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Policy response to the 2016 scientific assessment of the Convention

Policy response to the 2016 scientific assessment of the Convention

Submitted by the ad hoc policy review group of experts

Summary

At its thirty-fifth session (Geneva, 2-4 May 2016), the Executive Body for the Convention on Long-range Transboundary Air Pollution established an ad hoc policy review group of experts on the 2016 scientific assessment of the Convention (see ECE/EB.AIR/135, annex II). It requested the ad hoc group of experts to present its findings, conclusions and recommendations to the Working Group on Strategies and Review at its fifty-fifth session, which will then submit its recommendations to the Executive Body for consideration at its thirty-seventh session (Geneva, 11-14 December 2017).

The present document sets out the group's findings, conclusions and recommendations. More extensive background information is provided in a corresponding informal background document.¹

¹ All documentation for the Working Group's fifty-fifth session is available on a web page for the meeting: [http://www.unece.org/index.php?id=43511#/.](http://www.unece.org/index.php?id=43511#/)

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I. Introduction

1. At its thirty-fifth session (Geneva, 2-4 May 2016), the Executive Body for the Convention on Long-range Transboundary Air Pollution (Air Convention) established an ad hoc policy review group of experts on the 2016 scientific assessment of the Convention (policy review group). Specifically, the ad hoc group was tasked with:

(a) Making proposals for a policy response to the 2016 scientific assessment of the Convention² (2016 Assessment Report) and recommendations as to whether and how the Convention should take action in the short and long term based on the report's findings;

(b) Reviewing the priorities for work and action in the long-term strategy for the Convention (see ECE/EB.AIR/106/Add.1, decision 2010/18) in the light of the 2016 Assessment Report;

(c) Proposing updates and revisions to the long-term strategy for the Convention based on the findings in the 2016 Assessment Report, the policy recommendations developed further to subparagraph (a) above, and taking into account the report of the ad hoc group of experts on the action plan for the implementation of the long-term strategy for the Convention.

2. At its thirty-sixth session (Geneva, 15-16 December 2016) the Executive Body invited the policy review group to highlight issues requiring further discussion with regard to the long-term strategy in advance of the Executive Body's thirty-seventh session (Geneva, 11-14 December 2017).

3. The present document thus focuses mainly on the group's findings, conclusions and recommendations. With regard to the review of the priorities of work, the group has identified specific tasks that could be included in the 2018-2019 workplan. Proposed updates and revisions to the long-term strategy will be addressed in the group's report to the thirty-seventh session of the Executive Body.

4. At its fifty-fourth session (Geneva, 13-14 December 2016), the Working Group on Strategies and Review held an informal session and exchanged its expert views on the preliminary findings and key issues highlighted by the policy review group for feedback. The Working Group noted that the exchange represented an expert view as an input to the group's further work. Also at that session, the policy review group presented the four themes under which it had organized its work:

- (a) Science and technical gaps;
- (b) Policy gaps;
- (c) Maximizing the impact of the protocols;
- (d) Outreach and cooperation.

5. In addition, the group noted four priorities for the Convention, which it kept in mind in its work:

² Rob Maas and Peringe Grennfelt, eds., *Towards Cleaner Air: Scientific Assessment Report 2016* (Oslo, 2016). Available from <http://www.unece.org/environmental-policy/conventions/envlrtapwelcome/publications.html>. There is a separate report for North America by the United States Environmental Protection Agency and Environment and Climate Change Canada, *Towards Cleaner Air: Scientific Assessment Report 2016 — North America* (2016, online report).

- (a) Implementation of the Convention and all the current protocols;
- (b) Ratification of the three latest protocols;
- (c) Increased cooperation with countries outside the Economic Commission for Europe (ECE) region;
- (d) Further review and possible revision and extension of the protocols.

6. The group's work also took into consideration the following policy goal: to improve air quality, including by reducing transboundary air pollution impacting the ECE region, and addressing, in an integrated manner, related environmental and health objectives and other policies that will continue long-term progress.

7. In line with its mandate, the policy review group addressed prevalent issues highlighted in the 2016 Assessment Report. Staying true to the nature of the Convention, the report reviewed the state of air pollution from a multi-effects multi-pollutant approach, providing the general public, scientists, policy analysts, and decision makers with a thorough overview of the Convention's achievements and opportunities for further long-range transboundary air pollution abatement. The challenge for the group was to take this wealth of scientific information and translate it into meaningful policy recommendations tailored to fit with the Convention's mandate, organizational structure and functions.

8. The structure of the present document reflects the suite of recommendations made by the policy review group in order to encourage further action to reduce long-range transboundary air pollution in the ECE region in the short term, for purposes of developing the 2018-2019 workplan, and in the longer term to achieve the Convention's environmental and health objectives. Chapter II sets out the group's recommendations. Chapter II, section A, focuses on recommendations for enabling sound policy decisions, which assesses the approaches and available tools of the Convention and its protocols. Section B details how the Convention and its protocols can be enhanced to ensure the maximum impact for the Parties. Section C provides a detailed set of recommendations for improving the technical and scientific basis for the Convention's work. Finally, chapter II, section D, outlines opportunities to further improve upon communication, outreach and cooperation with other regions and organizations.

9. Recommendations vary in terms of complexity and the time frame within which they can be implemented. The findings of the 2016 Assessment Report and the subsequent policy recommendations will require a response from various subsidiary bodies, programmes, working groups and task forces in order to strengthen the existing framework. Therefore, where not already explicitly set out, each recommendation is followed by the name of the responsible body required to carry it out, in addition to the time horizon for implementation (short term or longer term) in parentheses. Recommendations addressed to the Convention imply that they are relevant for the work under the Convention carried out by the Executive Body, the subsidiary bodies, secretariat and Parties. Some recommendations are also specifically addressed to Parties. All short-term recommendations are relevant for the 2018-2019 workplan. There are some recommendations that will be labelled both short term and long term. As longer-term tasks may also have to start soon, they may also be relevant for the 2018-2019 workplan.

II. Findings, conclusions and recommendations

A. Enabling sound policy decisions

1. Human health effects

10. The continued threat of air pollution to human health is highlighted throughout the 2016 Assessment Report. In particular, long-term exposure to particulate matter and ozone constitutes an important burden of disease and contributes to premature death. Also, other pollutants such as heavy metals and persistent organic pollutants (POPs) continue to pose risks to human health in many countries, despite major emission reductions achieved in the past. Evidence of deleterious health effects of key pollutants at lower levels than previously reported justify future updating of the World Health Organization (WHO) Global Air Quality Guidelines.

11. In this context, the policy review group recommends that:

(a) The Joint Task Force on the Health Aspects of Air Pollution (Task Force on Health) further review and harmonize methodologies for health impact assessments, taking into consideration the global burden of disease and the WHO Health risks of air pollution in Europe (HRAPIE) project (short term);

(b) The Task Force on Health further assess the health effects of particulate matter with due consideration of its various components (e.g., secondary inorganic aerosols versus organic and elemental carbon or other toxic constituents) (short term and long term);

(c) The Task Force on Health and the Task Force on Integrated Assessment Modelling further work on dose/concentration response functions in order to better determine the health effects of air pollutants, including in the context of projected future scenarios. These analyses should quantify for ECE or its subregions specific factors, such as the aging of societies, which might counteract the benefits of emission reductions (short term);

(d) Airborne effects of heavy metals and POPs, e.g., regarding mercury, polycyclic aromatic hydrocarbons (PAHs) and dioxins or dioxin-like polychlorinated biphenyls, be more thoroughly and systematically prioritized with respect to policy needs, taking into account work performed under the related global Conventions (long term; Task Force on Health).

2. Integrated environmental policy

12. The importance of taking an integrated approach towards addressing multiple environmental effects is highlighted in the 2016 Assessment Report. The policy review group identified three strongly interrelated policy fields that should form the basis for integrated environmental policy development under the Convention.

(a) Ozone-nitrogen-climate-biodiversity interactions

13. Air pollution is a central link for interactions between ozone, nitrogen, climate change and ecosystems; therefore, they are an important science-policy item for the Convention and its outreach. Due to the complexity of these interactions, this is an issue for science and policy and also for communication. For instance, the ozone increase owing to climate change (“climate penalty”) may counteract emission reductions according to current legislation, and may trigger ecosystem responses further increasing ozone concentrations. Therefore, emissions of ozone precursors (carbon monoxide,

nitrogen oxides (NO_x), volatile organic compounds (VOCs) and methane) will have to be reduced even more to attain reductions in ozone concentrations and effects.

14. The policy review group recommends focusing specific research on:

(a) Further work on the long-term effects of atmospheric nitrogen and ozone inputs on carbon sequestration, biodiversity and other ecosystem effects, and their interaction with climate change and ecosystem properties (long term; Working Group on Effects, Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP Steering Body), various International Cooperative Programmes and task forces);

(b) More empirical (experimental) ecosystem research on dose-response functions for ozone and nitrogen, validation and further development of the parametrization of models, especially (but not limited to) under dry conditions (Mediterranean ecosystems) and in the long term (long term; Working Group on Effects, International Cooperative Programmes);

(c) Work to prioritize which links between climate change, carbon and nitrogen biogeochemistry and POPs or heavy metals biogeochemistry are most policy relevant (for countries, for ECE, globally) (short term; Working Group on Effects, EMEP Steering Body, International Cooperative Programmes, task forces).

(b) Nitrogen management

15. The disruption of global and regional nitrogen cycles is one of the most important challenges for environmental policy; it can only be solved in close cooperation with agricultural, transport, energy and other policies. Contrary to public perception, nitrogen pollution is very much an issue for air policy. Reactive nitrogen compounds are emitted into the air primarily by the agricultural sector (mostly as ammonia (NH₃)) and by transport, energy, industry and households (mostly as NO_x).

16. In the majority of ECE countries, the most cost-effective measures to reduce reactive nitrogen emissions remain in the agricultural sector. Ammonia is a crucial contributor to the formation of secondary particulate matter, and has important effects on ecosystems, including biological diversity. The 2016 Assessment Report clearly calls for prioritizing abatement of ammonia emissions and for a stronger engagement of the agricultural sector in air pollution policy development.

17. The policy review group recommends that:

(a) Parties be strongly encouraged to increase their efforts on air pollution abatement in the agricultural sector, with a focus on cost-effective measures, e.g., on large animal farms (short term);

(b) Parties within the geographical scope of EMEP be reminded to use the ECE Framework Code for Good Agriculture Practice for Reducing Ammonia Emissions (ECE/EB.AIR/129)³ when establishing their national advisory codes and to apply it, as required by annex IX of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) (short term);

(c) The Task Force on Reactive Nitrogen and Parties be encouraged to disseminate information related to agriculture, such as information on best practices and

³ Available from <http://www.unece.org/environmental-policy/conventions/envlrapwelcome/guidance-documents-and-other-methodological-materials/gothenburg-protocol.html>.

the co-benefits thereof, new technologies and relevant economic assessments and information on products such as pesticides and fertilizers (short term);

18. The group further recommends that:

(d) The Executive Body and the subsidiary bodies further increase their focus on reactive nitrogen emissions (NH₃ and NO_x) and their abatement, transport and effects, keeping in mind the full nitrogen cycle and with the aim of increasing nitrogen efficiency (short term);

(e) The Gothenburg Protocol be updated (see sect. B, subsection 3 (a), below) with strengthened ammonia reduction measures, in line with the findings of the Task Force on Reactive Nitrogen and the Guidance Document for Preventing and Abating Ammonia Emissions from Agricultural Sources (ECE/EB.AIR/120) (Guidance on Ammonia Abatement)⁴ (short term; Parties, Working Group on Strategies and Review, Executive Body).

(c) Integrated approach for the development of air pollution and climate change policies and measures

19. The 2016 Assessment Report stresses that many air pollution abatement measures have clear co-benefits for reducing greenhouse gases and short-lived climate pollutants (SLCPs) emissions, and thus address climate change while improving air quality. It is also important to recognize that air pollution control measures will alter the net climate balance. Different types of air pollution can have either a net cooling effect (e.g., sulphate aerosols) or a warming effect (e.g., ozone).

20. While work on integrated approaches to address air quality and climate change has expanded in recent years, integrated policy development is still emerging. Despite instances of shortages of detailed information, there is often sufficient information available to policymakers to enact mitigation policies that take an integrated approach, avoiding negative consequences and aiming for win-win scenarios. This applies not only to the energy and transport sectors (primarily carbon dioxide, but also black carbon and for some countries methane) but also to agriculture (methane and nitrous oxides).

21. SLCPs such as black carbon and methane are key examples of those interactions. Black carbon is a component of fine particulate matter (PM_{2.5}) with impacts on air pollution, health and climate, while methane is both a greenhouse gas and a precursor to tropospheric ozone (see sect. C, subsection 6, below), itself an SLCP.

22. The policy review group recommends that:

(a) The Executive Body and the subsidiary bodies continue using and further developing the multi-effects, multi-pollutant framework going forward, including for the next revision of the Gothenburg Protocol (long term);

(b) Parties continue designing policies that systematically aim for synergies between climate and air pollution policies, specifically by:

(i) Including enhanced actions to reduce methane (as an ozone precursor), and possibly also emission reduction commitments, in the update of the Gothenburg Protocol (long term);

(ii) Pursuing reductions in ozone, black carbon and other SLCPs that have direct or indirect effects on climate and air quality (short term).

⁴ Ibid.

23. The group also recommends working with the United Nations Framework Convention on Climate Change (UNFCCC) and other international bodies to catalyse action on methane and other SLCPs, with a focus on the following tasks:

(a) Representatives of the Convention (centres, subsidiary bodies, Parties or secretariat) could participate in meetings of the UNFCCC Ad Hoc Working Group on the Paris Agreement to ensure that methane and other SLCPs play an important part in the implementation of the Paris Agreement (short term);

(b) In addressing air pollution and climate change in an integrated approach, a first step could be to bring all relevant actors (the Arctic Council, the Climate and Clean Air Coalition (CCAC), ECE, the Global Methane Initiative and the United Nations Environment Programme (UNEP)) together in a workshop to discuss how best to collaborate on achieving global SLCP emissions reductions (short term; Executive Body Bureau, secretariat, Executive Body, Working Group on Strategies and Review);

(c) Fostering partnerships with the Global Methane Initiative and CCAC and exploring opportunities to cooperate on technical issues (e.g., leaks, emissions, venting, incomplete combustion and recovery by coal mining) in lieu of pursuing in the short term an overarching emissions reductions target. This technical work would likely be seen as not being policy oriented, and thus avoid being a contentious issue debated in political arenas (short to long term; technical subsidiary bodies).

24. Among specific sources already taken into consideration in the protocols, the 2016 Assessment Report mentions a key example of integrated policy that addresses air pollution and has climate benefits. Residential solid fuel combustion, including biomass burning, is a major source of PM_{2.5} and black carbon (an SLCP) in the ECE region. In addition, this source increasingly dominates emissions of PAHs, which is highly health relevant.

25. The group recommends:

(a) Implementing emission standards based on best available techniques (BAT) and energy-efficiency requirements for new domestic stoves and installations for solid-fuel burning in any future revision of the Gothenburg Protocol (short-term; Working Group on Strategies and Review, Task Force on Techno-economic issues);

(b) Asking the Task Force on Techno-economic issues to consider including additional measures for integration in their database, and to develop a code of good practice for solid-fuel burning and small combustion installations (short term; Working Group on Strategies and Review, Task Force on Techno-economic issues).

3. Cost-effective control measures

26. Analyses of the economic costs of the impacts of air pollution, and particularly the cost-effectiveness of control policies, are essential tools to design achievable control strategies. These elements provide the rationale for decision-making, motivate policymakers to ratify and implement the protocols and facilitate communication on and awareness of air pollution. Communication focused on the benefits of air pollution control measures and the costs of inaction is important in this context. The Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model gives sufficient information on the costs and benefits of emission reductions, but, as a living model, needs targeted improvements and updates to stay a reliable tool.

27. The policy review group recommends that:

(a) The Task Force on Techno-economic issues and the Task Force on Integrated Assessment Modelling undertake a review of the control costs currently used,

and improve, on an ongoing basis, the cost-effectiveness analyses produced by the GAINS model. This would include a comparison of cost estimates from different models and the improvement of the cost estimates of the impacts of air pollution on health and ecosystems (short term);

(b) The two above-mentioned Task Forces co-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 (short term);

(c) The appropriate subsidiary bodies:

(i) Analyse the cost-effectiveness of additional local and regional measures as compared with additional continental (European-wide) measures, to reduce life years lost, considering the relative importance of sources like agriculture, domestic sectors and transport, depending on local conditions or local financial support (short term);

(ii) Analyse the cost-effectiveness of Northern Hemispheric emission reduction strategies to reduce ozone precursors as compared with a European or North American approach alone to reduce ozone damage to health and crops (short term).

B. Maximizing the impact of the Convention and its protocols

28. Parties are implementing the requirements of the protocols to the Convention. The current focus of the Convention is on the Gothenburg Protocol, the Protocol on Persistent Organic Pollutants (Protocol on POPs) and the Protocol on Heavy Metals. The 2016 Assessment Report highlighted continued gaps with respect to these Protocols meeting their objectives in terms of emission reductions of the respective pollutants and health and environmental benefits.

29. Key conclusions from the 2016 Assessment Report related to the Gothenburg Protocol include strong evidence for the need for further reductions for ammonia, PM_{2.5} and ozone and their precursors. This includes black carbon as a component of particulate matter and methane as precursor of ozone. Reducing global background levels of ozone remains a key challenge. The report also notes that simulations of the Task Force on Hemispheric Transport of Air Pollution indicate that, after an initial decrease in region-wide annual average ozone concentrations in North America and Europe, ozone may start increasing after 2020-2030, progressively driven by methane. This is mainly attributed to an increase of methane emissions in other regions.

30. The report also cites findings in regard to heavy metals, such as cadmium, lead and mercury, and POPs. Despite significant reductions in each of these pollutants, high levels continue to persist in ECE countries. Mercury and unintentionally released POPs (UPOPs) are of particular importance in this context.

1. Ratification and implementation of the protocols

31. Ratification and implementation of the protocols, notably the three latest, amended ones, are among the highest priorities of the Convention. In some cases, while countries are aware of the health risks from air pollution, the complexity of protocol provisions is a major impediment to understanding national obligations. There is a lack of knowledge in some countries concerning how to assess air pollution at the national level. Some countries do not currently have an air quality programme, mostly owing to the low political priority given to the issue. The Convention should assist countries, especially in Eastern Europe, the Caucasus and Central Asia, on various aspects of technical assessments to quantify the national level of air pollution and identify and implement

appropriate abatement strategies. The Convention also needs to improve awareness of the health and environmental risks associated with air pollution.

32. The flexibility provisions in the amended protocols are extremely useful for countries in Eastern Europe, the Caucasus and Central Asia; however, there is a significant difference in the approach to regulating new and existing sources. Countries in the subregion believe that focusing on new installations or sources would be a better use of resources. Retrofitting existing sources to meet limit values is more complex, could be costly, and may not be feasible from a practical perspective, especially for small countries in the region.

33. The policy review group recommends that the Convention:

- (a) Focus on increasing ratifications (short term);
- (b) Focus on implementing current obligations for Parties to the protocols (short term);
- (c) Continue to focus efforts on increasing ratification and implementation of the three latest Protocols (i.e., the Gothenburg Protocol, the Protocol on POPs and the Protocol on Heavy Metals), as amended (short term);
- (d) Continue awareness-raising at the political level of the need to improve air quality and the benefits of ratifying the protocols. This includes promoting the benefits of taking actions such as energy-efficiency measures that lead to economic and competitiveness gains (short to long term);
- (e) Continue capacity-building activities to enhance skills' development of national experts in order to develop emission inventories and projections and apply BAT (short to long term);
- (f) Support the commitments made by countries and organizations under the Batumi Action on Cleaner Air (BACA) initiative (ECE/BATUMI.CONF/2016/7), launched at the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8-10 June 2016) including, but not limited to, the implementation of BAT and emission limit values, the improvement of air pollutant inventories, the development of sound air quality management policies and the application of effective approaches for urban transportation systems. Where feasible, also coordinate countries' efforts on BACA and air pollution in general with other countries with BACA commitments and donors (short term);
- (g) Improve understanding of protocol provisions, explain what is needed for countries to ratify and develop the technical assessment needed to identify the air pollution levels and the risk to public health and environment in the country, and explain the costs and benefits of implementing abatement measures and how the technologies work to reduce emissions (short term);
- (h) Apply lessons learned from the experiences of ECE countries to other countries within the region (short to long term);
- (i) Improve the use of existing capacity in Eastern and South-Eastern Europe, the Caucasus and Central Asia, including potentially providing resources for training and knowledge transfer (short term).

2. Enforcement of Protocol obligations and related support to countries

34. Currently, the Implementation Committee is functioning well and has made many improvements in the past several years in line with the long-term strategy for the Convention. It is desirable that the Committee and the technical subsidiary bodies work in

partnership to continue to support countries in the achievement of emission reductions required by the protocols. This link will help keep a focus on addressing some of the systemic barriers to compliance identified by the Committee (see ECE/EB.AIR/2012/16, para. 115). The policy review group reaffirms the importance of good quality emissions data. Parties should increase their own capacity to improve and report their emissions data, as this is the basis for all of the work under the Convention. The group believes that the current procedures for notifying Parties of non-compliance and the subsequent steps to address Parties' non-compliance are effective.

35. The policy review group recommends that:

(a) The Implementation Committee maintain its current approach to compliance review with a focus on longer-lasting non-compliance cases. At the same time, the Committee should continue to periodically review its functioning and make recommendations accordingly to the Executive Body (short term);

(b) Parties continue to focus on improving emissions inventories and reporting of emissions data, and potentially projections data (short term);

(c) Parties implement technical measures to meet protocol obligations and do not focus solely on emissions reporting obligations. As the emissions inventories improve, Parties will have a greater awareness as to the appropriate strategies, policies and technical measures to implement to reduce emissions and meet the objectives and obligations laid out in the protocols (short to long term);

(d) The Committee and the technical subsidiary bodies enhance their partnership to increase the support to countries in the achievement of emission reductions required by the protocols (short term);

(e) The Convention continue its support to countries in their implementation of the protocols and their efforts towards compliance with their substantive and reporting obligations, including through emissions inventory improvements (short term).

3. Updating the amended Protocols

(a) Possible updates to the Gothenburg Protocol

36. There is a need to focus on achieving sufficient ratifications of the amended Gothenburg Protocol for it to enter into force: 17 ratifications from the original signatory Parties are required. Thus, any updates to the Gothenburg Protocol can only take place following its entry into force, and following a full review of the Protocol. The recommendations below should be considered as part of this review.

37. The policy review group makes the following general recommendations to the Convention for updating the Gothenburg Protocol (long term):

(a) Utilize an approach or combination of approaches that would achieve the maximum possible emissions reductions of pollutants of interest in key sources, sectors, or regions;

(b) Consider an integrated approach (i.e., multi-pollutant and multi-effect, for example combined air pollution and climate change goals and improving nitrogen management);

(c) Consider potential unintended consequences (key interactions of pollutants or environmental effects, such as trade-offs between air quality and climate change).

38. When reviewing the Gothenburg Protocol, the group recommends that the following be considered for inclusion:

- (a) Emissions reductions commitments for black carbon;
- (b) Strengthened ammonia abatement measures, in line with the findings of the Task Force on Reactive Nitrogen and the Guidance on Ammonia Abatement;
- (c) Methane, as a priority substance, including specific reduction measures on methane;
- (d) Further emissions requirements for ozone precursors covered by the Protocol;
- (e) Further emissions requirements for PM_{2.5};
- (f) Further emission requirements for acid rain precursor pollutants;
- (g) Requirements for further addressing hemispheric air pollution;
- (h) Shipping emissions;
- (i) Ways to address barriers to implementation, including existing sources.

39. The group also recommends that Parties to the Gothenburg Protocol:

- (a) Tighten emission standards for ammonia according to BAT, as described in the Guidance on Ammonia Abatement, particularly for large farms (short term);
- (b) Establish emission standards based on BAT and energy-efficiency requirements for new residential and small-scale appliances, including solid-fuel burning (Task Force on Techno-economic Issues) and implement the standards under the current emission reduction commitments for PM_{2.5} (short term);
- (c) Encourage the use of operational guidelines for implementation and subnational level enforcement (short term).

(b) Possible updates to the Protocol on Persistent Organic Pollutants

40. The Protocol on POPs and the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention) have considerable overlap in their respective provisions. Some key differences between them include the fact that the Protocol on POPs covers PAHs, and also includes stricter measures for the ECE region for UPOPs. For this reason, the Protocol on POPs remains relevant for addressing these pollutants. The long-term strategy includes a principled approach to addressing POPs, which the Executive Body decided to follow (see ECE/EB.AIR/122/Add.1, decision 2013/22). Future action under the Protocol should focus on full implementation, continued emissions reporting and monitoring and further ratifications. Further measures under the Protocol should focus on areas and substances where the implementation of stricter measures in the ECE region is still recommended.

41. The policy review group recommends to the Convention that (long term):

- (a) The policy work on POPs be focused on UPOPs, where there is an added value to the activities under the Stockholm Convention;
- (b) Further scientific and technical work should continue to determine whether additional UPOPs should be added to the Protocol on POPs;
- (c) The Task Force on Techno-economic Issues explore to what extent the Protocol on POPs could be further developed with respect to UPOPs, especially on PAHs, and explore whether and which stricter measures could be recommended for the ECE region;
- (d) Possible additional measures be introduced to reduce POPs, including:

- (i) Strengthened BAT on new stationary sources (waste incineration, metallurgy, energy production) and measures on domestic combustion plants, as these are the main source of PAHs emissions in many countries;
- (ii) More specific measures on PAHs, such as a target value or a reduction objective;
- (iii) Additional measures to help countries in Eastern Europe, the Caucasus and Central Asia to increase their reduction of PAHs and dioxins/furans, especially for new installations.

(c) Possible updates to the Protocol on Heavy Metals

42. Considering the principled approach related to mercury which the Executive Body decided to follow (see decision 2013/22), i.e., that new measures be considered first under the Minamata Convention on Mercury, future action under the Protocol on Heavy Metals should focus on full implementation, continued monitoring and further ratifications. Nevertheless, despite important transport of mercury emissions to the ECE from other regions, according to the 2016 Assessment Report half of mercury distribution in the ECE region is attributed to EMEP countries. The report also notes critical loads exceedances of lead and mercury in several countries and high cadmium deposition in a number of hotspots close to industrial regions.

43. The policy review group recommends that the Convention:

- (a) Focus on implementing the obligations set out in the Protocol on Heavy Metals for all substances, especially in, but not limited to, the countries in Eastern Europe, the Caucasus and Central Asia, and on increasing ratifications (short term);
- (b) Pursue mitigation activities on heavy metals within the ECE region (short term);
- (c) Continue scientific and technical work on heavy metals (short and long term);
- (d) Position itself as a centre of expertise on reducing heavy metals, with a potential focus on sharing its expert technical knowledge (BAT, emission inventories, monitoring. etc.) on these pollutants with UNEP;
- (e) Engage with the North-East Asian Subregional Programme for Environment (NEASPEC) and similar regional organizations to assess the possibility of following the example of the Protocol on Heavy Metals with regard to abatement measures and policy.

(d) Broadening the geographical scope of the Convention and/or its protocols

44. The formal opening of the Convention and/or some of its protocols would provide other countries beyond the ECE region, and potentially also other regional economic integration organizations, with the opportunity to join the Convention formally, become part of its networks and experience exchanges at the scientific and policy levels.

45. The experience of other ECE multilateral environmental agreements demonstrates that formal accession takes many years to achieve. It has also shown that countries from outside the region have taken an interest in the respective activities and participated in meetings following the adoption of amendments to open them for accession by countries beyond the region.

46. Opening the protocols could concern mainly the Gothenburg Protocol. Global accession could act as a means to raise the Convention's visibility and recognition as an

important player and ECE as the key organization, alongside UNEP and WHO, in the field of addressing air pollution.

47. The policy review group recommends that the Executive Body consider how to address air pollution more broadly, including whether and how to formally open the Convention or some of its protocols to a broader membership (longer term).

C. Improving the technical and scientific basis

48. In order to continue making progress in addressing the main policy goal (see para. 6), there is a need to improve the technical and scientific basis that is the foundation for action under the Convention.

1. Emission data

49. The 2016 Assessment Report indicates that completeness and accuracy of emission inventories and projections, especially in Eastern and South-Eastern Europe, the Caucasus and Central Asia, is lacking. There are varying gaps and priorities on pollutants and issues regionally. The policy review group therefore recommends (short term):

(a) Implementing and further developing concrete actions in the 2016-2017 workplan (the Convention);

(b) Emphasizing stronger emission inventory verification by measurements in the 2018-2019 workplan (EMEP Steering Body, Task Force on Emission Inventories and Projections);

(c) Implementing the EMEP Strategy (ECE/EB.AIR/2009/16/Rev.1) regarding high-resolution regional data at a finer grid scale than the current EMEP scale, with a focus on high-emission and high-impact areas (e.g., urban scale) (Task Force on Measurements and Modelling, Task Force on Emission Inventories and Projections, Task Force on Hemispheric Transport of Air Pollution);

(d) Considering adding temporal variation of VOCs and ammonia emissions over the year to the workplan, especially in high emission areas, in order to improve model results with respect to ozone and nitrogen effects (Task Force on Measurements and Modelling, Task Force on Emission Inventories and Projections);

(e) Verifying that real-world emissions, e.g., of nitrogen oxides (diesel cars) and particulate matter (small wood combustion installations) are accurately and consistently implemented in emission inventories (Task Force on Emission Inventories and Projections);

(f) Linking emissions from shipping, being relevant locally, regionally and globally and occurring primarily near the coasts in the ECE region, more explicitly to existing inventories of land-based emissions (Task Force on Emission Inventories and Projections);

(g) Increasing the reliability and public availability of data on shipping emissions (Executive Body, EMEP Steering Body, Task Force on Emission Inventories and Projections).

50. Solid emissions inventories and projections are a prerequisite for countries' ratification of the Gothenburg Protocol in order to fulfil its national emission reduction commitments. While in the Protocols on Heavy Metal and POPs the emphasis is on technical emission standards, reliable inventories are also needed in order to assess effects, ascertain sources and design reduction strategies.

51. The policy review group recommends focusing on improving the reporting and quality of emission inventories and projections for the Gothenburg Protocol. The Protocols on Heavy Metals and POPs should be an additional focus, especially in countries with significant remaining emissions relevant for effects (short term; Task Force on Emission Inventories and Projections, others).

52. The group recommends further improvement of emission inventories for black carbon/particulate matter (including selected POPs such as Benzo[a]pyrene), especially from small-scale combustion and agricultural waste burning. Specifically, the group:

(a) Supports the work of the Task Force on Emission Inventories and Projections and others aiming at harmonizing emissions inventories and projections with respect to the treatment of condensables (short term; Task Force on Measurements and Modelling, Task Force on Emission Inventories and Projections);

(b) Recommends that the Convention work on (an) improved definition(s) of black carbon for emissions reporting and for ambient air and effects monitoring purposes, and that reporting of national black carbon emissions inventories should be mandatory once the improved definition for reporting is agreed (short term; Task Force on Measurements and Modelling, Task Force on Emission Inventories and Projections).

53. The policy review group further recommends that the emission inventory review process be improved. Specifically, it recommends:

(a) More investments (funding, experts) (short term; Parties);

(b) Improvement of the follow-up, for instance non-mandatory recommendations for changes (to be reported by the respective Party at the next EMEP Steering Body session), and/or regular reviews every five years (short term; Parties and EMEP Steering Body).

54. As emissions outside ECE are increasingly important, so is the quality of non-ECE inventories and projections. The group recommends that EMEP closely cooperate with relevant non-ECE institutions to establish reliable up-to-date non-ECE emission inventories for all pollutants to assess pollution transport to and from other regions (short term; Task Force on Emission Inventories and Projections, Task Force on Hemispheric Transport of Air Pollution, other subsidiary bodies).

2. Dispersion modelling

55. The policy review group recommends that the EMEP Steering Body and the Working Group on Effects further improve the implementation of their respective strategies with respect to cooperation on modelling and mapping between the Meteorological Synthesizing Centre-East and the Meteorological Synthesizing Centre-West and the International Cooperative Programmes.

56. For instance, the spatial distribution of ammonium nitrate concentration and nitrogen deposition is strongly dependent on a correct, complete and scale-specific parametrization of relevant processes (e.g., multiphase physico-chemistry) (short to long term; EMEP, Working Group on Effects).

57. The group further recommends that the presentation of modelling results more clearly indicate continental, regional or local applicability (long term; EMEP).

58. Due to the complexities outlined in the 2016 Assessment Report, the group recommends significant further work on heavy metals and POPs that relates to air pollution but is closely linked to other science and policy fields. Specifically for UPOPs, the group recommends improving the analysis of long-term trends in secondary emissions

and the capacity for quantifying intercontinental transport via multi-compartment modelling (short to long term; EMEP, Working Group on Effects, Parties).

3. Scope of monitoring and challenges to the existing monitoring systems

59. Monitoring aims to determine progress in improving air quality, human health and ecosystem effects. For the reasons described in the informal background document supplementing the present report,⁵ the policy review group strongly recommends that Parties keep up or extend their monitoring activities, especially on effects from air pollution.

60. When doing so, Parties are invited to take into account the relevant Guidance Document on Health and Environmental Improvements Using New Knowledge, Methods and Data (ECE/EB.AIR/124) (Guidance on Health and Environmental Improvements)⁶ and, if available, the updated list of monitoring and inventory priorities and related recommendations (short to long term).

61. Specifically, the policy review group recommends reducing quality assurance/quality control and representativeness problems, e.g., with heavy metal deposition monitoring data, by intensifying collaboration in combining deposition monitoring, modelling and biomonitoring (short term; EMEP, Meteorological Synthesizing Centre-East, Chemical Coordinating Centre, International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops (ICP Vegetation), International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests, International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems).

62. Any strategic decision on extending the geographical scope to high resolution (e.g., cities) and hemispheric or global work, including the strategic decisions on outreach, has to keep the consequences for monitoring in mind. The group recommends that EMEP consider how to further develop high resolution modelling without diverting resources from the Convention's core workplan items related to ECE scale modelling and background monitoring (long term; EMEP Steering Body, Task Force on Measurements and Modelling).

4. Improving the functioning of the Working Group on Effects and EMEP and their subsidiary bodies

63. Following up on the recommendations of the review of the International Cooperative Programmes (ECE/EB.AIR/2013/2), the policy review group reiterates that:

(a) EMEP, the Working Group on Effects and their subsidiary bodies, including the International Cooperative Programmes, are requested to systematically improve access to data via the Internet, and to establish a common web-based portal, as indicated in the workplans (short to long term);

(b) Subsidiary bodies and Parties are encouraged to continue using the Guidance on Health and Environmental Improvements as a set of priority indicators. The International Cooperative Programmes and subsidiary bodies to EMEP are encouraged to continue harmonizing technical standards (short to long term);

⁵ Available on the web page for the Working Group's fifty-fifth session: <http://www.unece.org/index.php?id=43511#/>.

⁶ Available from <http://www.unece.org/environmental-policy/conventions/envlrapwelcome/guidance-documents-and-other-methodological-materials/gothenburg-protocol.html>.

(c) The Working Group on Effects and the International Cooperative Programmes are asked to continue the integration of work and reporting with EMEP, to organize joint meetings, and to explore ways of combining or merging individual activities of International Cooperative Programmes (short to long term).

64. The group recommends that the Executive Body Bureau and the main subsidiary bodies continue priority discussions on a new financial mechanism for activities not covered by the Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe and recommend options to the Executive Body (short to long term).

5. Linked, multipurpose monitoring under the Convention

65. With regard to linked, multipurpose monitoring under the Convention, the policy review group recommends that:

(a) The Working Group on Effects and EMEP further intensify links between atmospheric monitoring and effects monitoring, for instance by means of the foreseen contact group to compare the Working Group's exposure measurements with exposures modelled and monitored by EMEP (short to long term);

(b) Cooperation, including common projects and data sharing, be further promoted between the Convention's monitoring programmes and external research projects in a systematic fashion (short to long term);

(c) The Convention take every opportunity to make monitoring networks serve multiple clients (national and international) and other problems (e.g., climate change and land-use and biodiversity management) (short to long term);

(d) Convention bodies better communicate to Governments the advantages of multilateral cooperation within the Convention system in dealing with increasingly complex science-policy issues (short to long term).

6. Hemispheric air pollution

66. The case has been made that the Convention should continue to play a vital role in assessing and addressing hemispheric transport of air pollution in the Northern Hemisphere. As recommended in the 2016 Assessment Report, reducing background levels and exposure will require measures beyond the implementation of the Convention's protocols, including broader coordination beyond the European or North American scale, as well as coordination with other international forums.

67. The policy review group recommends that EMEP consider providing information, and a time frame for providing it, to the Working Group on Strategies and Review in order to begin policy conversations on the hemispheric transport of ozone and its precursors and particulate matter. The information could include the following:

(a) A report by the Task Force on Hemispheric Transport of Air Pollution on the most relevant scientific information currently available regarding the relative contributions within and outside the ECE region to air pollution within the region, and the potential for emissions reductions;

(b) 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. These source-receptor relationships should be sufficiently detailed to inform hemispheric policy. The receptors should be defined with sufficiently high spatial resolution to do a health and ecosystem assessment. The sources should be defined as individual countries (with information on sectors);

(c) Current controls assumed in the base modelling, current controls in an appropriate future year and future control scenarios for the same future year (2030, 2050). Cost-effective control options should be applied in the models (including, in particular, cost-effective measures to reduce methane) to see what effect those control options 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 (2030, 2050). The Working Group on Strategies and Review should discuss which control strategies to recommend for use by the Task Force on Hemispheric Transport of Air Pollution in future scenarios;

(d) The impact of climate change on the contribution of sources of air pollution from within and outside the ECE region (2030, 2050).

68. In addition, it would be helpful for EMEP to:

(a) Report on the assessment (including the status of global modelling) of international shipping emissions and how it is contributing to the background levels of ozone and particulate matter that affect the ECE region. If the global models cannot accurately represent international shipping emissions, the group recommends that the Task Force on Hemispheric Transport of Air Pollution, in coordination with other subsidiary bodies, report on appropriate next steps to improve global models (and regional models, if appropriate);

(b) Find opportunities to collaborate with other organizations in Asian countries that have significant sources or are impacted by hemispheric air pollution (see also sect. D below);

(c) Describe the ecosystem and health effects that are a result of hemispheric air pollution. Identify where the highest health and ecosystem risk and exposures are expected, given estimates of current and future air quality (also include projections of changes in population and economic development), also taking into account the contributions from different regions within and outside of the ECE region. This, in turn, may help spur policy development that is targeted towards achieving the largest reductions in risk and/or exposure;

(d) Determine the health and ecosystem improvements that would result from future control options.

69. The policy review group recommends that the Working Group on Strategies and Review consider having a policy conversation on the hemispheric transport of POPs and heavy metals in the longer term, as appropriate. It also recommends that the Task Force on Hemispheric Transport of Air Pollution coordinate further work on heavy metals and POPs with the Meteorological Synthesizing Centre-East.

D. Improving communication, outreach and cooperation

70. As stated in the 2016 Assessment Report, air pollution policy is driven by a number of environmental concerns, such as ecosystem and public health, impacts on materials in the built environment and climate change. In particular, compelling scientific evidence of the significant burden of disease from air pollution on human health highlights the necessity for further action from all polluting sectors to reduce emissions in order to improve air quality and public health.

71. The policy review group recommends that existing communication products and information on ongoing activities be further disseminated. It is also recommended that communication activities be maintained and increased in order to further raise awareness

of the Convention's work and its contribution to improving air quality in the region, including at the national and local levels.

1. Outreach to the public

72. To highlight specifically how the Convention's work affects people's daily lives, the group recommends that the Executive Body Bureau and/or the secretariat, national focal points) (short term):

(a) Further pursue changes to the Convention's website (easy-to-understand information), to make it more attractive and informative for the public;

(b) Communicate information on the impacts of air pollution on health and ecosystems to the public to raise awareness of air pollution;⁷

(c) Establish closer contacts with the ministries of health of ECE countries, so as to contribute together to the implementation of the Sustainable Development Goals and the mutual benefits of actions, and inform ministries of finance and economics about the cost of inaction⁸ and the evident benefits for public health and the workforce of reducing air pollution impacts on health;

(d) In cooperation with the national focal points, inform the public of the positive impacts of decreasing transboundary air pollution for better air quality in cities through, e.g., infographics or YouTube videos;

(e) Encourage all Parties to promote the Convention's work through their national activities to engage the public whenever a suitable opportunity arises. An information kit to promote the Convention with additional information could be developed to support the work to be undertaken by national focal points or the countries themselves. This could have a positive effect and encourage behaviour adaptation and more sustainable consumption and transportation systems;

(f) Translate the guidance on good agriculture practice adopted by the Executive Body (ECE/EB.AIR/120 and ECE/EB.AIR/129) into language that is comprehensible to end-users, e.g., farmers;

(g) Develop online training courses or link information on the Convention to existing online training courses and develop awareness-raising information kits for national focal points;

(h) Use the BACA initiative as a tool to promote the Convention;

(i) Systematically use a simplified name for the Convention such as "Geneva Air Convention" for informal communications;

(j) Organize an event to celebrate the fortieth anniversary of the Convention in 2019.

⁷ See "Reducing air pollution to save lives and protect the environment", available from <http://www.unece.org/info/media/stories/breathe.html>. Similar stories with regard to the environmental effects of air pollution (e.g., biodiversity loss and excess of nitrogen compounds) could be envisaged (Task Force on Hemispheric Aspects of Air Pollution, Parties).

⁸ See Organization for Economic Cooperation and Development, *The Economic Consequences of Outdoor Air Pollution* (Paris, 2016), available from: <http://www.oecd.org/env/the-economic-consequences-of-outdoor-air-pollution-9789264257474-en.htm>.

2. Communication to policymakers

73. Awareness could be raised through dedicated ministerial or high-level meetings, segments of ECE intergovernmental meetings or events organized by partner organizations (short term to long-term; Bureau, secretariat). High-level contacts through missions (by office holders or the secretariat) could also be conducive to awareness-raising. Such an approach has proven particularly successful with the European Commission and countries of Central Asia.

74. At the national level, the policy review group recommends that policymakers reach out to colleagues working in related policy arenas, including health and agriculture, in order to raise awareness of the work under the Convention, for example through dedicated coordination meetings, special sessions of the Working Group on Strategies and Review and information sharing on activities and events under the Convention.

3. Information exchange with other organizations

75. Knowledge and experience gained under the Convention could be further disseminated and shared with institutions working at a wider geographical scale, including in Asia. However, the policy review group considered that the main responsibility to ensure an effective exchange of information and a coordinated approach between various institutions and other subnational or international bodies should lie with Parties active in these different organizations.

76. To strengthen and further enhance awareness with other organizations and to position the work of the Convention in the international policy arena, the group recommends that (short term):

(a) Efforts to raise visibility on air pollution are pooled with other organizations, existing platforms and channels and such opportunities are used more effectively, e.g., under the WHO Breathe Life Campaign⁹ (secretariat);

(b) Parties establish and maintain coordination mechanisms and information exchange between the various national focal points in charge of the organizations and treaties addressing air pollution abatement and related aspects, e.g., through the organization of joint events or sessions with UNEP or WHO in the framework of the governing bodies of these organizations or Executive Body sessions (Executive Body Bureau, secretariat);

(c) Collaboration be undertaken with CCAC and/or WHO to help countries assess the health benefits from reducing air pollution (e.g., country tools like the Environmental Benefits Mapping and Analysis Programme (BenMAP)¹⁰ in the United States). The CCAC integrated benefits calculator could be beneficial to countries that are not equipped to use BenMAP (secretariat, appropriate subsidiary bodies).

4. Prioritized outreach activities for the next five years

77. With regard to outreach, the policy review group recommends prioritizing the activities under the Convention on the response to global policy processes and cooperation with priority regions.

78. The group also highlights that enhancing existing outreach activities and developing additional ones, as suggested below, requires specific additional financing for

⁹ See <http://www.who.int/sustainable-development/news-events/breathe-life/en>.

¹⁰ Available from <https://www.epa.gov/benmap>.

the work by the centres, working groups and task forces established under the Convention and the secretariat.

(a) Response to global policy processes: broadening the geographical scope when addressing air pollution

79. The need to address air pollution at the global scale has gained more visibility in global forums in recent years. In 2014, the United Nations Environment Assembly adopted resolution 1/7 on strengthening the role of UNEP in promoting air quality. The resolution tasks UNEP:

to undertake global, regional and subregional, as appropriate, assessments by 2016, if possible, focused on identifying gaps in capacity to address air quality issues, including monitoring and control opportunities for cooperation, and air pollution mitigation opportunities, building upon existing global, regional and subregional cooperative efforts on air pollution, such as the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury and the Economic Commission for Europe Convention on Long-range Transboundary Air Pollution and its eight protocols, and information provided by States members of the United Nations Environment Programme.¹¹

This issue will be further discussed at the third session of the United Nations Environment Assembly (Nairobi, 4-6 December 2017).

80. In 2015, the World Health Assembly adopted resolution 68/8 on “health and the environment: addressing the health impact of air pollution”, and subsequently in 2016 approved a road map for its implementation (see A69/18).

81. At the same time, CCAC is becoming an increasingly important player in leveraging support for climate policies that also address air pollution.

82. As reported in section B, subsection 3 (d), above, the policy review group considered formally opening the Convention and/or its protocols to address broadening the geographical scope of the Convention’s work. Here, the group suggests specific actions to address air pollution at the global scale.

83. The group recommends continuing to collaborate with other organizations and countries beyond the region, and specifically (short term) that:

(a) Further to United Nations Environment Assembly resolution 1/7, paragraph 5 (c), Parties consider cooperating with UNEP and countries participating at the third session of the United Nations Environment Assembly when further elaborating the role of UNEP in addressing air pollution;

(b) The Convention continue its scientific work on a broader international basis by inviting relevant partner bodies to discussions;¹²

¹¹ See UNEP/EA.1/10, annex I.

¹² At its twenty-fourth session (Geneva, 11-14 December 2006), the Executive Body “agreed to continue efforts to attract participation from non-UNECE delegations and experts at meetings under the Convention, especially on issues such as hemispheric transport of air pollution, and to develop further and extend outreach activities to regions developing their own agreements on air pollution, including consideration of the possibilities for interregional collaboration, through, for example, memorandums of understanding or special events/seminars for non-UNECE countries” (ECE/EB.AIR/89, para. 62 (a)).

¹³ Further to the activities under the UNEP programme of work, this concerns also the Stockholm and Minamata Conventions.

(c) Activities in relation to the global processes under UNEP and WHO be strengthened. Through its expertise and expert networks, the Convention should contribute to capacity-building activities in the ECE and other regions;

(d) Cooperation with UNEP, WHO, the World Meteorological Organization (WMO), CCAC and other global organizations and networks be strengthened, as encouraged by United Nations Environment Assembly resolution 1/7 (Convention);

(e) The ECE secretariat concretize, as a matter of priority, the inter-agency dialogue with UNEP¹³ and WHO, and support the activities launched under CCAC to abate SLCPs;¹⁴

(f) A workshop be hosted under the Convention with official representatives from non-ECE countries and regional organizations to discuss the results of the work of the Task Force on Hemispheric Transport of Air Pollution (see sect. C, above). This would also include discussing the monitoring networks in other regions. Policymakers from different regions should participate in this workshop, which should serve to improve awareness on air pollution issues and to collectively develop an adequate policy response (Working Group on Strategies and Review, EMEP Steering Body, Task Force on the Hemispheric Transport of Air Pollution).

84. A focus on collaborating with other organizations and strengthening the Convention's activities in relation to global processes would also constitute a contribution to the implementation of the Sustainable Development Goals.¹⁵ The group recommends that the Convention raise the visibility of its contribution to support their implementation, e.g., during dedicated information-sharing sessions with policymakers.

(b) Cooperation with priority regions

85. The 2016 Assessment Report points out that one of the remaining air pollution challenges in the ECE region is tackling ozone background levels and black carbon.

86. The policy review group supports maintaining and enhancing cooperation, in particular further discussion on the development of policy cooperation, with the following organizations (in no order of priority) (long term):

(a) **Acid Deposition Monitoring Network in East Asia:** The Convention should continue the ongoing cooperation through the Chemical Coordinating Centre and the ECE secretariat on establishing a new network centre in Asia;

(b) **Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia (Malé Declaration):** ICP Vegetation should further cooperate with the Malé Declaration on the impacts of ozone on crops. The secretariat to the Malé Declaration expressed interest in exploring further cooperation opportunities, subject to funding by donors. Funding implications would have to be further carefully considered by the Executive Body;

¹³ Further to the activities under the UNEP programme of work, this concerns also the Stockholm and Minamata Conventions.

¹⁴ ECE is a non-State partner of CCAC. The ECE secretariat is engaged in the CCAC communications task force and the CCAC secretariat has recently approached the ECE secretariat to gather ideas for concrete joint projects.

¹⁵ More information is available in information paper no. 10, "ECE multilateral environmental agreements for global goals", submitted to the Committee on Environmental Policy at its twenty-first session (available from <http://www.unepce.org/index.php?id=38470#/>).

(c) **North-East Asian Subregional Programme for Environmental Cooperation:** based on the previous cooperation and in response to the recent proposal by NEASPEC, the ECE secretariat and EMEP should be encouraged to explore further cooperative opportunities for possible data sharing, including on black carbon. Further cooperation on policy-relevant matters of emission abatement can be considered;

(d) **Arctic Council:** EMEP should continue its effective scientific cooperation with the Arctic Council in order to reap synergies, avoid duplication and raise mutual awareness. Furthermore, cooperation in the policy arena should be maintained and further developed. The Arctic Council member States that are also Parties to the Convention should take the lead in further developing such cooperation.

5. Working with other international bodies: a cooperative approach for protecting health and ecosystems

87. The policy review group recommends inviting organizations and interested countries outside the ECE region to exchange experiences at the sessions of the Working Group on Strategies and Review, joint meetings of the Working Group on Effects and the EMEP Steering Body, task force meetings or specific workshops. Alternatively, direct contacts with the Convention centres could facilitate information exchange at the operational level. Contributions (data, scientific expertise, participation in projects and workshops, etc.) of the Convention and its subsidiary bodies and centres to work outside the ECE region should be duly acknowledged and referenced. In addition, the group recommends that the Bureau discuss developing a roster of ECE experts that advise and train experts in other countries and regions, particularly Asia (short term).

88. The group also recommends that:

(a) Subsidiary bodies, and specifically the Task Force on Measurements and Modelling, continue their strong cooperation with WMO, especially in relation to the operation of joint EMEP-Global Atmosphere Watch supersites (short term);

(b) The Co-Chairs of the International Cooperative Programme on Effects of Air Pollution on Materials continue cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO), and invite Parties to participate in studies evaluating material deterioration due to air pollution at UNESCO cultural heritage sites (short term);

(c) EMEP, the Task Force on Reactive Nitrogen and International Cooperative Programmes intensify cooperation with the nascent science-policy field of reactive nitrogen management (long term);

(d) The International Cooperative Programmes and the Task Force on Reactive Nitrogen intensify existing outreach to the Convention on Biological Diversity and its community, including on the national level, on the modelling of biodiversity and/or ecosystem function loss, taking into account multi-stress impacts (air pollution, climate, water, land use) (short to long term);

(e) The ECE secretariat renew the memorandum of understanding with the Convention on Biological Diversity (long term);

(f) Subsidiary bodies strengthen the linkage with other international organizations working on nitrogen management, including the Integrated Nitrogen Management System, OECD and multilateral agreements on water (e.g., the Global Partnership on Nutrient Management) and climate (short term);

- (g) The Co-Chairs of the Task Force on Reactive Nitrogen and the Task Force on Techno-economic Issues continue and strengthen cooperation with OECD, to the extent useful for their work (short term);
- (h) The EMEP Steering Body consider cooperating with the Copernicus Atmosphere Monitoring Service in order to enhance public information on air quality (long term);
- (i) The Co-Chairs of the Task Force on Emissions Inventories and Projections identify potential emission limit values associated with BAT on emissions of black carbon with the International Maritime Organization (short to long term);
- (j) The ECE secretariat and the bodies under the Convention continue to follow relevant developments with regard to the implementation of the Paris Agreement together with the UNFCCC (short term);
- (k) The Working Group on Strategies and Review, with contributions from the Task Force on Integrated Assessment Modelling, improve awareness of the effects of SLCPs, including those regulated under the Gothenburg Protocol, together with CCAC, and possibly other organizations, such as the Arctic Council (short to long term);
- (l) The EMEP Steering Body maintain further exchange of information related to atmospheric observations and data management within the ECE region and input to the Stockholm Convention data warehouse, while securing visibility of EMEP capacities and data (short to long term);
- (m) EMEP share the Convention's experiences in developing reporting guidelines with the aim of harmonizing reporting guidelines under the Minamata Convention on Mercury with those under the Air Convention (short term);
- (n) The Task Force on Health and the Task Force on Reactive Nitrogen collaborate with WHO to improve public awareness on the health risks of pollutants, and identify and promote non-technical options for air pollution abatement, such as the reduction of food waste and encouraging low-meat diets (short term);
- (o) The Convention better communicate the linkages of local exposure and transboundary air pollution to Governments, and work with other relevant international bodies to address the health effects from peak exposure in cities (long term).

III. Conclusion

89. The conclusions in the 2016 Assessment Report point to further work to be done within the Convention to improve air quality in the ECE region. The policy review group supports the findings of the report and has provided a suite of recommendations that address them, ranging from maintaining the Convention's current direction to shifting or adding focus to specific issues.

90. Examples of issues where the group's recommendations maintain the current approach are:

- (a) Ratification and implementation of the Convention and its protocols;
- (b) The Implementation Committee's work;
- (c) Improvements to the technical and scientific basis that will maintain the Convention's scientific leadership role.

91. Examples of issues where the group recommends a shift in approach or an increased focus on certain aspects of the Convention's work include:

- (a) Additional commitments for certain pollutants (e.g., ozone, black carbon and ammonia);
- (b) Integrated approaches for environmental policy (e.g., nitrogen policy and air quality or climate change policy);
- (c) Increased communication and cooperation with countries and organizations outside the ECE region. In this regard, the Convention would be positioned as a model for other regions in relation to the global processes launched by WHO and UNEP.

92. The group concludes that further work should mainly focus on:

- (a) Ratification or accession to the three latest, amended Protocols, and implementing the requirements of those Protocols;
- (b) Improving emission inventories and projections;
- (c) Harmonizing air quality and effects monitoring, assessing health and ecosystem impacts;
- (d) Integrating environmental policy approaches;
- (e) Further pursuing emissions reductions, especially under the Gothenburg Protocol;
- (f) Broadening the geographical scope of addressing air pollution.

93. The policy review group looks forward to discussing its recommendations within the various bodies of the Convention and to continuing to support the Working Group on Strategies and Review and the Executive Body in defining a policy response to the 2016 Assessment Report.
