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Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer
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Item 7 of the provisional agenda*

Outcome of the workshop on hydrofluorocarbon management

Workshop on hydrofluorocarbon management: conclusions and identification of further discussion points

Summary by the rapporteurs

I. Introduction

1. In accordance with paragraph 2 of decision XXV/5 of the Twenty-Fifth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, the Ozone Secretariat convened a workshop on 11 and 12 July 2014 to continue discussions on hydrofluorocarbon (HFC) management issues. The present summary presents the key issues discussed at and the conclusions of the four sessions of the workshop as summarized by the rapporteurs, including issues for further consideration by the parties at the thirty-fourth meeting of the Open-ended Working Group.

II. Session 1: Technical aspects

2. There are many existing alternatives to HFCs available in the refrigeration, air-conditioning and foam sectors. Many such alternatives have low or no global-warming potential (GWP) but are flammable and need to have mitigating design or special installation and servicing treatment to reduce risks. Currently, such alternatives often have higher capital or operating costs than hydrofluorocarbons (HFCs) in order to mitigate the risks. New non-flammable alternatives to HFCs are also being commercialized and developed for those sectors. These unsaturated HFCs (or HFOs) have very high operating costs at present, and their global availability is not clear at this time. Unlike in the past, different refrigerants will be required for different applications and different sized technologies. Assisting small and medium-sized enterprises in making a transition is a challenge for all countries.

3. Significant growth in HFC use is expected in Article 5 parties owing to population growth, urbanization, electrification and consumer patterns. Growth in refrigerant use will also increase energy consumption and greenhouse gas emissions.

4. A number of policies and regulations to control HFCs are now in place in a number of countries and regions. These policies and regulations have created interest in markets to develop alternatives.

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5. A multitude of refrigerants for different applications in the future will require careful management by businesses. There are some foam, air-conditioning and refrigeration subsectors that do not currently have commercialized low- or no GWP alternatives (e.g., spray foam and metered dose inhalers). Some low-GWP alternatives are not yet mature.

6. Alternatives to HFCs should address environmental sustainability (including in relation to other environmental issues) and similar or improved performance, while addressing safety and cost issues. Air-conditioning equipment operating in high ambient temperatures requires special attention in order to maintain similar efficiency to that of HCFC-22.

7. The timelines for the deployment of alternatives to HFCs depend on commercial availability, research and development for new equipment and components, regulatory approval for safety and energy efficiency and the updating of international and domestic standards and codes to allow their use and servicing.

8. The use of flammable alternatives requires the reassessment of traditional procedures and the establishment, development and implementation of relevant standards and codes related to the use of refrigerants, equipment and energy efficiency. Many developing countries adopt non-Article 5 standards by default, which can be more restrictive than necessary, and the interpretation of these standards within developing countries can also be inconsistent.

9. Hurdles preventing the development and commercialization of alternatives to HFCs include different national regulations, which have created a patchwork of approaches and uncertainty in the market and the lack of a globally consistent signal. This has led to reluctance by manufacturing and refrigerant companies to invest.

10. Businesses in developing countries are concerned about potential requirements to transition several times; however it was noted during the workshop that sometimes transitions are part of business. There was also a concern about technologies being phased out being foisted on Article 5 countries.

11. For industry, a global target or signal needs to be set to provide predictability and confidence for investment in research and development and for the commitment of funds to develop and commercialize alternative technologies. A global framework would drive faster global change.

12. In conjunction with a global target, time is needed for alternative technologies to be commercialized, validated and become available in developing country markets. A staggered approach could be taken to introducing alternative technologies in sectors where low-GWP technologies are already available.

13. For developing countries, demonstration projects will assist in building confidence in new technologies (e.g., carbon dioxide cascade in supermarkets, pilot air-conditioning systems and transport refrigeration). Developing countries need to consider adapting international or other domestic standards and codes on refrigerants, equipment and energy efficiency that meet their circumstances rather than just adopting them directly. Technologies that meet a range of environmental criteria and meet new policy challenges will provide confidence for transitions to take place (“future proofing”).

14. Technical support is needed to assist businesses in developing countries in building the skills of servicing technicians in order to handle the many new flammable refrigerants and technologies coming online that contain existing refrigerants with ozone-depletion potential or high global-warming potential.

15. Financial incentives to support the introduction of low-GWP alternatives, including through the Multilateral Fund, would be helpful. For example, looking at increasing the incremental operating cost threshold could assist in the introduction of non-flammable alternatives to HFCs through the phase-out of hydrochlorofluorcarbons (HCFCs).

III. Session 2: Legal aspects, in particular mutually supportive measures between the ozone and climate regimes

16. Regarding the management of HFCs, the Vienna Convention and its Montreal Protocol and the United Nations Framework Convention on Climate Change and its Kyoto Protocol can complement each other. It is possible to fulfil the obligations under both regimes simultaneously.

17. The synergies between the Vienna Convention and its Montreal Protocol and the United Nations Framework Convention on Climate Change and its Kyoto Protocol were noted during the workshop. Addressing HFCs creates an additional opportunity for cooperation and mutual support

between the two regimes. The two regimes can be complementary to each other, allowing the obligations under both regimes to be fulfilled simultaneously by parties. However, this is dependent on all countries identifying and resolving any potential conflicts regarding the sharing of responsibilities, finance, timing, equity, regime development and other matters for the future implementation of the regimes.

18. Jurisdictional overlap between the two regimes is an opportunity to examine and resolve issues such as principles of equity and timing and to determine shared responsibilities among the regimes. Current and future conflict issues can be resolved through conflict clauses and reaching agreement on the sharing of responsibilities.

19. The availability of alternatives remains an issue of concern, in particular to developing countries and those with high ambient temperatures, where work is ongoing to address the lack of alternatives. Sending the right signals to industry would begin to address the issues of available, applicable and economically viable alternatives to create an enabling environment to move forward on the issue of HFCs.

20. Although legal concerns regarding HFCs remain, there needs to be political will in order to address the issue of HFCs. Once there is political will, parties can address legal issues to allow for controlling HFCs. These issues include, but are not limited to, definitions of what is high and what is "low" GWP, fairness and others, including common but differentiated responsibilities and respective capabilities. These issues must be considered carefully during the negotiation process, if any, on proposed amendments to the Montreal Protocol.

21. The legality of addressing HFCs within the Montreal Protocol and the scope of Article 2 of the Vienna Convention and its provisions to sufficiently provide support for any proposed amendments was raised. Considering that the Vienna Convention is based on the requirement that parties protect human health and the environment, which is enshrined in its articles, could be a basis for action by parties on HFCs. Furthermore, it is possible to resolve these concerns through a possible amendment which calls for participation by countries.

22. Addressing the principle of common but differentiated responsibilities and respective capabilities within the context of a possible HFC phase-down remains a concern for some parties, although the Montreal Protocol is a good example of this principle in practice. The specific application of the principle includes the grace period for the phase-out schedules for Article 5 parties, processes for technology transfer and the provision of financial assistance through the Multilateral Fund. However, the issue of common but differentiated responsibilities would need to be considered afresh in the light of the specific circumstances surrounding any HFC amendment negotiated.

23. The challenge surrounding ensuring fairness and regime development was stressed as a collective challenge, but one that could be resolved within the context of negotiating a possible amendment. During that process, views could be heard and action proposed to address those concerns, which could then be taken into account through adoption of any text.

24. Addressing HFCs in a mutually supportive manner could represent a valuable approach to bridging the two regimes while at the same time providing an opportunity for cooperation and mutual support. Parties in both regimes could identify and develop approaches to effectively address HFCs. The two regimes could be complementary to each other, allowing the obligations under both regimes to be fulfilled simultaneously by parties. However, this is dependent on all countries identifying and resolving any potential conflict regarding the sharing of responsibilities, finance, timing, equity, regime development and other matters for the future implementation of the regimes.

25. Parties are free to decide to modify a treaty or conclude a new treaty on the same subject . It was noted that treaties could be amended only if there was agreement by all parties, through a negotiating process. Where a conflict between the climate regime and any amended Montreal Protocol arose, a clause in the amendment clarifying its effects on the provision of the United Nations Framework Convention on Climate Change could be included to resolve the conflict.

26. The acceptance of scientific evidence regarding the effects of HFCs on our climate could encourage discussions on addressing the HFC issue. This, along with global commitment and political will, is needed for a comprehensive and holistic approach to HFCs. Differences between countries must be recognized and solutions tailored to meet the needs of countries.

IV. Session 3: Finance and technology transfer

27. On a framework for a financial mechanism for the management of HFCs, it was noted that the financial mechanism of the Montreal Protocol had been effective in providing technical and financial assistance for Article 5 parties in phasing out ozone-depleting substances. The Multilateral Fund had evolved to build up the relevant capacity, knowledge and experience to deal with phasing out chemicals in the sectors concerned.

28. The importance of considering energy efficiency was recognized and it was noted that, historically, the support of the Multilateral Fund had led to increased energy efficiency.

29. It was stressed that, although HFCs were being addressed under the present Montreal Protocol, in order to leapfrog HFCs, the right incentives were necessary. At present, Multilateral Fund guidelines provide an incentive (25 per cent) for minimizing climate impact. Furthermore, setting clear targets may help to provide some of incentives necessary.

30. Assisting Article 5 parties in maximizing the climate benefits of HCFC phase-out and managing HFCs will be complex, in view of the diverse range of alternatives that are available and under development, depending on the country circumstances, the sectors addressed and the specific applications targeted.

31. The financial and technology mechanisms under the climate regime address HFCs from a broader perspective, aiming at assisting developing countries in transitioning to low carbon pathways. There are good examples of cooperation between the financial mechanisms of the two regimes.

32. Technology transfer is considered essential for addressing HFCs. There are different challenges for technology users, technology takers and technology providers. The need to assess barriers for technology transfer was identified.

33. Furthermore, there was a broad acknowledgement of usefulness of demonstration projects to respond to specific (technical) challenges.

34. It is challenging to find a balance between existing targets under the Montreal Protocol and at the same time address climate impacts and avoid HFCs. The question was also considered to what extent financial and other incentives are enough to leapfrog HFCs.

35. Consideration needs to be given to what extent a choice should be made for one or another regime to manage HFCs to address challenges in developing countries. Or is it possible to build upon and scale up cooperation between the financial mechanisms under both regimes?

36. The availability of financial resources to cover the cost of transition, especially for small and medium-sized enterprises, was mentioned as one of the specific challenges. In addition, the difficulty of providing resources under the existing regime of the Montreal Protocol without clear control targets for HFCs was discussed, as was the difficulty of accepting targets for HFCs if resources were limited or uncertain.

37. On technology transfer, there is a need for a diverse range of alternatives that are tailor made and that suit countries' needs. The challenge is how to address the fact that some alternatives are under development. Challenges with regard to standardization and specific challenges with regard to availability, costs and technology transfer of alternatives in the air conditioning sector and high ambient temperature regions were also identified. The extent to which the Multilateral Fund addressed all relevant aspects related to technology transfer relevant to address HFCs (technology needs assessment, capacity building, research and development, and enabling environment and barriers) was questioned.

38. Parties were encouraged to address HFCs with an open mind. Several options were mentioned for parties to further explore:

(a) Setting a clear target on HFCs to increase (financial and non-financial) incentives to develop and implement low-GWP and energy efficient alternatives;

(b) Developing a leapfrog approach for Article 5 parties and a leadership approach for non-Article 5 parties to address the management of HFCs;

(c) Using the experience of the Montreal Protocol and its financial mechanisms to leapfrog HFCs and at the same time consider energy efficiency;

(d) Considering:

(i) The needs of regions with specific challenges (especially those with high ambient temperatures);

(ii) A sectoral approach, taking into account cost-effectiveness and the availability of alternatives;

(iii) Allowing for HCFCs to be used in specific sectors until non HFC alternatives are available;

(iv) Further demonstration projects that addressed specific challenges;

(v) How business cases for alternatives could be improved, such as by public-private partnerships;

(e) Identifying options for a holistic approach in addressing the management of HFCs as well as energy efficiency in the financial mechanism, including related savings;

(f) Assessing ways to scale up cooperation between the financial mechanisms of the Montreal Protocol and the climate regime;

(g) Assessing needs, barriers and an enabling environment for technology transfer;

(h) Discussing ways to enable effective transfer of technologies in a comprehensive and transparent manner.

V. Session 4: Policies and measures for HFC management

39. In relation to policies and measures for HFC management, key drivers in most cases are related to reducing their effect on the climate, especially given the high growth of HFC use recently. These policies and measures are designed to both restrict and reduce emissions of HFCs and to restrict their use. The increased availability of alternatives also assisted countries in adopting policies and measures controlling HFCs.

40. For some countries, such policies and measures are being taken in conjunction with HCFC phase-out activities. Policies often use a combination of mandatory or regulatory measures and voluntary approaches, such as proactive measures to promote low-GWP alternatives. For manufacturing sectors, the focus is on conversion from high-GWP to low-GWP alternatives. For servicing sectors, the focus is on containment and the promotion of new energy-efficient refrigeration and air-conditioning equipment using low-GWP refrigerants.

41. These policies and measures address multiple objectives as well as climate – such as energy efficiency, safety, affordability and business competitiveness. Some policies adopt different phase-out timelines for specific sectors, specific applications or HFC species, depending on the situation of the country, the availability of technologies and industry acceptance. Challenges included providing support to businesses to innovate, achieving broader industry acceptability and integrating HFC policies with other national policies, including transport and safety policies.

42. For industry, the adoption of standards is important in order to ensure high performance and safety of equipment. Appropriate controls and the enforcement of measures is needed to ensure good maintenance and servicing practices for the safe operation of equipment using flammable alternatives.

43. In considering market-based mechanisms, industry representatives indicated a variety of views about their effectiveness, although this depended in part on the definition of a market mechanism. The importance of the price signal was highlighted as a means of changing consumer demand, taking into account the availability of mature alternatives in the country. There were different views on the need to harmonize standards – harmonizing standards would lead to better economies of scale and higher energy efficiency of equipment, but might also lead to unnecessary higher costs in some markets.

44. The panel members indicated that a global decision was needed in order to provide a level playing field and certainty for industry to make long-term investment decisions. Concern was expressed that segmented markets would appear as a result of fragmented policymaking and that economies of scale would not be able to be delivered as a result of differing demands and alternatives. It was suggested that standards and codes be harmonized with policies and regulations. At present, new technologies are being commercialized and coming onto the market as a result of the national and regional policies being implemented. However, there are risks for early movers related to market acceptability, lack of trained technicians, safety and reputational risk. A global decision or signal would allow businesses to proceed with commercialization of a full range of alternatives, including for larger refrigeration and air-conditioning equipment. In this context, industry representatives indicated that the model adopted by the Montreal Protocol had proved highly successful.

VI. Identification of further discussion points

45. The parties might like to consider further discussions on:

(a) Whether existing national and regional policies and measures are sufficient to drive the development of alternatives to HFCs or whether a global signal is required to enable industry to make necessary investments to move ahead with the development and commercialization of alternatives to HFC technologies;

(b) Whether there is more that the Multilateral Fund can do to assist Article 5 countries to transition towards low- or no-GWP alternatives within the existing HCFC phase-out, including through greater assistance with technician training, targeted demonstration projects, considering incentives for improving the energy efficiency of alternatives or more flexibility in relation to providing incremental operating and capital costs;

(c) Whether actions can be taken by parties at the national level to encourage alternatives to HFCs to be taken up in preference to HFCs, such as regulations, adoption of standards or codes, incentives for improving energy efficiency of alternatives or prioritizing technical support or guidance that will facilitate the adoption of low- or no-GWP alternatives;

(d) Whether cooperation with the United Nations Framework Convention on Climate Change is required to clarify issues, such as legal aspects, definitions of low- and high-GWP alternative substances and possible cooperation with the financial and technology mechanisms;

(e) The issues that Article 5 parties might face if considering a phase-down approach, such as the challenges in regions with high ambient temperatures, the availability of alternatives in the air conditioning sector, ways to enhance technology transfer and small and medium-sized enterprises.