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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-fourth Meeting
Montreal, 16–20 December 2019

**KEY ASPECTS RELATED TO HFC-23 BY-PRODUCT CONTROL TECHNOLOGIES
(DECISIONS 83/66 AND 83/67)**Background

1. At the 83rd meeting, the Executive Committee considered the document on Key aspects related to HFC-23 by-product control technologies,¹ which consisted of two parts: part I provided details of the proposal to control HFC-23 by-product emissions at Frio Industrias Argentinas (FIASA), along with a summary of the independent technical audit carried out by a consultant, and the Secretariat's comments; and part II identified policy issues related to controls of HFC-23 by-product emissions in Article 5 Parties for which the Secretariat was seeking the guidance of the Executive Committee.
2. With regard to the options to control and phase out HFC-23 by-product emissions at FIASA, there was general agreement that the detailed evaluation of the project was of significant value for the assessment of similar future projects and contributed to the discussion on the policy issues identified in the second part of the document.
3. Issues identified for further discussion included the influence of Government policies and regulations on the availability of cost-effective options and the impact of the history of the production swing plant, including the Clean Development Mechanism (CDM) project to control HFC-23 by-product emissions implemented at FIASA during 2007–2013. One member said that, while his delegation was open to consideration of the various options available to the Government of Argentina in mitigating HFC-23 by-product emissions, the principle of cost-effectiveness should be given precedence. Questions were also raised regarding: the estimation of the market price of HCFC-22 and the cost of the raw materials; the methods used to estimate the remaining life of the facility and the date by which it would no longer be financially viable; and determination of the eligible incremental operating costs (IOCs) of the project.
4. Following a discussion, the Executive Committee agreed to establish a contact group to consider the project proposal on options to control HFC-23 by-product emissions in Argentina, the policy issues identified by the Secretariat and the request for project preparation for the control of HFC-23 by-product emissions in the HCFC production sector in Mexico.

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¹ UNEP/OzL.Pro/ExCom/83/44

5. Subsequently, the convener of the contact group reported that the group had reached agreement on the project preparation request for Mexico, but had been unable to conclude its deliberations on the proposal to control HFC-23 by-product emissions in Argentina. Accordingly, the Executive Committee approved the project preparation request for Mexico (decision 83/67) and deferred to the 84th meeting further consideration of the project proposal to control HFC-23 by-product emissions in Argentina and the associated policy issues raised by the Secretariat (decision 83/66).

6. In approving the project preparation request for Mexico, the Executive Committee decided *inter alia* to discuss the criteria for funding the activities related to the compliance obligations of Article 5 countries with respect to HFC-23 by-product emission controls at the 84th meeting (decision 83/67(d)).

Scope of the document

7. In line with decision 83/67(d), the Secretariat has prepared the present document. The document only presents the policy issues related to control of HFC-23 by-product emissions in Article 5 countries that arose from the Secretariat's review of the projects in Argentina² and Mexico.³ It consists of the following three parts, and a recommendation:

I Policy issues arising in the projects in Argentina and Mexico

II Policy issues arising in the project in Argentina

III Policy issues arising in the project in Mexico

Recommendation

8. In each part, the document briefly explains each of the issues identified, and seeks guidance from the Executive Committee on how to meaningfully address those issues.

I. Policy issues arising in the projects in Argentina and Mexico

Basis for HCFC-22 production to be used in determining IOCs

9. The Secretariat has calculated the level of the production of HCFC-22 and the associated HFC-23 by-product emissions, on the basis of either the year, or an average of the three years, immediately preceding project preparation, in line with the decision adopted by the Executive Committee at its 16th meeting.⁴

10. The Executive Committee may wish to provide guidance on whether the decision adopted at the 16th meeting should be used as a basis for calculating the level HCFC-22 production and associated HFC-23 by-product generated, to be used in determining IOCs, or to use another method.

Duration for which funding support for HFC-23 by-product emission controls is provided

11. During the discussion of the duration for which funding support for HFC-23 by-product emission controls should be provided, the Executive Committee have expressed different views. Some members have suggested that IOCs should be provided as long as the destruction of HFC-23 is taking place; others have suggested a more limited duration. Some members have suggested that IOCs are intended to incentivize early action, and the need for such an incentive may change as the cost of adopting control measures becomes the regular cost of business. Other members have suggested that the costs of destruction should

² UNEP/OzL.Pro/ExCom/84/71

³ UNEP/OzL.Pro/ExCom/84/72

⁴ Paragraph 32(b) of document UNEP/OzL.Pro/ExCom/16/20

not be considered as IOCs but recurring costs. In contrast to IOCs, which are expected to decrease as the cost of the alternative to be phased in goes down and the cost of the controlled substance that is phased out goes up, many of those recurring costs are not expected to change with time and, therefore, funding should continue to be provided for them.

12. The Executive Committee may wish to provide guidance on:
- (a) The duration of the IOCs; and/or
 - (b) Whether to develop guidelines for the application of IOC to HFC-23 by-product control projects.

Level of agency support costs

13. In line with decision 67/15,⁵ projects amounting to US \$250,000 and above would receive agency support costs of 7 per cent, and for projects in the production sector, the agency support costs would be no greater than 6.5 per cent, to be determined on a case-by-case basis. The current practice in the production sector is that the costs of independent verification are included in the agency support costs. It is not clear whether HFC-23 by-product control projects would be considered as projects in the production sector (i.e., up to 6.5 per cent agency support costs, to be determined on a case-by-case basis), or as investment projects (i.e., 7 per cent agency support costs).

14. The Secretariat considers that for HFC-23 by-product control projects where there would be continued production of HCFC-22, and hence continued generation of HFC-23 by-product that must be controlled (either on- or off-site), continued agency support would be expected. Accordingly, in such cases, the agency support costs for investment projects (at 7 per cent) would be applicable.

15. In contrast, in projects where closure of the HCFC-22 production facility is the modality used to comply with HFC-23 by-product control obligations, the agency support costs for the production sector (6.5 per cent, to be determined on a case-by-case basis) would be applicable.

16. UNIDO considers that its portfolio is more relevant in determining the agency support costs, rather than on a project-by-project basis; and that projects in the production sector always took into consideration lost profits and, in such cases, it was understandable that lower agency support costs were applied. For production swing plants where it is not yet clear whether lost profits will be eligible, UNIDO considers that 7 per cent may be appropriate.

17. The Executive Committee may wish to consider providing guidance on:
- (a) The appropriate level of agency support costs for HFC-23 by-product control projects in Article 5 countries, including whether the level should differ between projects that control HFC-23 through destruction versus the closure of HCFC-22 production facilities; and
 - (b) Whether the costs of independent verification should be included under agency support costs or in the project costs.

⁵ Administrative cost regime for the 2012–2014 triennium, which has been maintained.

II. Policy issues arising in the project in Argentina

Extent to which market demand and profitability of HCFC-22 production should determine expected future production of HCFC-22

18. Consistent with the assessment of the independent consultant,⁶ at the 83rd meeting the Secretariat considered that FIASA will shut down production by 1 January 2024 given the trend in the HCFC consumption and production in the country, market demand for HCFC-22 in Argentina, FIASA's price of HCFC-22 versus the price for which HCFC-22 can be imported, FIASA's cost of production relative to its international competitors, and that FIASA's cost of production will increase as production continues to decrease to the point where it will no longer be profitable. An assessment carried out for the 84th meeting suggests that the August 2019 market crash in Argentina may have affected the enterprise's financial viability.⁷

19. However, the Government of Argentina has a different assessment. Relative to 2018, production of HCFC-22 at FIASA will increase by at least 69 per cent in 2020, that such production can be maintained until 2024, and then continue at 10 per cent above the 2018 production levels between 2025 and 2029.

20. FIASA was profitable at the 83rd meeting because it could charge local consumers a price that is at least double the international market price. A similar situation may apply to HCFC-22 production lines in other Article 5 countries.

21. The Executive Committee may wish to provide guidance on:

- (a) The extent to which market demand and profitability of HCFC-22 production determine expected future production of HCFC-22; and
- (b) The extent to which the profitability of an HCFC-22 production line should depend on the local versus international market price.

III Policy issues arising in the project in Mexico

Timeline for HFC-23 by-product emission control

22. The Kigali Amendment entered into force on 1 January 2019. Paragraph 6 of Article 2J of the Amendment states that "Each Party manufacturing Annex C, Group I, or Annex F substances shall ensure that for the twelve-month period commencing on 1 January 2020, and in each twelve-month period thereafter, its emissions of Annex F, Group II, substances generated in each production facility that manufactures Annex C, Group I, or Annex F substances are destroyed to the extent practicable using technology approved by the Parties in the same twelve-month period."

23. The Government of Mexico ratified the Kigali Amendment on 25 September 2018. However, all of the options proposed by UNIDO include continued emissions for approximately six months of HFC-23 by-product from Quimobásicos, the HCFC-22 production facility in Mexico, beyond 1 January 2020. The Fund Secretariat was concerned that by 1 January 2020 the country could be at risk of not meeting its obligations under paragraph 6 of Article 2J of the Kigali Amendment. Given this concern, the Secretariat sought advice from the Ozone Secretariat in regard to the compliance obligations of a concerned Party to the Kigali Amendment that manufactures Annex C, Group I, or Annex F substances.

⁶ UNEP/OzL.Pro/ExCom/83/44

⁷ UNEP/OzL.Pro/ExCom/84/71

24. While emphasizing that the interpretation of the provisions of the Montreal Protocol is the responsibility of the Parties, the Ozone Secretariat understands the term “to the extent practicable” may apply to either “destruction” (i.e., destroy to the extent practicable), or to the “use of the technology” (i.e., using approved technology to the extent practicable). Accordingly, as long as a Party that generates the HFC-23 submits the new data reporting form for HFC-23 emissions and informs the Ozone Secretariat in 2021 that it has destroyed HFC-23 emissions to the extent practicable in 2020 (irrespective of amount of HFC-23 by-product that has been destroyed), it would be understood by the Ozone Secretariat that such Party has met its obligations under paragraph 6 of Article 2J of the Amendment. Further, there are no reduction targets, schedules, or baselines specified for the HFC-23 by-product emission reduction, nor does paragraph 6 of Article 2J require Parties to demonstrate decrease in HFC-23-by product emissions from one year to the next.

25. Noting that one kilogramme (kg) of HFC-23 by-product emitted into the atmosphere is equivalent to 14,800 kg CO₂, and that the emissions of this substance generated as a by-product of the production of HCFC-22 by Quimobásicos amounts to approximately 1.6 million metric tonnes CO₂-eq, from the moment the project proposal was submitted until the options proposed by UNIDO could be implemented, the Secretariat explored whether Quimobásicos could, with its own funding, undertake actions prior to the Executive Committee meeting so as to minimize the amount of time HFC-23 would be vented to the atmosphere. However, neither Quimobásicos nor the Government had a budget for such activities; moreover, it was unclear which of the control options requested in decision 83/67(a) the Executive Committee might select.

26. Accordingly, in order to assist the Government of Mexico to be in compliance with its newly acquired obligations under the Kigali Amendment at the earliest time possible, the Secretariat considered whether technically feasible options were available that would reduce the time needed to control HFC-23 by-product emissions. As further explained in document UNEP/OzL.Pro/ExCom/84/72, the options identified by the Secretariat involved offsite destruction and technical changes to the HCFC-22 production process used by Quimobásicos. However, as further discussed in that document, it is not clear whether those options can be implemented in practice in the envisioned timeline. Moreover, Quimobásicos did not agree to changing its HCFC-22 production process.

27. The Executive Committee may wish to provide guidance on whether the timeline for HFC-23 by-product emission control is a relevant issue to be considered in selecting an option to control HFC-23 by-product emissions.

Eligibility of HFC-23 by-product associated with HCFC-22 exported to a non-Article 5 country

28. At its 15th meeting, the Executive Committee endorsed guidelines to apply in projects which benefit enterprises that export part of their production to non-Article 5 countries.⁸ In line with those guidelines, HCFCs that were exported to non-Article 5 countries were deducted when determining the funding compensation as those exports were not considered eligible.

29. Quimobásicos’ exports to a non-Article 5 country are higher than 70 per cent. If the guidelines endorsed by the Committee at its 15th meeting were to be applied, the project would not be eligible.

30. HFC-23 by-product control obligations are new and different from those previously considered by the Executive Committee. HFC-23 by-product would be generated in Mexico and, unless controlled, would be emitted there, irrespective of whether the HCFC-22 produced that was associated with such emissions was exported to a non-Article 5 country.

⁸ Paragraphs 146 and 147 of document UNEP/OzL.Pro/ExCom/15/45

31. The Executive Committee may wish to provide guidance on:
- (a) Whether to consider all HFC-23 by-product to be eligible, irrespective of whether the HCFC-22 from which it was generated was exported to a non-Article 5 country, and
 - (b) Whether to deduct that portion of the HFC-23 by-product associated with HCFC-22 exported to a non-Article 5 country.

Eligibility of HFC-23 by-product associated with HCFC-22 production for feedstock use

32. The Parties to the Montreal Protocol had determined that production (and consumption) of controlled substances for feedstock uses should be excluded from control measures, based on the understanding that the controlled substance would be transformed during the manufacture of other chemicals and, therefore, would result in insignificant emissions into the atmosphere.

33. HFC-23 by-product control measures were intended to provide climate benefits; achieving those benefits would require control of the HFC-23 by-product emissions irrespective of whether the HCFC-22 production that generated the HFC-23 by-product is used for controlled or feedstock uses.

34. The Executive Committee may wish to confirm that the eligibility of HFC-23 by-product controls would be independent of whether the production is for controlled or for feedstock uses.

Eligibility of back-up systems to enable control of HFC-23 by-product emissions

35. For the options of on- and offsite destruction, UNIDO had proposed refurbishing or purchasing equipment that would provide back-up to ensure that HFC-23 would not be emitted in case maintenance or repairs of the destruction device were needed (in the case of onsite destruction) or (in the case of offsite destruction) there were delays. In its assessment, the Secretariat considered the costs associated with such back-up systems to be eligible.

36. The compliance obligation under paragraph 6 of Article 2J of the Kigali Amendment *inter alia* specifies that HFC-23 by-product shall be “destroyed to the extent practicable using technology approved by the Parties in the same twelve-month period.” Notwithstanding that paragraph 6 of Article 2J does not specify reduction targets, schedules, or baselines for the HFC-23 emission reduction, nor is there a specific requirement for Parties to show a decrease in emissions from one year to the next, the Executive Committee may wish to confirm that the implementation of a back-up system to control HFC-23 is “practicable” and, hence, eligible.

By-product generation rate

37. UNIDO used the HFC-23 by-product generation rate from the year immediately preceding project preparation in its assessment of the costs to control HFC-23 by-product. The Secretariat recalled that another Article 5 country had reported continued reductions in the by-product generation rate with time. The Secretariat also recalled the concerns expressed by some Executive Committee members regarding the potential for perverse incentives. Noting that the enterprise in Mexico had achieved lower by-product generation rates, the Secretariat suggested an additional option based on the minimum HFC-23 waste stream generation rate achieved in the three years preceding project preparation. Other approaches, such as a generation rate that decreases with time, could also be considered.

RECOMMENDATION

38. The Executive Committee may wish to:

- (a) Note the key aspects related to HFC-23 by-product control technologies (decisions 83/66 and 67) contained in document UNEP/OzL.Pro/ExCom/84/70;
- (b) Provide policy guidance on the following issues related to HFC-23 by-product control projects:

With regard to the basis for HCFC-22 production to be used in determining IOCs

- (i) Whether the decision adopted at the 16th meeting should be used as a basis for calculating the level HCFC-22 production and associated by product emissions, to be used in determining IOCs, or to use another method;

With regard to the duration for which funding support for HFC-23 by-product emission controls is provided

- (ii) The duration of the IOCs; and/or
- (iii) Whether to develop guidelines for the application of IOC to HFC-23 by-product control projects;

With regard to the level of agency support costs

- (iv) The appropriate level of agency support costs for HFC-23 by-product control projects in Article 5 countries;
- (v) Whether the costs of independent verification should be included under agency support costs or in the project costs; and
- (vi) Whether the agency support costs should differ between (on- or off-site) destruction of HFC-23 by-product and closure of HCFC-22 production facilities;

With regard to the extent to which market demand and profitability of HCFC-22 production should determine expected future production of HCFC-22

- (vii) The extent to which market demand and profitability of HCFC-22 production determine expected future production of HCFC-22; and
- (viii) The extent to which the profitability of an HCFC-22 production line should depend on the local versus international market price;

With regard to the timeline for HFC-23 by-product emission control

- (ix) Whether the timeline for HFC-23 by-product emission control is a relevant issue to be considered in selecting an option to control HFC-23 by-product emissions;

With regard to the eligibility of HFC-23 by-product associated with HCFC-22 exported to a non-Article 5 country

- (x) Whether to consider all HFC-23 by-product to be eligible, irrespective of whether the HCFC-22 from which it was generated was exported to a non-Article 5 country, and
- (xi) Whether to deduct that portion of the HFC-23 by-product associated with HCFC-22 exported to a non-Article 5 country;

With regard to the HFC-23 by-product generation rate

- (xii) Whether to use the HFC-23 by-product generation rate in the year immediately preceding project preparation, the minimum generation rate in the three years immediately preceding project preparation, or another value;
- (c) Confirm that:
- (i) HFC-23 by-product controls would be eligible independent of whether the HCFC-22 production that generated the HFC-23 is for controlled or for feedstock uses; and
 - (ii) The implementation of a back-up system to control emissions of HFC-23 by-product is “practicable” and, hence, eligible.