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

Enabling a global phase-down of hydrofluorocarbons: discussion paper submitted by the European Union

Note by the Secretariat

The annex to the present note contains a discussion paper submitted by the European Union. According to the party, the information presented in the paper will further evolve as contributions from other parties to the Montreal Protocol on Substances that Deplete the Ozone Layer are taken into account. The information is presented as received by the Secretariat, without formal editing.

* UNEP/OzL.Conv.10/1/Rev.1-UNEP/OzL.Pro.26/1/Rev.1.

Annex

Enabling a global phase-down of HFCs A discussion paper submitted by the European Union

Version 6 November 2014

Encouraged by the constructive discussions on the management of HFCs at the workshop organised prior the 34th OEWG pursuant to decision XXV/5, in the informal discussion group convened at that OEWG and in bilateral contacts, the European Union (EU) wishes to further contribute to reflections on a balanced amendment of the Montreal Protocol to address HFCs, thus complementing the Protocol's achievements in phasing out ozone depleting substances.

This paper does not present a fixed EU position but is an invitation to other Parties to engage in a constructive dialogue. This paper will evolve in light of the feedback received.

Key messages

The EU fully supports an amendment of the Montreal Protocol to achieve a global phase down of the consumption and production of hydrofluorocarbons (HFCs).

Non-Article 5 countries, as major consumers of HFCs, must take the lead in this effort. At the same time, the EU believes that a broader base of support for an HFC amendment to the Montreal Protocol could be built up by more directly addressing the different situations in Article 5 and non-Article 5 countries in their progress in phasing-out HCFCs. The respective commitments have to respond to specific national circumstances, such as climate conditions and the expected growth of the refrigeration and air conditioning sector.

The EU believes that it would be consistent with the Montreal Protocol's design to consider for:

- 1. Non-Article 5 countries, an ambitious phase-down schedule for the consumption and production of HFCs, beginning in [2017];**
- 2. Article 5 countries,**
 - a freeze of *production of HFCs*, expressed in CO₂ equivalent beginning in [2019], and a longer-term reduction target;**
 - a freeze of the combined HCFCs and HFCs *consumption* on the basis of the combined climate impacts of HCFC and HFC expressed in CO₂ equivalent, beginning in [2019], while maintaining the existing HCFC phase-out schedule for consumption and production. The longer-term phase-down of the combined consumption of these chemicals in Article 5 countries would be agreed in the coming years.**

This approach, to limit the extent to which environmentally harmful HFCs can be introduced as alternatives to HCFCs, responds to the obligation under the Vienna Convention to prevent adverse effects to the environment as a result of measures taken to save the ozone layer and thus underlines the need to address HFCs by the Montreal Protocol. It builds on previous decision under the Montreal Protocol addressing HFC in this respect.

Action on HFCs under the Montreal Protocol would complement UNFCCC measures. The drafting of an HFC amendment can and should clarify the relationship between the two regimes to address the issue in the most effective way.

The EU invites all Parties to provide feedback on these ideas to enable a global phase-down of HFC as soon as possible, thereby maximising the climate benefits of the HCFC phase-out.

1. Background and motives

Although HFCs are not ozone depleting substances (ODS), these powerful greenhouse gases were mainly developed and deployed as a result of the Montreal Protocol's phase-out of ODS, most recently the phase-out of hydrochlorofluorocarbons (HCFCs). The HCFC phase-out is largely complete in industrialised countries (Non-Article 5 countries) while it has just started in countries operating under Article 5 of the Montreal Protocol (Article 5 countries). The Parties to the Protocol should now address the adverse effects of HFCs on the climate by taking appropriate¹ measures to phase down HFC production and consumption, foremost in Non-Article 5 countries, and to limit the introduction of HFCs as replacements for HCFCs in countries operating under Article 5 of the Protocol.

The EU welcomes the recently submitted amendment proposals from the North American countries, as well as from the Federated States of Micronesia. In particular, the EU supports – in line with its recent bilateral statements and declarations of G7 and G8 summits – the need for the Montreal Protocol to send an unambiguous regulatory and market signal that HFCs must be phased down and replaced by substances that avoid further harm either to the ozone layer or to the climate system. During the discussions the need for a clear signal to industry in which technologies to invest was repeatedly cited as essential for bringing climate friendly alternatives to the market and for accelerating their further development. To that end an ambitious phase-down of HFCs in Non-Article 5 countries is essential.

At the same time, the EU believes that for reaching consensus on a HFC amendment to the Montreal Protocol specific national circumstances should be better taken into account, in particular in countries with rapidly growing markets for refrigeration and air conditioning that may continue to rely on a combination of HFCs and other coolants in the near term. The EU believes that it would be consistent with the Montreal Protocol's design to use a more differentiated approach.

To address the combined climate impacts expressed in CO₂ equivalent of HCFCs and HFCs consumption in Article 5 countries, while maintaining the HCFC phase-out schedule for consumption and production agreed in 2007, is what distinguishes this approach most from amendment proposals already on the table. It provides greater regulatory flexibility and technological choice to Article 5 countries to replace HCFCs by alternatives that may include HFCs as long as the impact of those replacements on the climate system is capped.

The longer term phase-down of the combined consumption of these chemicals in Article 5 countries would be agreed in the coming years when baseline HFC consumption data and technological alternatives are better understood.

This approach builds on previous decisions of the MOP by limiting the extent to which HFCs - as environmentally harmful alternatives to HCFCs - can be introduced. This corresponds to the

¹ Article 2 paragraph 2 of the Vienna Convention for the Protection of the Ozone Layer provides that the Parties "[...] shall, in accordance with the means at their disposal and their capabilities [...] (b) 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".

Parties to the Montreal Protocol, all of which are Parties to the Vienna Convention, must ensure that measures taken to phase out HCFCs do not lead to the adverse effect of increasing global warming. As has been recognized by heads of government of all the major consumers and producers of HFCs, the Montreal Protocol and the UN Framework Convention on Climate Change can promote action on HFCs in a mutually supportive manner.

basic idea, that HFCs are addressed by the Montreal Protocol in order to prevent adverse effects to the environment as a result from measures taken to save the ozone layer.

For the EU, one clear message of the workshop on HFC management was that there are no legal obstacles for taking action on HFC under the Montreal Protocol that complement measures under the UNFCCC. The drafting of an HFC amendment therefore needs to clarify the relationship between the two regimes and to underline their complementarity. Compatibility with the UNFCCC could be achieved by introducing a new category of *regulated substances* in addition to the Montreal Protocol's definition of *controlled substances* in Article 1 paragraph 4, covering substances, such as HFCs, that have been introduced to replace ODS but that create adverse effects that impede achieving the objectives of other international environment agreements, in particular those for the protection of the climate system. These substances could be treated for the purpose of Article 2 to 10 of the Protocol like *controlled substances*, but which would only be subject to a phase-down and a specific commitment design linking of the climate effects of a basket of HFC and HCFC consumption in Article 5 countries. This approach would also address the concerns of those parties that (like the EU) want the UNFCCC to track the climate related benefits of regulating HFCs but (unlike the EU) see a potential conflict with UNFCCC provisions that exclude from its coverage substances *controlled by* the Montreal Protocol.

2. Detailed Suggestions

a. Rationale for differentiated commitment design for Article 5 and Non-Article 5 countries

An amendment should reflect the different situations of the Non-Article 5 and Article 5 countries with regard to the progress of the HCFC phase-out, the main driver for the deployment of HFCs. Such an approach, going beyond a merely deferred reduction schedule for Article 5 countries, would particularly respond to the principle of '*common but differentiated responsibilities and respective capabilities*' that should guide parties in their actions for reaching the objectives of the UNFCCC. This has been emphasized by many parties as prerequisite for pursuing climate benefits under the Montreal Protocol.

Since the HCFC phase-out is (nearly) accomplished in Non-Article 5 countries, it is appropriate for them to focus on the reduction of HFC consumption and production to mitigate the negative impacts of their already widespread use.

In Article 5 countries, where the HCFC phase-out has just started, the emphasis of the proposed measures on **consumption** should be placed on maximising the climate benefits of the HCFC phase-out. In this context it is recognised that the cumulative HCFC and HFC use is expected to grow significantly in Article 5 countries, not only as result of the HCFC phase-out but also driven by the growth of relevant sectors. The commitment design should offer sufficient flexibility to accommodate specific conditions and needs of individual countries. This could be accomplished by starting with a cap for the climate impacts of those sectors, leaving additional time to collect information on the use of HFCs in individual countries and further improve the access to low-GWP technologies before deciding on a long term reduction schedule.

Concerning the **production** of HFCs, the situation of Non-Article 5 and Article 5 countries differs less than at the time when measures on ODS were agreed. A significant proportion of HFC production (nearly 50%) is today located in Article 5 countries and a differentiated commitment design would need to be justified by economic constraints, e.g. linked to the more recent, or still ongoing, conversion of ODS production.

b. Commitment design for Non-Article 5 countries: HFC consumption and production

The commitments for Non-Article 5 countries under previous and current amendment proposals provide a good starting point for discussion. However, the EU experience of agreeing a regional reduction schedule, which will apply as of 1 January 2015², has demonstrated that a steeper and quicker decline is feasible to reach better environmental benefits at moderate costs.

Since some Non-Article 5 countries still consume HCFCs (as permitted under the Protocol), it is appropriate to include a certain proportion of HCFC production and consumption in the baseline. But this proportion should not be determined by the real consumption and production in a given reference period, but should be calculated on the basis of the 1989 baseline, determined for the HCFC phase-out. Otherwise those Parties which achieved the HCFC phase-out ahead of schedule would be penalised. A figure of [15%] of the 1989 HCFC baseline, expressed in CO₂ equivalents, in addition to the HFC production and consumption, would be at the higher end of the remaining, average Non-Article 5 countries' HCFC supply.

In summary, at this stage of the discussions, the commitment of Non-Article 5 countries could include the following:

- Baseline: Average consumption and production of HFCs in the years [2009 to 2012] + [15%] of the 1989 baseline for the HCFC phase-out, expressed in CO₂ equivalents,
- A reduction schedule for HFC production and consumption starting in [2017]:
 - [2017 85%
 - 2018 65%
 - 2021 45%
 - 2024 30%
 - 2027 25%
 - 2030 15%]

c. Commitment design for Article 5 countries: Consumption

In view of the early stage of the HCFC phase-out in Article 5 countries and remaining concerns about the availability of low-GWP alternatives to HFCs in specific conditions, a more flexible approach for the reduction of the climate impacts of the sectors concerned is required. In this context the most relevant sectors, such as refrigeration and air-conditioning, are expected to grow in Article 5 countries.

In line with previous decisions of the Parties to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate,³ the combined climate impacts of HCFC and of HFCs should be targeted by a binding commitment. Instead of agreeing on an HFC specific reduction schedule with a longer grace period, a commitment to freeze the combined HCFC/HFC basket from [2019] onwards – expressed in CO₂ equivalent – would allow a seamless continuation of the work towards the HCFC phase-out as agreed in 2007. These commitments should build upon the agreed HCFC phase-out (Decision XIX/6) and will ensure that the HCFC-commitments remain unaltered for Article 5 and Non-Article 5 countries. This element is the main difference to the amendment proposals submitted to date and would emphasise the intrinsic link of actions on HFCs with the ongoing HCFC phase-out. This element would address

² Regulation (EU) No 517/2014 of 16 April 2014 on fluorinated greenhouse gases, OJ L 150, 20/05/2014, p. 195
http://ec.europa.eu/clima/policies/f-gas/index_en.htm

³ See in particular Decision XIX/6

concerns of some parties that a commitment on a new group of substances could impair the phase-out already agreed.

With a declining HCFC consumption, driven by the ODS phase-out, such a combined HCFC/HFC consumption freeze would allow for some growth in HFC consumption which might be needed to accommodate the growth of sectors where the adoption of low-GWP alternatives might still be more challenging. The choice of HFCs (including HFC containing blends) with low GWPs would further increase the flexibility in this respect.

Acknowledging that the information on the present uses of HFCs might be lacking for many Article 5 countries and that there are still doubts about the availability of sufficient low-GWP alternatives, including the implementation of not-in-kind alternatives (such as district heating and cooling with alternative low GWP refrigerants and insulation) the decision on a long-term schedule for the **reduction** of the climate impacts of the consumption of the HCFC/HFC basket should be deferred to a later date, when more data on current HFC uses is available and the confidence in the availability of low-GWP alternatives has further grown.

Whereas the baseline of HCFC consumption, expressed in CO₂ equivalents, is already determined by the 2007 agreement on the HCFC phase-out, the HFC component might require further data collection. A reference period in the near future could be envisaged.

In summary, the commitment of Article 5 could include the following:

- No reduction schedule for HFC consumption, but a freeze of combined HFC/HCFC consumption in CO₂eq as of [2019],
- Baseline: Average consumption of HFCs and HCFCs in [2015/2016] (CO₂eq).

Complementary action:

- Data collection preparing the establishment of the HFC baseline component,
- Agreement on reduction schedule in [2017 or 2018], on the basis of the collected data.

d. Commitment design for Article 5 countries: HFC production

Considering HFC production in Article 5 countries today, the reduction schedule for this production could follow the same slope as for the production in Non-Article 5 countries, using a baseline in the recent past, for example the yearly average of the years [2009 to 2012]. It could nevertheless be considered to provide a grace period, or deferred dates for the individual phase-down steps as proposed in the previous amendment proposals, to take account of the more recent conversion of production facilities in the context of the ODS phase-out.

However, the implications of various production phase-down options on the consumption regime for Article 5 countries need further reflection. At this stage the best option would be to agree on a freeze from [2019] onwards and a long-term [85 %] reduction target for [2045], deciding on the intermediate reduction steps at a later stage, also considering the progress of the transition to low-GWP alternatives in the consumption sector.

The commitment of Article 5 countries on the HFC production could, at this stage of the discussions, include the following:

- Freeze of HFC production (in CO₂eq) as of [2019],
- Reduction to [15%] in [2045],
- Baseline: Average HFC production in [2009-2012] + [70%] of the [2009/2010] HCFC baseline (in CO₂ eq).

Complementary action:

- Data collection for calculating the HFC baseline component,
- Agreement on reduction schedule in [2017 or 2018], on the basis of collected data.

e. Financial and technical co-operation

The EU is open to considering all options to ensure adequate funding for the for the phase-down of HFCs, including through future replenishments of the Montreal Protocol's Multilateral Fund, while meeting existing commitments and exploiting synergies with current activities on ozone depleting substances.

3. The way forward

The EU invites all Parties to engage in constructive discussions on how to address the growth of use and emissions of HFCs, that is to a large extent driven by the HCFC phase-out. A formal contact group should be established for this purpose. The phase-out of HCFCs, which has just started in Article 5 countries, offers a unique opportunity to prevent a substantial threat to the climate by the alternatives used.

To fully exploit such synergies it is necessary to take action without further delay. While discussions on an amendment to the Montreal Protocol are underway, Parties should start collecting information on the alternatives to ODS used in individual countries, in order to inform the decisions on long term measures to maximise the climate benefits of the ODS phase-out.

The opening of formal and technical negotiations on an amendment of the Montreal Protocol would provide additional valuable information on the availability of climate friendly alternatives to HCFCs and facilitate informed decisions by individual Article 5 Parties on steps of the HCFC phase-out.
