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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fifth Meeting
Montreal, 4–8 December 2024
Item 14 of the provisional agenda¹

REPORT OF THE SUB-GROUP ON THE PRODUCTION SECTOR**Introduction**

1. The Sub-group on the Production Sector, which had been reconstituted at the 94th meeting of the Executive Committee, met on 5, 7 and 8 December 2024 in the margins of the 95th meeting. It consisted of the representatives of Argentina, Canada, Cuba, India, Italy, Jordan, Sweden and the United States of America, with Canada acting as facilitator. Representatives of the World Bank were also present as observers.

Agenda item 1: Adoption of the agenda

2. The facilitator of the Sub-group welcomed the participants.
3. The Sub-group adopted the provisional agenda as set out in document UNEP/OzL.Pro/ExCom/95/SGP/1.

Agenda item 2: Organization of work

4. The Sub-group agreed to follow the organization of work proposed by the facilitator.

Agenda item 3(a): HCFC production phase-out management plan (HPPMP) for China: 2023 verification report of the HCFC production sector, including the additional verifications requested under decision 93/99(d) and the reporting of HCFCs captured from high-boiling residue (decision 94/61(b))

5. The representative of the Secretariat introduced document UNEP/OzL.Pro/ExCom/95/SGP/2, presenting the 2023 verification report of the HCFC production sector in China, including the additional verifications requested under decision 93/99(d) and the reporting of HCFCs captured from high-boiling residue, pursuant to decision 94/61(b), and the Secretariat's comments and recommendation. The verification had concluded that the Government of China was in compliance with the Montreal Protocol

¹ UNEP/OzL.Pro/ExCom/95/1

control targets of HCFC production and consumption. The verification report had also confirmed that all compensated producers had controlled their production for controlled and feedstock use below the maximum allowable annual production during the verification year and did not redirect any compensated capacity towards feedstock; and had verified the closure of two HCFC-141b production lines. Discussions between the Secretariat and the World Bank on the level of additional funding that might be needed to undertake the one-off verifications of newly established HCFC production lines had not been finalized. The document also provided information related to the management of HFC-23 at all HCFC-22 production lines that were operating in the country in 2023.

6. Members of the Sub-group sought clarification and commented on various elements of the verification report. In response to one member, the Secretariat clarified that the difference between the data on production for controlled uses reported under Article 7 and that in the 2023 verification report (71.86 ODP tonnes) appeared to be primarily related to the production of HCFC-142b for controlled uses, and further clarified that the large increase in the amount of HFC-23 by-product vented² was due to a change in methodology, specifically with regard to the estimation of HFC-23 by-product emissions from the HCFC-22 production process, including fugitive emissions.³ Notably, the Government of China used two methods to estimate HFC-23 by-product generation: the measured data analysis method and the mass balance calculation method, both of which included estimated fugitive emissions; the inclusion since 2021 of estimated fugitive emissions of HFC-23 by-product in the Article 7 reporting of the Government of China was the main reason for the discrepancy. The representative of the World Bank further explained that additional data is being gathered to complete the analysis on the reasons for the discrepancy; further information on that matter could be provided by the World Bank at the next meeting of the Executive Committee.

7. On the level of additional funding that might be needed to undertake the one-off verification of the newly established HCFC production lines to be included in the 2024 annual HCFC production verification,⁴ the World Bank provided an estimate of US \$40,000, noting that costs could be reduced by the use of a local expert, and the Secretariat explained that various factors had made it difficult to accurately estimate the total amount needed, including confirmation of whether the production lines were being verified under the HPPMP. One member later proposed an amount of US \$30,000, noting the need to provide sufficient funding for the task while ensuring cost-efficiency.

8. Regarding the newly established production lines, another member noted that some are in high-growth areas and could potentially present a regulation challenge, for example in the production of HCFC-142b for the lithium batteries market; however, the Government of China has in place a robust system to monitor and control production for feedstock use, as further discussed under agenda item 3(c).

9. Subsequently, following further informal discussions, the Sub-group on the Production Sector recommended that the Executive Committee:

- (a) Note the 2023 verification report of the HCFC production sector in China considered by the Sub-group on the Production Sector;
- (b) Request the World Bank to include in the 2024 HCFC production verification:
 - (i) An explanation of the differences between the verified 2023 HCFC production for controlled uses and that reported under Article 7 of the Montreal Protocol, and between the verified 2023 HCFC consumption and that reported under Article 7;

² Table 4 of document UNEP/OzL.Pro/ExCom/95/SGP/2

³ Details on methodology are further explained in document UNEP/OzL.Pro/ExCom/95/SGP/5

⁴ Annex I to document UNEP/OzL.Pro/ExCom/95/SGP/2

- (ii) An update on the status of:
 - a. The destruction of remaining key equipment and the environmental clean-up from the HCFC-142b production line at Inner Mongolia 3F Wanhao Fluorochemical that had been dismantled;
 - b. Zhejiang Pengyou Chemical Co. Plant's HCFC-22 production line that was relocated to Jiangxi Province;
 - c. Zhejiang Lantian Fluoro Materials Co. (now Sinochem Lantian Fluoro Materials Co.) that was relocated to Jiangxi Province;
 - d. Jiangsu Meilan Chemical Co. Ltd.'s HCFC-22 production line that was relocated to Jiangxi Province to be operated by Jiujiang JiuHong New Materials Co.;
- (c) Request the World Bank to verify, on a one-off basis, that the newly established HCFC production lines listed in annex I to document UNEP/OzL.Pro/ExCom/95/SGP/2 are vertically integrated with the downstream facilities and that all HCFCs produced on those lines would be exclusively for feedstock use and to submit a report thereon to the last meeting of 2025; and
- (d) To provide the World Bank, on an exceptional basis, with a one-time payment of US \$30,000 for support to undertake the additional one-off verifications referred to in subparagraph (c) above.

Agenda item 3(b): HPPMP for China: Progress report on the implementation of the second tranche and request for funding of the third tranche of stage II of the HPPMP

10. The representative of the Secretariat introduced document UNEP/OzL.Pro/ExCom/95/SGP/3. He noted that on behalf of the Government of China, the World Bank had submitted to the 95th meeting the request for the third tranche of stage II of the HPPMP. A variety of technical assistance activities were planned to support production phase-out and ensure sustainability. The Government had reported the establishment of eight new HCFC production lines, and the World Bank's verification team had identified further newly established lines during the 2023 HCFC production verification exercise, which would be verified as being vertically integrated on a one-off basis by the World Bank. The Government had implemented regulations, effective from September 2021, to support China's commitment to coordinate with its stakeholders and make best efforts to manage HCFC production and associated by-product production in HCFC plants in accordance with best practices.

11. In the ensuing discussion, one member expressed appreciation for the new regulations, which would help strengthen the regulatory system for ozone-depleting substances, particularly in the production sector, and asked whether there were any plans to extend the newly installed online monitoring equipment and connect it to Government systems. The World Bank stated that the monitoring system currently covers all chloromethane production plants and no online monitoring of production of other substances, and the Secretariat noted that one of the technical assistance activities planned for the third tranche of the HPPMP was a study on the feasibility of building an online system for the Government to monitor and regulate HCFC production facilities for both controlled use and feedstock use, including what regulations might be needed to enable the Government of China to obtain those data from producers while ensuring the security of the data. Responding to a question on the next stages, the representative of the Government of China added that the study would provide information on the feasibility of setting up a system for the long-term monitoring of HCFC production.

12. On the matter of disbursement of funds for producer compensation, one member brought up that only 53 per cent of the budgeted amount for the second tranche had thus far been disbursed, as well as only approximately US \$500,000 of the US \$4.1 million allocated to technical assistance in the first tranche, and wondered whether any surplus amount could be reallocated to technical assistance activities planned for the third tranche, particularly relating to more information on HFC-23 emissions, bearing in mind the clause in the Agreement to make best efforts to minimize the associated climate impacts of HFC-23 by-product emissions, and taking into account the pressing need to increase understanding of the reasons behind the previously highlighted discrepancies in the data on HFC-23 by-product emissions. The World Bank explained that further funds would be disbursed following the restructuring of administrative arrangements between the World Bank and the Government of China, that funding for some technical assistance activities had been committed but had not yet been disbursed, and that some activities that had been initially planned under the first or second tranche were planned to be undertaken closer to the end of the stage. The Secretariat added that the disbursed amounts for the first and second tranches did not include some committed amounts for which contracts had already been signed; all in all, the planned activities would probably make use of the remaining budget. The member who had raised the issue stressed the importance of further discussions between the Secretariat, the World Bank, the Government of China, and interested parties on the matter of HFC-23 by-product emissions, taking advantage of the pool of resources that was available to gain further understanding on the matter, which could help inform the future funding decisions of the Executive Committee.

13. A member expressed concern at the upward trend in atmospheric concentrations of HFC-23, as revealed by monitoring systems. A more holistic approach was needed to address and manage the associated risks, supported by adequate allocation of resources.

14. One member suggested inclusion in the recommendation of additional text related to changes in the technical assistance activities to extend their applicability to HFC-23 by-product emission control measures. The precise wording of that proposed text would depend on the outcome of discussions on the nature of technical assistance activities under the HPPMP and how they would be funded.

15. There was some discussion of the proposed item in the recommendation requesting the Government of China, through the World Bank, to submit the reports on the annual investigations of HCFC feedstock applications in China for 2025, 2026 and 2027 to the following first meeting of the Executive Committee after the completion of those reports. One member noted that the timing of the 2027 report would present challenges, given that the HPPMP was scheduled to conclude on 31 December 2027. The representative of the Secretariat said that the recommendation had been based on the list of technical activities planned for the third tranche of the HPPMP, as set out in document UNEP/OzL.Pro/ExCom/95/SGP/3, one of which was annual investigation of HCFC feedstock applications in the period 2025–2027 to assess feedstock uses in China. However, the investigation for 2027 could only be conducted after 2027, at which point stage II of the HPPMP would have been completed. One member noted that US \$240,000 had been allocated to the annual investigations for 2025–2027; in the event that the 2027 report was not undertaken as planned, then part of that funding could be reallocated to other technical assistance activities.

16. There was extended discussion on the proposed recommendation to approve the third tranche of the HPPMP in China, and the corresponding 2024–2026 tranche implementation plan. One member said that that disbursement should be considered in relation to paragraph 10 of the Agreement between the Executive Committee and the Government of China, by which the Government committed to continue to coordinate with its stakeholders and authorities to make best efforts to manage HCFC production and associated by-product production in HCFC plants in accordance with best practices. However, while it was recognized that China faced considerable challenges in combating emissions, significant knowledge gaps remained on the sources of HFC-23 by-product emissions and how those emissions were measured and calculated. Discrepancies in the data on quantities of emissions, according to the methods used, were still not fully explained, and recent atmospheric monitoring data showed that atmospheric concentrations of emissions were far larger than were indicated by bottom-up estimates. The Executive Committee needed to

see greater evidence of progress in resolving those issues, in the context of paragraph 10 of the Agreement, to gain assurance that further disbursement of funding was being used effectively. He therefore proposed that US \$4,000,000 of the proposed funding be withheld until the Secretariat had confirmed that appropriate measures had been taken to ensure that HFC-23 by-product from HCFC-22 facilities had been destroyed to the extent practicable.

17. Options were available to achieve that aim. Greater focus should be given to those technical activities planned for the third tranche that were related to control of HFC-23 by-product. He also recalled that recently published scientific research used data from ten atmospheric monitoring stations to infer historic nationwide emissions of methyl bromide and HFC-152a in China; similar cooperation between the Government of China and research institutions could assist in filling knowledge gaps on HFC-23 by-product emissions and would send a positive signal to the Executive Committee.

18. Another member concurred that the matter of HFC-23 emissions was of urgent concern, given the fact that concentrations in the atmosphere had almost doubled since 2008, and recent research had indicated that a major factor accounting for that increase was the expansion of feedstock production for HCFC-22 in China.

19. The representative of the Government of China said that the Government had met all the conditions in the HPPMP, and the full funding amount was needed to attain the phase-out target. In recent months two production lines had been closed, and a contract had recently been signed to close a HCFC-22 production line and a HCFC-141b production line; those enterprises would require compensation. In addition, paragraph 25 of the comments and recommendations of the Secretariat on the project proposal for China, as set out in document UNEP/OzL.Pro/ExCom/95/SGP/3, stated that 2023 reporting by the Government of China on emissions of HFC-23 by-product from HCFC-22 production met the criteria used by the Executive Committee to define HFC-23 by-product destruction as “to the extent practicable” in the context of Multilateral Fund-supported projects.

20. The member who had introduced the proposal to withhold US \$4,000,000 of the proposed funding said that it was important to move beyond the business-as-usual scenario, given that the concerns expressed had been reiterated over a period of several years. He stressed that the commitments embodied in paragraph 10 of the Agreement formed the basis of all efforts to resolve the issues raised. Regarding the financial implications of the proposal to withhold some funding, he said that table 5 of document UNEP/OzL.Pro/ExCom/95/SGP/3 indicated that 53 per cent of the budget allocation for producer compensation in the second tranche of stage II had thus far been disbursed, leaving a balance of US \$9.6 million; that, plus the proposed disbursement of US \$18 million for the third tranche of the HPPMP, would provide adequate funding for ongoing and planned activities until disbursement of the remaining US \$4 million on the assurance that the best efforts clause of paragraph 10 had been fulfilled.

21. Subsequently, the Sub-group further discussed elements of the draft recommendation, including the modalities and timing of disbursement of the third tranche of the HPPMP in China; related activities to be undertaken by China, and reporting on those activities, including verification reports; proposed international workshop to be held in China on the HFC-23 issue, their scope, and their relevance to the portfolio of technical assistance activities under the HPPMP; the amount and timing of funding needed by the Government of China to finance planned closures and quota reductions; and how to ensure relevance to paragraph 10 of the Agreement.

22. Subsequently, following further informal discussions, the Sub-group on the Production Sector recommended that the Executive Committee:

- (a) Note the progress report on the implementation of the second tranche of stage II of the HCFC production phase-out management plan (HPPMP) for China, considered by the Sub-group on the Production Sector;

- (b) Request the Government of China, through the World Bank, to submit the reports of the following technical assistance activities supported under the HPPMP:
 - (i) The 2024 investigation of HCFC feedstock applications in China to the first meeting of 2026;
 - (ii) The annual investigations of HCFC feedstock applications in China for 2025 and 2026 to the following first meeting of the Executive Committee after the completion of those reports;
 - (iii) Updates at the 97th and 99th meetings on the outcomes of the activity in subparagraph d(ii) below for the respective 2025 and 2026 workshops;
- (c) Approve the third tranche of the HPPMP in China, and the corresponding 2024-2026 tranche implementation plan, in the amount of US \$22,000,000, plus agency support costs of US \$1,232,000 for the World Bank, on the understanding that the World Bank will withhold disbursement of US \$3,000,000 of this amount until the Secretariat, on the basis of relevant available information including the 2024 verification report and Article 7 data report and no sooner than the 97th meeting of the Executive Committee, has confirmed that the Government of China has taken appropriate measures to manage HFC-23 byproduct in accordance with paragraph 10 of stage II of the HPPMP Agreement;
- (d) Note that the scope of the technical assistance activities set out in the 2024 to 2026 tranche implementation plan will be further adjusted as follows:
 - (i) The activities described in paragraph 16 h, j, and l of document UNEP/OzL.Pro/ExCom/95/SGP/3 would cover related work on management of HCFC production and by-product HFC-23 in HCFC-22 production facilities relevant to those items;
 - (ii) To add one new technical assistance activity to promote conducting and sharing of relevant information on atmospheric monitoring, research on the development of spatial emissions estimates and emission sources, and progress of HFC-23 emissions control management through the organisation of two international workshops on HFC-23 emission control at the scientific level and including the participation of other relevant stakeholders in 2025 and 2026;
- (e) Note with appreciation that the Government of China has and will continue to undertake, as appropriate, monitoring, assessment and verification activities for by-product HFC-23 emissions from HCFC-22 production facilities, covered by paragraph 10 of stage II of the HPPMP Agreement;
- (f) Request the Treasurer to offset future transfers to the World Bank by US \$536, representing interest accrued from funds previously transferred for the implementation of stage II of the HPPMP; and
- (g) In line with decision 93/5(b)(ii), request the Treasurer to deduct US \$45,143 from the amount approved in subparagraph (c) above, on account of income from cumulative interest accrued during stage I and stage II of the HPPMP between 2015 and 2019.

Agenda item 3(c): HPPMP for China: 2023 investigation of HCFC feedstock applications (decision 93/101(b))

23. The representative of the Secretariat introduced document UNEP/OzL.Pro/ExCom/95/SGP/4. He noted that, in response to decision 93/101, the Government of China, through the World Bank, had submitted the summary report of investigations on HCFC feedstock applications in China for 2023. The Secretariat had compared the HCFC production for domestic feedstock use reported under Article 7 with the amount of HCFCs purchased and used by feedstock users and had noted that the production and feedstock use were largely consistent. A challenge identified was the increased construction of vertically integrated production facilities, which would increase the Government monitoring and supervision burden. Activities to address that challenge had been included under the third tranche of stage II of the HPPMP. The report concluded that China had a clear and effective system for the management of HCFC feedstock uses.

24. In the ensuing discussion, one member asked for clarification of the suggestion, put forward in the summary report, that strict policy and regulation of HCFC feedstock use might constrain market development. The representative of the Secretariat noted that the report had been prepared by an independent entity, and did not necessarily reflect the proposed action of the Government of China. The representative of the Government of China said that the report reflected a suggestion from industry that the strict regulations of the Government on feedstock use should be relaxed. Another member said that the rate of growth of feedstock uses in China in recent years indicated the value of and need for strong regulation by the Government of China.

25. One member expressed concern at the steady increase in the feedstock use of HCFC-22 to produce HFC-23, which was then used as a feedstock to produce halon-1301, as described in the report. He requested further clarification on the two low-capacity producers who were reported as using HCFC-22 as a feedstock to produce HFC-23. The representative of the Secretariat clarified that those facilities did not produce HCFC-22 but purchased it for feedstock use, including production of HFC-23 as a feedstock to produce halon-1301. The representative of the World Bank added that those facilities produced their own HFC-23 in order to ensure its quality and suitability for further downstream production. Both facilities had commenced such production in recent years.

26. One member informed the Sub-group that an enterprise in Australia had started to import HCFC-123 manufactured in China for feedstock use for a medical product and this import for feedstock use was expected to continue. The Government of China had contacted the Government of Australia on the matter under a prior informed consent procedure, and the Government of Australia had confirmed that the import of the substance was acceptable.

27. The Sub-group on the Production Sector recommended that the Executive Committee note with appreciation the submission of the report on the investigation of HCFC feedstock applications in China for 2023, submitted by the Government of China through the World Bank and contained in document UNEP/OzL.Pro/ExCom/95/SGP/4.

Agenda item 3(d): HPPMP for China: Matters related to HFC-23 (decision 93/100)

28. The representative of the Secretariat introduced document UNEP/OzL.Pro/ExCom/95/SGP/5. He said that the World Bank, on behalf of the Government of China, had submitted a report on matters related to HFC-23, in line with decision 93/100. The report provided an update on the development of technical guidelines for reporting on HFC-23 generation and emissions; the most recent information on HFC-23 generation, destruction and emissions, and regulatory or implementation updates; and an analysis of the discrepancy between Article 7 reporting and the 2021 and 2022 verification reports. The 2023 verified generation of HFC-23 by-product was 19,256.31 metric tonnes (mt), of which 16,207.84 mt was destroyed, 1,910.30 mt sold, 236.45 stored, and 901.72 mt was emitted.

29. One member requested clarification on how the measured data analysis and mass balance calculation methods of estimating HFC-23 by-product generation were applied, and how a decision was made on which method to use. He also sought some explanation for the large percentage differences between Article 7 and verification report emissions data for 2021 and 2022, as shown in table 1 of document UNEP/OzL.Pro/ExCom/95/SGP/5. On the first matter, the representative of the Secretariat responded that the measured data analysis method essentially involved measurement of the product stream coming off the top of the HCFC-22 reactor. If the ratio of the composition of that stream was fairly stable, then the measured data analysis method was used to estimate the quantity of HFC-23 by-product generated; if there was considerable variability in that measurement or an enterprise did not sample continuously or frequently enough, then the mass balance method was used. In addition, a decision on which method to use was informed by the judgement of the expert commissioned by the Government, based on the particular circumstances of the HCFC-22 production line. Regarding the large percentage differences in table 1, he explained that that was due to the fact that emissions were small relative to the total quantity generated. In 2021 and 2022, the verification report did not account for possible fugitive emissions, whereas the Article 7 data did so.

30. One member said that it was possible that the verification reports of 2021 and 2022 had used a clean development mechanism (CDM) methodology, which could result in underreporting of actual emissions for some years. More accurate data were presented for 2023, as fugitive emissions were now taken into account, leading to closer alignment of the Article 7 and verification report data. It was a matter of concern that the underreporting of emissions in previous years gave a misleading impression of the follow-up of the Government of China on the best efforts provision of paragraph 10 of the HPPMP. More recently, the inclusion of fugitive emissions in the data estimates, and the new information available from atmospheric monitoring data, gave a truer indication of the actual situation with regard to HFC-23 by-product emissions. The representative of the Secretariat said that the Secretariat understood that the Government of China did not specifically use the CDM methodology, though the method used was similar. He also concurred that the change in methodology in 2023 had brought the Article 7 and verification report data much closer. Regarding fugitive emissions, in the past they had been assumed to be negligible; the Government of China had in recent years taken steps to increase its understanding of those emissions.

31. Regarding a query on the Ministry of Ecology and Environment organizing technical and financial experts to conduct annual on-site verification of HFC production and by-production enterprises, as reported in document UNEP/OzL.Pro/ExCom/95/SGP/5, the representative of the Secretariat confirmed that the verifications referred to were separate from those conducted by the World Bank.

32. Due to a lack of time to finish its discussions on the matter, the Sub-group on the Production Sector recommended that the Executive Committee defer further consideration of the matters related to HFC-23 in China to the following meeting of the Executive Committee.

Agenda item 4: Other matters

33. No other matters were raised.

Agenda item 5: Adoption of the report

34. The present report was reviewed by the facilitator and submitted to the Chair of the Executive Committee for transmission to the 95th meeting of the Executive Committee.

Agenda item 6: Closure

35. The meeting of the Sub-group on the Production Sector was closed at 6:40 p.m. on 8 December 2024.