priorities as submitted by the EMEP Steering Body and the Working Group on Effects

In the framework of the 57th WGSR session (May 2019) and in the perspective of a future review of the Gothenburg Protocol, the scientific bodies of the Convention (EMEP SB and WGE) have been invited to provide additional scientific information to support policy discussions. The few points below summarise recommendations of EMEP SB and WGE regarding the scientific questions that would need to be the most urgently covered with respect to the review process.

1. **Black carbon definition:** what do the reported emissions actually represent and what is taken into account in health impact assessment studies (including measured and modelled data)?
2. **Emission reporting system:**
 - Need to improve quality and consistency of reported emissions (in particular need for updated emission factors for BC and consistent reporting of the condensable part of PM);
 - update guidelines and investigate how to further restrict use of Tier 1 by countries for key sources beyond the current specification in reporting guidance that this is not good practice
 - Increase consistency in reporting for NECD and revised Gothenburg Protocol (once ratified) and increase flexibility to develop more efficient reporting and review processes without losing quality (e.g. skip 2010 ceilings)
 - Consistency between the EMEP monitoring and assessment area and the area where emissions are reported
3. **Effects on ecosystems (for effects-based policies):**
 - Include additional types of non-forested terrestrial ecosystems for monitoring and modelling the effects of nitrogen
 - Including effects of air pollution on biodiversity as a basis for critical levels/loads calculations
 - Update of the critical loads for the analysis of the efficiency of policies
 - Metrics for assessing ozone damages on crops and ecosystems and the interactions with other pollutants and climate change
 - Accounting for linkages with climate change and land use in effects indicators
4. Definition of **human health impact metrics** to be taken into account in future assessments (morbidity, low concentrations impacts)
5. **Linking the scales:**

- Trend analysis in emissions/concentrations/deposition/impact with the multiscale (spatial) dimension. How international policies (and the Convention) influence these trends?
 - Role of methane in ozone levels and its influence at the global scale
 - Linkages with urban monitoring networks including supersites
6. **Improving communication** for policy makers and the general public on scientific insights and results produced by the scientific bodies of the Convention should be a priority.

Submission by Canada

Issues to be included in policy discussions to inform any future review of the Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone (the Gothenburg Protocol)

At the 38th session of the Executive Body, Parties to, and subsidiary bodies of, the Convention were invited to submit views on issues that should be included in policy discussions at the at the fifty-seventh session of the Working Group on Strategies and Review (WGSR 57) to inform any future review of the Gothenburg Protocol, pursuant to item 2.1.3 of the 2018-2019 workplan for the implementation of the Convention, taking into account relevant recommendations from:

- the Saltsjöbaden VI workshop;
- the 2020-2030 Long-term Strategy for the Convention (LTS);
- the report of the Policy Review Group (PRG report); and
- the 2016 Scientific Assessment Report (SAR).

Canada is pleased to submit its views on this important topic. Canada would like to stress the importance of keeping the present Gothenburg Protocol under review, in terms of the adequacy of the obligations contained therein and the progress made towards achieving the objective of the Protocol, pursuant to its article 10. The 2018-2019 workplan for the implementation of the Convention calls for policy discussions to inform any future review of the Protocol, while the Executive Body provided guidance with its decision 2017/4 that Parties should consider reviewing the Gothenburg Protocol as amended in 2012 and following the entry-into-force of the amendments, based on the results of this review, they should also consider updating the Protocol. The 2020-2030 LTS also calls on Parties to review the Protocol, providing guidance on topics to be considered in any review, in conjunction with the PRG report and article 10 of the amended Protocol. It is clear that any updates to the Protocol should only take place after entry-into-force of the 2012 amendments.

Given the number of Parties that have ratified the 2012 amendments to the Gothenburg Protocol, Canada is hopeful that the amended Protocol will enter into force in 2019. Thus, it is timely to begin the policy discussions to inform the next review of the Gothenburg Protocol, which in Canada's understanding could formally begin in 2020, informed by the discussions to take place at WGSR 57, which will bring to light elements to be considered in the review.

With the adoption of the 2020-2030 LTS, the strategic priorities of the Convention going forward are clear. The highest priority continues to be to maximize the impact of the Convention, including through increased ratification and implementation and capacity building, and by reviewing the Protocol, taking into consideration the priorities in the 2020-2030 LTS, the PRG report and the SAR.

In this regard, Parties should consider what problems remain to be solved and how to solve them in terms of both pollutants and measures, as well as ratification. A reflection on additional flexibilities and new approaches that could be adopted in order to facilitate ratification and implementation by countries in Eastern Europe, the Caucasus and Central Asia should be part of the review. In addition, the Parties should consider opportunities for an integrated approach to environmental policy that can achieve multiple goals and benefits (including consideration of potential unintended consequences such as trade-offs between air quality and climate change measures), and work to further develop the multi-pollutant multi-effect approach of the Protocol.

At these beginning stages of discussions in preparation for the review of the Gothenburg Protocol, and eventual update if required, Canada is interested in having open discussions on a broad range of issues as per the documents referenced above and would not at this early stage support the exclusion of any issues for consideration at this time.

Canada proposes that a review of the Gothenburg Protocol should include, but may not be limited to, consideration of:

- an evaluation of mitigation measures for black carbon emissions and ammonia control measures as per article 10, paragraphs 3 and 4, particularly considering further measures to reduce black carbon emissions and strengthened ammonia abatement measures, including increasing measures to address ammonia emissions from the agricultural sector;
 - mandatory emissions reporting for black carbon;
 - emissions reduction commitments for black carbon;
 - further emissions requirements for fine particulate matter, acid rain and ozone precursors already included in the Protocol;
 - ozone precursors not yet addressed, such as methane;
 - further emission requirements for acid rain precursor pollutants;
 - strengthened emission standards based on the best available techniques and energy-efficiency requirements for residential and small-scale solid fuel burning;
 - shipping emissions (taking into consideration IMO policies and measures);
 - further requirements for hemispheric air pollution;
 - barriers to implementation, including for existing sources;
 - operational guidelines for implementation and subnational level enforcement;
 - flexibility provisions, especially for EECCA countries, and their effectiveness.

Canada welcomes the upcoming policy discussions and is looking forward to considering the scientific and technical information submitted to the WGSR in this context. In that regard, we expect that WGSR 57 may also identify additional and specific questions for subsidiary bodies to answer as part of the process going forward.

We anticipate fruitful discussions on these important issues and are ready to work cooperatively with other Parties at the upcoming session on the elements for consideration the upcoming review of the Protocol, as well as the process and timelines for taking the review forward.

Submission by the European Union and its Member States

1. Gothenburg Protocol

For consideration by the Working Group on Strategies and Review (WGSR)

For policy discussion in the framework of the 57th WGSR session, May 2019, in order to prepare for a future review of the Gothenburg Protocol pursuant to article 10, the European Union and its Member States propose:

- To discuss the process and modalities for the review of the Gothenburg Protocol which will be launched once the 2012 amendment enters into force, in line with the Long-Term Strategy, notably paragraphs 48 and 49. This would include:

- clarifying that the mandate for this review will be to look in a first stage at the entire text of the amended Gothenburg Protocol, including black carbon and ammonia as specifically mentioned by Article 10 of the Protocol;
- underlining that the review will take into account and investigate all priorities identified in the Long-Term Strategy, the policy review group report and the 2016 scientific assessment report.

- To ask Secretariat to make the necessary preparations for a review process to be launched soonest upon the 2012 amendment entering into force.

2. Black Carbon

For consideration by the Working Group on Strategies and Review (WGSR)

Black carbon particulate matter is harmful to human health: WHO reports on evidence that links black carbon particles with cardiovascular health effects and premature mortality, for both short-term (24 hours) and long-term annual exposures (e.g. REVIHAAP, 2013). In addition, black carbon is a climate forcer with particularly strong impact on the Arctic region, accelerating the melting of ice.

The EU and its Member States have underlined black carbon as a priority issue within the new NEC Directive of 2016, mirroring the agreed emphasis on black carbon reduction in the 2012 amendment to the Gothenburg Protocol.

Considering both the urgency of the negative health impact and the climate change aspects of black carbon, it would be relevant to now accelerate the policy discussions on these emissions.

For discussion in the framework of the 57th WGSR session, May 2019, and with the amended Gothenburg Protocol article 10 paragraph 3 in mind, the European Union and its Member States therefore, propose to initiate discussions on possible policy options for further improving black carbon reporting and abatement techniques under CLRTAP. Notably:

- **To invite EMEP and its Task Forces and Centres to present the current reporting and inventory situation** in more detail, to inform the WGSR. Is the current reporting sufficiently detailed, coherent and of sufficient quality to inform policy decisions on cost-efficient reduction measures? Within the CLRTAP framework, what could be done to improve the situation further?

- **To invite EMEP to consider and assess further improvements of the available black carbon inventory methods and the possible need for revision of the EMEP/EEA Guidebook in this regard.**

Improvement in methods would provide CLRTAP parties with better tools to develop and/or improve their black carbon emissions inventories and thereby to ensure efficient policies for

emission reductions. An initiative to further develop methods for estimating black carbon emissions as well as subsequent emission reduction techniques and potentials should focus in particular on increasing the extent to which relevant black carbon source sectors are provided with higher Tier emission coefficients. Assessment of the emission factors/black carbon fractions could be done with an aim to reduce uncertainties in these parameters.

- **To discuss ways for enhanced cooperation between CLRTAP and the Arctic Council to expand and harmonise black carbon emissions reporting by countries whose black carbon emissions impact the Arctic region; and to harmonise, where needed, the reporting within these two frameworks.**

- **To further develop control strategies that focus PM emission abatement on the reduction of BC emissions.**

This activity should build on existing material such as Guidance Documents to the Gothenburg Protocol, take into account the proposed Code of good practice for solid fuel burning and small combustion installations, and be developed in close cooperation with the Arctic Council, CCAC and other relevant fora.

Submission by Switzerland

Switzerland proposes the following issues for the policy discussions to be launched at the 57th session of the Working Group on Strategies and Review (item 2.1.3 of the 2018–2019 work plan). It concerns mainly the following aspects which appears as priority for the future work:

(a) Black carbon and ammonia emissions:

Evaluation of further emissions abatement measures for reducing black carbon and ammonia emissions.

(b) Residential wood combustion:

Follow-up on the thematic session on residential wood combustion and air pollution at the 56th session of the WGSR with the aim of exploring options for further emissions abatement measures to reduce PM_{2.5} and BC emissions from small-scale installations.

(c) Precursors of tropospheric ozone:

To address the potential of reducing methane emissions in North America and Europe, which – according to analyses based on GAINS – accounts for 33% of the global reductions potential (communicated by CCAC¹ on March 8th in Nairobi), and corresponding emissions abatement measures in addition to the current strategy focussed on the abatement of NO_x and NMVOC emissions.

(d) Flexibilities contained in the amended Gothenburg Protocol:

To invite EECCA countries to make specific suggestions for overcoming the barriers to ratifications of the GP and, based on these suggestions, provide a roadmap leading to ratification of the GP in the respective countries.

Submission by the United States of America

The Executive Body invited parties to submit views pursuant to item 2.1.3 of the 2018-2019 workplan for the Convention, taking into account Saltsjobaden VI workshop, the revised Long-term Strategy,

¹ twk.pm/tl8av7yqnu.

the report of the Policy Review Group and the 2016 Scientific Assessment of the Convention. Workplan item 2.1.3 reads:

“Keep track of scientific and technical work under WGE, the EMEP Steering Body and WGSR so as to facilitate future policy development, including any future review of the effectiveness and completeness of the Gothenburg Protocol,” and the expected deliverable for this workplan item is:

”Policy discussions in the framework of WGSR sessions, on the basis of scientific and technical work, to inform any future review of the Gothenburg Protocol pursuant to article 10, and preparatory work in the context of article 10, paragraphs 3–4.”

Given the focus on scientific and technical work in this workplan item, the U.S. believes the following items should be priorities for discussion:

1. Hemispheric transport of ozone, ozone precursors, and particulate matter

We believe that WGSR should develop a list of questions at the workshop at the 57th session to provide to EMEP. Example questions include (drawn from the PRG report, paragraphs 66-69):

- What are the relative contributions within and outside the ECE region to air pollution within the region, and the potential for emissions reductions ?
- What are the long-term relative contributions of each pollutant, including levels of precursor pollutants, from each country or region to the hemispheric pollution problem in the ECE region ?
- What effect does the implementation of cost-effective control strategies, in particular those using the tools developed by TFTEI, have on the relative contributions of each pollutant to hemispheric pollution and how it affects the ECE region with and without further greenhouse gas mitigation policy for the years 2030 and 2050 ?

The United States also supports the Global Cooperation Forum agreed to at the EB (para 68(b) of EB report draft) and capacity-building/technical cooperation by the Convention, which will help the Convention facilitate work by countries and organizations outside the Convention to reduce emissions of particulate matter and ozone precursors. We suggest that WGSR discuss appropriate priority items for the Forum to undertake with a view toward an EB Decision on the Forum’s mandate at EB 2019.

We also suggest that WGSR propose a name for the forum, for example “Forum for Global Cooperation on Air Pollution” (GCAP Forum). The WGSR may also wish to suggest that the EB include in its decision on the Forum’s mandate an invitation for other international organizations to join the effort.

2. Analyzing costs/benefits and promoting cost-effective strategies

The WSGR will note that TFTEI has two workplan items in response to the PRG’s short-term recommendations regarding this topic, which call for them to “Further develop of techno-economic tools for estimating costs of implementing BAT and complying with the requirements of the Gothenburg Protocol in different sectors and its promotion, in particular in EECCA” (2.3.2) and “Produce a report for policymakers that clearly sets out the costs of controls versus the costs of inaction to encourage ratification and implementation of the protocols, in cooperation with TFIAM” (2.3.10).

The United States suggests the WGSR request an update from TFTEI on these workplan items and discuss progress and next steps. In particular, we would like to understand what additional cost-benefit analysis and health impact assessments would be useful to develop, in particular for the EECCA region.

3. Continued improvement in emission inventory development and quality of data

The United States believes that improvement of emission inventories and data quality remains a priority because it is a basis for good policy decisions within the Convention. We suggest that WGSR could provide a recommendation to EMEP/EB that reaffirms this view.

Submission by the EU Action on Black Carbon in the Arctic

Below are key messages/recommendations from two technical reports produced by the Project Implementation Committee of the EU Action on Black Carbon in the Arctic (funded through the Partnership Instrument). These reports have undergone external review and will be published in spring 2019. Links to the final reports (including executive summaries) can be provided in time for the May meeting of the WGSR, as needed.

Technical Report on a Review of Reporting Systems for National Black Carbon Emissions Inventories:

1. Improvements in the available black carbon inventory methods. A reassessment of the validity of the current methods using black carbon fractions of PM_{2.5} should be considered. Such an improvement in methods would provide countries within CLRTAP with the tools needed to develop and/or improve their own black carbon emissions inventories. To support this work, further experimental research is likely to be required to derive new emission factors/black carbon fractions and to reduce uncertainties in these parameters.
2. Revisions to the 2016 EMEP/EEA Guidebook would look to further develop the recommended methods for estimating black carbon emissions, focusing in particular on increasing the extent to which relevant black carbon source sectors are provided with higher Tier emission coefficients.
3. Establishment of mandatory reporting under CLRTAP is considered an important step in improving the completeness and consistency of the current CLRTAP reporting systems. This would have considerable benefit for the CLRTAP, EU and Arctic Council whose reporting systems are essentially based on the same data, methods and reporting mechanisms. The CLRTAP policy review group indicated that a transition to mandatory black carbon emissions reporting could be implemented via an update of the 2012 Gothenburg Protocol Amendment. This report strongly supports such action; however, the report furthermore argues that implementing mandatory black carbon emissions reporting could be accelerated through an updated or new Executive Body Decision on Reporting of Emissions and Projections Data under the Convention and its Protocols in Force.
4. Continued and enhanced cooperation between scientists developing independent black carbon emissions datasets and the national inventory experts compiling official black carbon inventories.
5. Enhanced cooperation between CLRTAP and the Arctic Council to expand and harmonise black carbon emissions reporting by countries whose black carbon emissions impact the Arctic.

DRAFT Technical Report on an Assessment of Observation Capacities and Data Availability for Black Carbon in the Arctic Region

1. There are few monitoring sites in the Arctic region and large areas where no observations are being made, in particular in the Russian part of the Arctic. Only three sites (Alert (Canada), Villum Research Station (Greenland/Denmark) and Zeppelin (Svalbard/Norway)) currently have multi-decadal time series for black carbon measurements. It is extremely important to maintain the monitoring at existing sites, increase the number of sites to fill geographical gaps, and increase the number of sites with long-term data series.
2. Monitoring at Arctic sites should generate high-precision and comparable data that can also be compared with observations from other geographical regions. WMO-Global Atmosphere Watch (GAW) guidance should be followed with respect to instrumentation and methods, and WMO-GAW, European Monitoring and Evaluation Programme (EMEP), Arctic Monitoring and Assessment Programme (AMAP) and initiatives such as the pan-European initiative on Aerosols, Clouds and Trace Gases Research Infrastructure (ACTRIS) should act to ensure harmonization of methods to secure necessary data quality and comparability.
3. It is recommended that additional observations of elemental carbon (EC) and organic carbon (OC) be made by thermal-optical analysis. The use of isotopic information can improve source apportionment studies, and will allow studies of transport into the Arctic, and impacts of sources within the region itself.
4. Data from the monitoring efforts are generally open and freely-accessible; however, the review demonstrated that attention to data reporting has been inadequate, in particular in the period prior to 2010. International programs coordinating monitoring in the Arctic should pay more attention to operational aspects related to data reporting and quality assurance. A large number of improvements have been made in the databases of the WMO GAW, EMEP and AMAP. These include correction of erroneous data, improved meta-data documentation, and improved functionality of the user interface to the online observational database (EBAS). Such efforts are limited by the resources available to support this work.
5. Observations made from ships or aircraft (mostly associated with research monitoring campaigns) play a fundamental role in allowing interpretation of distinct episodes of long-range transport. A large number of such studies are reported in the scientific literature, including presentations of data and their interpretation, typically in combination with results of application of atmospheric transport models and/or use of satellite remote-sensing data. Satellite remote sensing cannot yet directly measure black carbon in the atmosphere but has many applications in, for example investigating climatic and ecosystem impacts. Required meta-data associated with such observations differ from those of fixed stations.

Generally, access to data from research activities is best achieved by direct communication with the individual research teams/institutions responsible for the studies; comparability of data between studies and data-quality evaluation can be challenging, and long-term archiving is not always secured. It is not currently recommended to include these data in the databases of GAW, EMEP or AMAP; international data repositories do however exist for satellite remote sensing data.