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**Montreal Protocol issues: proposed amendments to the
Montreal Protocol**

**Proposed amendment to the Montreal Protocol submitted by
the European Union: frequently asked questions**

Note by the Secretariat

The annex to the present note contains information submitted by the European Union. It is presented as received by the Secretariat, without formal editing.

* UNEP/OzL.Pro.WG.1/36/1.

Annex

European Union HFC Amendment Proposal - Frequently Asked Questions**Scope of the Montreal Protocol****1. Do HFCs fit within the scope of the Montreal Protocol?**

Article 2(2)(b) of the Vienna Convention states that Parties shall: *"Adopt appropriate legislative or administrative measures and co-operate in harmonizing appropriate policies to control, limit, reduce or prevent human activities under their jurisdiction or control should it be found that these activities have or are likely to have adverse effects resulting from modification or likely modification of the ozone layer"*. As HFCs are commonly used as alternatives for ODSs, the Montreal Protocol is responsible for action to prevent their significant growth.

In Article 1 of the Convention, *"adverse effects"* means *"changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind."*

This definition enables Parties to *"harmonize appropriate policies"* with a view to preventing changes to the climate that have deleterious effects resulting from ozone layer protection policies. One way the Parties may cooperate in *"harmonizing their policies"* is by agreeing to avoid the use of HFCs as replacement for CFCs and HCFCs in implementing their obligations under the Montreal Protocol. This is partly addressed at present, by incentivizing transitions to low-GWP alternatives, in decision XIX/6, and thereby avoiding the use of HFCs in some cases, but not all.

2. Have the Parties addressed HFCs under the Montreal Protocol before?

The Montreal Protocol has a long history of considering HFCs, their uses as alternatives to ozone-depleting substances and monitoring their trends. Therefore there are many precedents to the amendment proposal(s) for addressing HFCs under the Montreal Protocol. Examples of decisions concerning HFCs including those provided in document MOP26/INF6 are:

- MOP Decision I/10 (1989): requests the SAP to give full consideration to ODPs, greenhouse-warming potential and atmospheric lifetime of the various atmospheric constituents whether controlled or not, and advise the Parties as to the environmental characteristics, both currently and in the light of projections of future production and emission, of all relevant atmospheric constituents;
- MOP Decision II/13 (1990): requests the SAP to include in its work: an evaluation of the ozone-depleting potential, other possible ozone layer impacts, and global warming potential of chemical substitutes (e.g. HCFCs and HFCs) for controlled substances;
- MOP Decision IV/13 (1992): requests the TEAP and its TOCs to report annually to the OEWG the technical progress in reducing the use and emissions of controlled substances and assess the use of alternatives, particularly their direct and indirect global-warming effects.
- MOP Decision X/16 (1998): convened a workshop, in collaboration with UNFCCC, with the view to assisting establishment of and providing information on HFCs and PFCs and potential ways to limit their emissions,
- MOP Decision XIV/10 (2002): called on TEAP to collaborate with IPCC to develop report: Safeguarding the Ozone Layer and the Global Climate System; Issues Related to HFCs and PFCs,
- MOP Decision XIX/6 (2007): called on the Multilateral Fund Executive Committee (ExCom) to give priority to substitutes and alternatives that minimize other impacts to the environment, including on the climate, taking into account GWP and other factors,
- MOP Decision XX/8 (2008): called for a report and workshop on high-GWP alternatives, principally HFCs, to ODS,
- ExCom Decision 60/44 (2010): allowed for up to a 25% funding increment, above cost-effectiveness thresholds, when needed for climate benefits, mainly to avoid selection of high-GWP HFCs,

- MOP Decision XXIV/7 (2012): requested the TEAP to update information on ODS alternatives and technologies, and identify the opportunities for the selection of environmentally sound alternatives to HCFCs.
- MOP Decision XXV/5 (2013): requested the TEAP to prepare a report to provide an update on information on alternatives to ODS, and assessing whether such alternatives are environmentally sound;
- MOP Decision XXV/5 (2013): convened a workshop, back to back with the thirty-fourth meeting of the Open-ended Working Group, to continue discussions on hydrofluorocarbon management.

There is a great advantage in using the Montreal Protocol's experience, as well as the fact that the same sectors that use HCFCs employ HFCs, to complement the current activities of the Protocol and the UNFCCC. Furthermore an HFC phase-down under the Montreal Protocol will help increase the environmental and climate benefits of the ODS phase-out.

Relationship with UNFCCC

3. How does the EU amendment address the relationship with provisions under UN Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol?

Since the EU proposes a phase-down rather than a phase-out, some HFC emissions will remain. As the Montreal Protocol and the UNFCCC are complementary, the EU amendment proposes to phase-down HFCs by setting out specific provisions, including for Article 5 Parties, for the HFCs listed in a new Annex F. In addition, HFC emissions will remain reported and accounted for under the UNFCCC.

The UNFCCC and its Kyoto Protocol refer to “greenhouse gases not controlled by the Montreal Protocol”. To ensure that HFC emissions will be accounted for under the UNFCCC, and any related legal instruments that the Conference of the Parties may adopt, the EU amendment specifies that HFCs will not fall under this exclusion. This is made explicitly clear in Article I.B. of the amendment proposal, adding to the definition in Article 1 of the Protocol, that the substances listed in the new Annex F *are not controlled substances as defined in paragraph 4 of this Article*. Since HFCs are not controlled substances, according to this definition, they are not excluded from the scope of the UNFCCC.

Furthermore, Article III of the proposed amendment clarifies that *This Amendment is not intended to have the effect of excepting hydrofluorocarbons from the scope of the commitments contained in Articles 4 and 12 of the United Nations Framework Convention on Climate Change and in Articles 2, 5, 7 and 10 of its Kyoto Protocol that apply to “greenhouse gases not controlled by the Montreal Protocol.”* It makes clear that the proposed amendment would not exclude HFCs from the coverage of the relevant provisions of the UNFCCC and the Kyoto Protocol. It further states that Parties would continue to apply those provisions for as long as they remain in force. This is in line with Article 31(3)(a) of the Vienna Convention on the Law of Treaties, which provides that subsequent agreements between the Parties should take into account the interpretation of the treaties.

4. What is the relationship between production/consumption and emissions?

Like most ODSs, HFCs are man-made gases, to be used in applications such as refrigeration, air-conditioning, foams, solvents and aerosols. HFCs are also used as feedstocks or process agents for the production of other chemicals. HFC emissions occur during production, by-production or co-production as well as during their use.

The EU amendment proposal addresses HFC production and consumption: HFC emissions will therefore be reduced:

- Through the phase-down of production and consumption;
- By introducing provisions to limit and destroy by-production of HFC-23 during the production of HCFC22 which will reduce emissions of HFC-23 substantially.

Consumption phase-down schedules

The ambition level of any phase-down is established through the choice of baseline years, the percentage of HCFCs included and the subsequent reduction steps.

5. What are the main features of the combined HCFC/HFC approach for consumption sectors?

In the EU proposal there are two aspects of a combined HCFC/HFC approach:

- A combined HCFC/HFC baseline for consumption expressed in CO₂eq to level the playing field between Parties that have taken different pathways in phasing-out HCFCs. This approach takes into account that Parties may still need to phase-out HCFC consumption by the time the freeze or when the first reduction step comes into place in order to meet their domestic and/or export needs. A combined baseline expressed in CO₂eq for the consumption sector allows for the necessary flexibility for countries to prioritize those sectors where climate friendly alternatives are available. This is similar to the approach taken earlier under the Montreal Protocol, where the baselines for groups of ODSs were expressed in ODP.
- A combined consumption schedule for HCFCs/HFCs for Article 5 Parties expressed in CO₂eq, while maintaining the already agreed reduction schedule for HCFCs.
The proposal introduces a freeze for the combined climate impacts of HCFC and HFC consumption - expressed in CO₂eq - beginning in 2019. To comply with the proposed initial freeze Article 5 Parties do not have to target HFC consumption first, but have the option to reduce climate impacts by maximizing the benefits of the ongoing HCFC phase-out. In this context it is important to note that the proposed amendment does not affect existing HCFC phase-out commitments. While minimizing the climate impact, this approach would ensure that Parties can cope with the autonomous growth of use in certain sectors. It also provides for flexibility for low GWP alternatives to mature, while at the same time optimizing synergies with the HCFC phase-out schedule.

6. Would a combined HCFC/HFC approach allow for growth in consumption in the certain sectors?

To reach a freeze of the combined climate impacts of HCFC and HFC consumption Article 5 Parties will have the flexibility to prioritize either HCFC or HFC transitions to low GWP alternatives. The HCFC phase-out provides for limited capacity to absorb unavoidable HFC growth in sectors where alternatives are not, or not yet, available. However, this growth in HFCs is limited by the autonomous growth rates of the relevant sectors and will be further curbed by the phase-down schedule to be defined by 2020.

The use of the CO₂eq as the measurement tool provides additional room for growth in volume of certain sectors, depending on the choice of alternatives for both HCFCs and HFCs. The lower the GWP of the alternatives in one sector, the more room will be available for growth in other sectors. Not only is the replacement of substances by those with lower GWPs an option, but also reductions of the quantities used for a specific application, for example by reducing charge sizes of refrigeration and air-conditioning equipment.

Article 5 Parties – consumption schedule

The ambition level of any phase-down is a result of the selection of the baseline years, the percentage of HCFCs included and the availability of high GWP HFCs, following reduction steps in the production sector.

7. What is the rationale for choosing the baseline HFC/HCFC ratio for the consumption sectors?

The reference period 2015/2016 addresses comments made by some Article 5 Parties, indicating that the baseline should reflect the current needs of the sectors concerned. Since both HFCs and HCFCs are used, both groups of substances had to be represented in a balanced manner. Even under the assumption that by 2019, the proposed date of the freeze, HCFC consumption should have been reduced significantly to reach the 2020 HCFC phase-out step, a 100% share of HCFC consumption seems appropriate to compensate for their partial replacement by HFCs and some autonomous growth of the sectors.

8. Which data have been taken into account when choosing the baselines for Article 5 Parties?

In choosing the data and projecting the impact of different scenarios for an HFC phase-down, recent TEAP reports have provided a solid basis, complemented by publicly available data, HFC inventories and studies, modelling the HFC demand for different regions (see also http://ec.europa.eu/clima/policies/f-gas/legislation/studies_en.htm).

The approach was tested in a series of country level case studies representing Article 5 Parties with different features of consumption and production. A summary of the case studies can be found on the OzoneSecretariat website: http://conf.montreal-protocol.org/meeting/workshops/hfcs-intersessional-informal-consultation/Parties-contributions/English/European_Union-Case_Study_Summary.pdf.

9. What is the rationale for choosing 2019 to meet the freeze for Article 5 Parties?

The EU took into account the multiple benefits of early action in terms of limiting climate impact and reducing the costs of phasing-down HFCs over a longer period for all relevant stakeholders. Since, initially, compliance can be reached by continuing the efforts agreed in decision XIX/6, prioritizing climate friendly alternatives, it is appropriate to start as early as practically possible. The date of 2019 takes into account that time would be required for the implementation of the obligations. In addition, by proposing to define the phase-down by 2020, will allow Parties to benefit from a larger range of alternatives that are expected to become available in the future, providing Parties with flexibility in prioritizing those sectors where HFCs will still be required in the short term.

10. How can phasing in of HFCs be avoided under a freeze scenario?

The EU proposes that the phase-down schedule for Article 5 Parties should be defined by 2020, when detailed data on production and consumption of HFCs would have become available. It is anticipated that the market will have further developed acceptable and available climate friendly alternatives by that time, which will allow Parties to define a realistic and ambitious phase-down schedule.

Even if in some cases a freeze could be maintained despite transitions to HFCs, Parties should keep in mind the anticipated phase-down scenario. Parties should optimize climate benefits in reaching the defined freeze, and consider cost-effective ways to further optimize the choice of climate friendly alternatives by encouraging leapfrogging HFCs while phasing-out HCFCs. Above all: preventing the phase-in of HFCs will reduce costs of the HFC phase-down for all relevant stakeholders: (donor)Parties, industry and end-users alike.

11. On what basis will the proposed reduction schedule for Article 5 Parties be determined in 2020?

Although it has not been explicitly stipulated, it is anticipated that any schedule will be decided by the Parties based on an extensive review of the data available on HFC production, consumption and emissions and on the availability of climate friendly alternatives. By that time inventories of current HFC consumption will be available for many countries which will allow taking an informed decision on the long-term reduction schedule.

Non-Article 5 Parties - consumption schedules

12. What is the rationale for choosing the baseline HFC/HCFC ratio?

The choice of a combined 100%HFC/45%HCFC baseline for the period 2009/2012 reflects the preference of some Parties for a recent historic baseline for which reliable data on HFC uses are available. The fact that some non-Article 5 Parties have already taken considerable steps to address HFCs, leaving the most challenging sectors still to be addressed, requires the inclusion of a share of HCFC consumption allowable under the agreed terms of the HCFC phase-out to reflect the needs of the sectors concerned.

13. Which data have been taken into account when choosing the baseline for non Article 5 Parties?

The baseline proposed takes into account public data on the consumption of HFCs and HCFCs as reported under the Montreal Protocol, UNFCCC and other available data.

14. Why is there no freeze defined?

In considering the fact that a freeze establishes an obligation for Parties to meet a level of 100% of their baseline in the first compliance step, the EU proposal takes into account that most non-Article 5 Parties have already taken action to address HFCs before the obligation comes into effect in 2019. In order to address this, and taking into account the fact that the baseline also includes a share of HCFCs, it is appropriate to define a lower percentage to comply with for the year 2019.

Production Phase-down**15. What is the rationale for choosing the baseline HFC/HCFC ratio?**

The choice of a combined 100% HFC/70% HCFC baseline for the period 2009-2012 reflects:

- A historic, but recent baseline;
- Leveling the playing field. In comparison to previous ODS schedules, the situation has changed: almost 50% of production is based in Article 5 Parties, this justifies choosing a similar baseline for both Article 5 and non-Article 5 Parties;
- During and after the chosen reference period (2009-2012) a conversion from HCFCs to HFCs production might have taken place;
- Transitions will be made to alternatives with lower GWPs in sectors where they are or are becoming available;
- It is therefore likely that the HCFC production in place during the baseline period would not be replaced by HFC production or by production of substances with lower GWP;
- Part of the HCFC production to meet consumption needs of Article 5 Parties was being produced in non-Article 5 Parties in the relevant period, while most of the HCFC consumption in non-Article 5 Parties had already been phased-out.

16. What are the basic considerations for selection of the production phase-down Schedule?

In choosing the production phase-down schedule for non-Article 5 Parties, the following considerations are taken into account:

- Minimizing the climate impact in meeting global demand, based on projected transitions to alternatives in the consumption sector;
- Availability of alternatives that drive demand in the consumption sector;
- Allowing for an end tail to meet consumption needs for essential uses;
- Climate benefits of early action.

Differentiation**17. How does the EU see the role of non-Article 5 Parties?**

The EU proposal introduces different commitments for Article 5 and non-Article 5 Parties requiring non-Article 5 Parties to comply with stricter measures and obliging them to take action first. The EU proposal acknowledges that more time may be required for Article 5 Parties to analyze their situation with regard to the consumption sector, to enable them to define the appropriate measures.

In the consumption sector the EU proposal differentiates between Article 5 and non-Article 5 Parties. It does not apply the same obligations with a deferred schedule ('grace-period'), but proposes an entirely different set of requirements, acknowledging that Article 5 Parties have just started the process of phasing-out HCFCs.

The less prominent difference in the design of the production phase-down schedules for Article 5 and non-Article 5 Parties and the rather similar start- and end dates, compared to previous ODS phase-out schedules,

reflects the fact that almost half of the production is now based in Article 5 Parties operating on a global market.

Financing

18. How would technical and financial support be provided for the EU Amendment?

The EU anticipates that financial and technical support will be provided through the existing financial mechanism, the Multilateral Fund, and that financial support will be provided to meet the agreed incremental cost of implementation. Details related to the implications of the new HFC requirements on the operation of the Multilateral Fund have to be discussed in connection with the amendment proposal, since the costs will be depending on the level of ambition of the agreed outcome.

19. How much would the amendment cost, and could the TEAP make an estimate of its costs?

The cost of the amendment will ultimately depend on the level of ambition to be agreed in the phase-down schedules and the success in aligning the HFC phase-down with the HCFC phase-out and, in doing so, leapfrogging HFCs. The TEAP could be requested to provide cost estimates of agreed incremental costs for Article 5 Parties to comply with HFC targets in specific periods for several scenarios.

20. How will finance be aligned with HCFC phase-out and what exactly will be financed in case of a freeze?

The EU anticipates that Parties will agree on prioritizing actions to leapfrog HFCs in the process of phasing out HCFCs, as well as addressing avoiding of phase-in of high GWP HFCs in a timely and cost-effective manner.

Alternatives

21. Are alternatives available?

Information provided by the TEAP as well as by experts representing industry in recent workshops shows that low GWP alternatives are increasingly available for many sectors. However, challenges remain for the air-conditioning sector, specifically for certain applications in Parties with regions with very high ambient temperatures. It is expected that an agreement on phasing down HFCs globally would send a clear signal to industry and provide the necessary incentive to companies to accelerate the pace of their investments in developing new alternatives. Early action taken at domestic level by a number of non-Article 5 Parties, including the EU, but also by some Article 5 Parties has already started this process, but would be strengthened by a global agreement.

22. What sources of information are available on alternatives?

Parties have established three independent assessment panels that provide information on the science, effects, technical and economic aspects of measures and alternatives. Over the years, the Multilateral Fund secretariat and the Implementing Agencies as well as individual Parties have provided comprehensive factsheets, background documents and financial assistance contributing to the information assessed and provided by the panels.

The TEAP provides regular updates on availability, costs, safety, energy efficiency of alternatives, whereas the SAP and the EEAP provide the latest insights and advice on the science and effects of the actions taken by the Parties every four years. Reports of the panels are available through the Ozone Secretariat website.

The UNEP Ozone secretariat has provided comprehensive factsheets and background documents summarizing the information provided by the assessment panels in 2014 and 2015.

23. Is energy efficiency considered in the amendment proposal?

Energy efficiency is not explicitly mentioned in the amendment proposal, but considered as an important co-benefit of phasing-down high-GWP HFCs. In the assessment of potential alternatives to ODS and high-GWP HFCs, energy efficiency is an important factor to be taken into account by the countries. Historically energy efficiency was often improved during such transitions; however, it is assumed that energy efficiency will remain a key driver for equipment design, enabling the GWP of alternatives to be taken into account. In addition some low-GWP alternatives, including not-in-kind alternatives, have substantially improved energy efficiency, depending on the application and ambient temperature, as well as operational conditions.

Phase-down versus exemptions**24. What sectors and continued uses could be included within the 15% phase-down plateau?**

In setting a plateau of 15% of the calculated baseline, the EU proposal recognizes the need for continued use of some (high-GWP) HFCs. The plateau is chosen to enable continued use of HFCs in specific applications such as for MDIs, specific military or fire protection uses, without having to set up an exemption and review procedure, limiting time and resources that would have to be spent by Parties on these accompanying procedures. This plateau may be reviewed by the Parties in the future. Defining a plateau rather than an exemption process will provide flexibility for Parties to design their policies in a way best suited to their national circumstances and priorities. However, the EU would be open to consider the need for an exemption regime for specific uses in view of reaching the same objective.
