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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Ninety-fourth Meeting  
Montreal, 27-31 May 2024  
Item 7(a) of the provisional agenda<sup>1</sup>

**STATUS REPORTS AND REPORTS ON PROJECTS WITH SPECIFIC REPORTING  
REQUIREMENTS WITH NO OUTSTANDING ISSUES**

1. The present document consists of two sections, namely (i) projects with implementation delays and projects for which special status reports were requested, and (ii) projects with specific reporting requirements with no outstanding issues. The reporting on these projects, after the Secretariat's review, have no outstanding issues and therefore do not require the Executive Committee to consider them individually.

**I. Projects with implementation delays and for which special status reports were requested**

2. At the 93<sup>rd</sup> meeting, the Executive Committee noted that the bilateral and implementing agencies would report, at the 94<sup>th</sup> meeting, on 105 projects with implementation delays and 16 ongoing projects<sup>2</sup> or tranches of multi-year agreements (MYAs) recommended for additional status reports (decision 93/11(c)). Accordingly, relevant bilateral and implementing agencies submitted the requested reports to the 94<sup>th</sup> meeting. In reviewing the reports, the Secretariat held discussions with relevant bilateral and implementing agencies and several issues have been satisfactorily addressed. Table 1 provides a summary of projects with implementation delays and projects recommended for additional status reports including their levels of progress, recommendations by the Secretariat and references to annexes to the present document.

**Table 1. Summary of projects with implementation delays and additional status reports**

Level of progress	Number of projects	Decision	Recommendation	Annex
<b>Implementation delays</b>				
Progress (Individual projects and MYAs)	80	32/4	To be removed from future reporting	n/a

<sup>1</sup> UNEP/OzL.Pro/ExCom/94/1

<sup>2</sup> Five of the 16 projects recommended for additional status reports were also classified as projects with implementation delays. The review for these projects is included in the implementation delays section.

Level of progress	Number of projects	Decision	Recommendation	Annex
Some progress (Individual projects and MYAs)	22	32/4	To continue monitoring until their final completion	Annex I
No progress for the first time (MYAs)	3	84/45	To continue monitoring until their final completion	Annex II
<b>Total</b>	<b>105</b>			
<b>Status reports</b>				
No outstanding issues	4	51/13	To be removed from future reporting	n/a
Issues still need to be resolved	7	51/13	To request submission of additional status reports	Annex III
<b>Total*</b>	<b>11</b>			

\*Excluding 5 projects that are included in the implementation delays section.

## Recommendation

3. The Executive Committee may wish:

(a) To note:

- (i) The implementation delay reports and status reports submitted by bilateral and implementing agencies, contained in document UNEP/OzL.Pro/ExCom/94/9;
- (ii) That bilateral and implementing agencies would report to the Executive Committee at the 95<sup>th</sup> meeting on 29 projects with implementation delays, as indicated in annexes I and II to the present document, and on seven projects recommended for additional status reports, as indicated in annex III to the present document, as part of the 2023 annual and financial progress report of the bilateral and implementing agencies; and

(b) To approve the recommendations on ongoing projects with specific issues listed in the last column of the table in annex III to the present document.

## II. Projects with specific reporting requirements with no outstanding issues

### An overview

4. Table 2 lists the reports on projects with specific reporting requirements with no outstanding issues.

**Table 2. Reports on projects with specific reporting requirements with no outstanding issues**

Country	Project title	Paragraphs
<b>A. Reports related to HCFC phase-out management plans (HPMPs)</b>		
Argentina	HCFC phase-out management plan (stage II – availability of low global warming potential alternatives to HCFC-141b in the foam sector and transitional use of high global warming potential alternatives)	5 – 14
Bangladesh	HCFC phase-out management plan (stage II) (decision 92/9(c))	Included in project proposal (document 94/22, paragraph 22)
Chile	HCFC phase-out management plan (stage II – final progress report on the implementation of the work programme associated with the final tranche)	15 - 25
Jordan	HCFC phase-out management plan (stage II – progress report on the implementation of the work programme associated with the final tranche)	26 - 38

Country	Project title	Paragraphs
Kenya	HCFC phase-out management plan (stage II – change of technology for a supermarket (Quickmart))	39 - 48
Malaysia	HCFC phase-out management plan (stage II – final progress report)	Included in project proposal (document 94/43, paragraphs 1 – 19)
Pakistan	HCFC phase-out management plan (stage II – progress report on the implementation of the third and fourth tranches)	49 - 61
Pakistan	HCFC phase-out management plan (stage III – report on the status of imports of pre-blended polyols containing HCFC-141b and on the progress of implementation of technical assistance for the foam sector)	62 - 69
South Africa	HCFC phase-out management plan (stage I – final progress report on implementation of the fifth and last tranche)	70 - 77
Uruguay	HCFC phase-out management plan (stage II – progress report on the implementation of the conversion of the foam sector)	78 - 92
Viet Nam	HCFC phase-out management plan (stage II – progress report)	93 - 95
<b>B. Report related to a HFC project</b>		
Jordan	Annual sales report of R-290 based large commercial unitary roof-top air-conditioning units (decision 90/25(b)(ii))	96 - 98

#### A. Reports related to HPMPs

**Argentina: HCFC phase-out management plan (stage II – availability of low-global-warming-potential alternatives to HCFC-141b in the foam sector and transitional use of high-global-warming-potential alternatives)** (UNIDO and the Government of Italy)

#### Background

5. At its 92<sup>nd</sup> meeting, in approving the third tranche of stage II of the HCFC phase-out management plan (HPMP) for Argentina (decision 92/31), the Executive Committee noted *inter alia*:

- (a) The challenges presented by the lack of supply of low-global-warming-potential (GWP) alternatives to HCFC-141b in the foam sector, which had delayed the implementation of stage II activities in the foam sector that would have allowed the Government of Argentina to phase out 85.92 ODP tonnes of HCFCs; and
- (b) That, in the event that alternatives were not available on the local market, high-GWP alternatives could be used, on a transitional basis only, and that the Government of Argentina would report to each Executive Committee meeting on the progress made towards ensuring that the selected technologies, including the associated components, were available on a commercial basis in the country, on the understanding that incremental operating costs (IOCs) would not be funded until the transition to the agreed alternatives was complete.

6. At the 93<sup>rd</sup> meeting, UNIDO reported that over the 2022-2023 period, HFO prices reached US \$35-40/kg, and that even though HFOs had been tested by local systems houses, they did not have sufficient stocks for production at a commercial scale. Regarding other alternatives, downstream enterprises were reluctant to use other technologies such as methyl formate or methylal due to their corrosiveness and flammability issues, identified during previous tests. Noting the report, the Executive Committee requested the Government of Argentina and UNIDO, in line with subparagraph (c)(ii) of decision 92/31, to provide an update at the 94<sup>th</sup> meeting on the local market availability of low-GWP alternatives to HCFC-141b in the foam sector and on the transitional use of high-GWP alternatives (decision 93/17)(b)).

## **Progress report**

7. On behalf of the Government of Argentina, UNIDO submitted a report highlighting Argentina's recent consultations with key suppliers (Chemours, Honeywell and Arkema), which confirmed that prices, availability and delivery times continue to be the main issues hindering local adoption of HFOs. Their local most recent prices between US \$20 and US \$32, owing to global demand and limited availability, are still a significant barrier for local enterprises. Furthermore, delivery times span between 90 and 120 days, further complicating procurement efforts. None of the suppliers have begun selling HFO to the local system houses on a commercial scale. However, suppliers indicated they could provide HFO to the country provided there are purchase commitments from system houses, highlighting the need for insurance to meet headquarters' requirements for introducing a new alternative into the country.

8. Despite those challenges, system houses in Argentina have engaged in testing and conducting trials with HFOs but no conversions have taken place. Given the commitment to phase out HCFC-141b, local system houses have indicated their necessity to temporarily transition to HFCs. HFC-365mfc, HFC-227ea, HFC-245fa emerge as the most feasible immediate alternatives. Their prices align closely with that of HCFC-141b and their availability ensures business continuity without significant cost increases.

9. HFCs are also technically compatible in PU foam formulations which is critical for an easy and efficient substitution of HCFC-141b. Previous attempts with alternative options like methyl formate and methylal proved unsuccessful, as reported earlier. Upon consultation with both system houses and suppliers, the Government of Argentina confirmed that some enterprises are using HFCs on a transitional basis as an alternative to HCFC-141b in the PU foam sector, in an effort to reconcile environmental commitments with economic sustainability.

10. The Government of Argentina reiterated that the use of HFCs in the PU foam sector is not a long-term solution and the local system houses expressed their willingness to adopt HFOs as an alternative once the price and supply barriers are overcome. The Government considers that suppliers are a key piece in the adoption of the technology and that the country requires support from HFO-producing countries to ensure a reliable local supply.

## **Secretariat's comments**

11. The Secretariat notes the status report providing an update on the local market prices and availability of HFOs, the Government's efforts to explore the use of other low-GWP alternatives, the confirmation that some enterprises are using HFCs on a temporary basis as an alternative to HCFC-141b in the PU foam sector, and the reassurance of the local system houses' willingness to adopt HFOs as an alternative once the price and supply barriers are overcome.

12. The report submitted by UNIDO also highlights the role of suppliers and the need for support from HFO-producer countries to ensure local supply of HFOs. Noting that the issue of availability of alternatives in PU foam manufacturing will be discussed in the agenda item 10 of the 94<sup>th</sup> Executive Committee meeting, the Secretariat has included information related to the PU foam project in Argentina in document UNEP/OzL.Pro/ExCom/94/58.

13. Noting that high-GWP alternatives are being used on a transitional basis, the Secretariat recommends that, in line with decision 92/31(c)(ii), the Government of Argentina continue reporting to the Executive Committee on the matter.

## Recommendation

14. The Executive Committee may wish:
- (a) To note the report on the status of availability of low-global-warming-potential (GWP) alternatives to HCFC-141b in the foam sector and on the transitional use of high-GWP alternatives in the context of stage II of the HCFC phase-out management plan for Argentina, provided by UNIDO and contained in document UNEP/OzL.Pro/ExCom/94/9; and
  - (b) To request the Government of Argentina and UNIDO, in line with decision 92/31(c)(ii), to provide an update at the 95<sup>th</sup> meeting on the local market availability of low-GWP alternatives to HCFC-141b in the foam sector and on the transitional use of high-GWP alternatives.

### **Chile: HCFC phase-out management plan (stage II – final progress report on the implementation of the work programme associated with the final tranche) (UNDP, UNEP and UNIDO)**

#### Background

15. Stage II of the HCFC phase-out management plan (HPMP) for Chile was approved in principle, at the 76<sup>th</sup> meeting<sup>3</sup> and the third and final tranche was approved at the 85<sup>th</sup> meeting.<sup>4</sup> At the 90<sup>th</sup> meeting the Executive Committee approved, on an exceptional basis, the extension of the date of completion of stage II of the HPMP for Chile to 31 June 2023, given the delay in implementing phase-out activities due to the COVID-19 pandemic and requested the Government of Chile, through UNDP as lead implementing agency, to submit, at the second meeting in 2023, a progress report on the implementation of the work programme associated with the final tranche and the project completion report.<sup>5</sup>

16. On behalf of the Government of Chile, UNDP as lead implementing agency, submitted the progress report on the implementation of the work programme associated with the third and final tranche of stage II of the HPMP in line with decision 90/10(d). The project completion report was submitted in October 2023.

#### *HCFC consumption*

17. The Government of Chile reported a consumption of 18.37 ODP tonnes of HCFCs in 2022, which is 79 per cent below the HCFC baseline for compliance of 87.5 ODP tonnes.

#### Progress report on the implementation of the third and final tranche of stage II of the HPMP

#### *Legal framework*

18. During the final tranche of stage II, the national ozone unit (NOU) continued to strengthen the monitoring and enforcement system including updating the tariff headings and descriptors for the control of HCFCs and HFCs and fully formulated polyols. Three training workshops were held for a total of 57 customs officers (including 23 women). Laboratory materials for chemical analysis of ODS refrigerants and fully formulated polyols were purchased to support enforcement through the Customs Laboratory. The

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<sup>3</sup> Decision 76/37

<sup>4</sup> Decision 85/22 Annex IV of document UNEP/OzL.Pro/ExCom/85/67

<sup>5</sup> Decision 90/10(c) and (d)

system of registry for products and equipment<sup>6</sup> containing or using HCFCs continued to be finalized and tested, and it is being adjusted for incorporation into the web-based platform on the Pollutants Release and Transfer Registry of the Ministry of Environment. A training session on the new registry process was held for 91 customs officers (including 36 women) and information booklets and flyers were printed and published online. The new decree to update regulations to include HFC quotas and the HPMP stage III agreement was approved by the Council of Ministers in July 2023 and is expected to enter into force during the first half of 2024.

#### *Polyurethane foam manufacturing sector*

19. During the final tranche of stage II, the last polyurethane (PU) foam enterprises completed conversions, resulting in a total phase out of 20.46 ODP tonnes (185.98 mt) of HCFC-141b from the conversions in stage II of the HPMP, as follows:

#### *Individual conversions (discontinuous panels)*

- (a) Eight enterprises completed conversions to HFOs (one enterprise converted to cyclopentane and HFO) as individual enterprises with a phase-out of 13.21 ODP tonnes (120.10 mt) of HCFC-141b. From the five enterprises originally included for individual conversion,<sup>7</sup> one enterprise, Superfrigo, withdrew from the project, while four additional enterprises from the group projects were added for individual conversion; including two from the Austral Chemicals Chile S.A. (Austral) project and two from the Ixom Chile S.A. (Ixom) group project;

#### *Group projects (discontinuous panels and spray foam)*

- (b) *Austral group project:* Of the 28 enterprises initially included, 25 enterprises completed conversions to HFO technology for a total phase out of 6.37 ODP tonnes (57.90 mt); two enterprises withdrew entirely from the project; two enterprises converted as individual enterprises<sup>8</sup>; and one enterprise formerly included under the Ixom group project joined; and
- (c) *Ixom group project:* Of the eight enterprises initially included, five enterprises completed conversions to HFO technology for a total phase out of 0.88 ODP tonnes (7.98 mt), three enterprises withdrew entirely from the project; three eligible enterprises joined the project; two enterprises converted as individual enterprises without assistance from the Multilateral Fund; and one enterprise left to join the Austral group.

#### *Refrigeration servicing sector*

20. The following activities were implemented since the last progress report:

- (a) *Training in good servicing practices, certification of technicians and technical assistance in the refrigeration and air-conditioning sector:* Four training workshops were held on best refrigeration practices for a total of 126 technicians (including 10 women); 37

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<sup>6</sup> The online registry contains information on products and equipment, including brand, model, type of HCFC, amount of HCFC, and the type of use (refrigerant, insulation, etc). The registry contains the information submitted by national producers, importers and exporters on products and equipment containing or using HCFC.

<sup>7</sup> Danica Termointustrial, Inema S.A., Poliuretanos Polchile Ltda, Refricentro S.A. and Superfrigo ingenieria y Refrigeracion Ltda.

<sup>8</sup> Without requiring any additional funding from the Multilateral Fund.

technicians (including two women) received certification in two or more categories by the Centre of Evaluation and Certification of Labour Skills, for a total of 318 technicians certified; the NOU continued participating as technical counterpart in the 4<sup>th</sup> Clean Production Agreement on processed food of the agro-industry sector to encourage the use of alternatives to HCFCs and HFCs in agro-industry installations;

- (b) *Recovery, recycling and reclaiming programme:* All the reclaiming units and associated equipment (i.e., three recycling units; three refrigerant identifiers; 90 low-capacity, 90 medium-capacity and six high-capacity reusable refrigerant recovery cylinders; and three Goetz tubes) were delivered to the three recycling and reclamation centres and associated training was provided;
- (c) *Demonstrative conversions in cold rooms and air conditioners:* Conversions were completed in two beneficiaries: a fish processing company, Marine Farm, which converted its cold room to ammonia phasing out 0.32 ODP tonnes (5.82 mt) of HCFC-22 and a hospital, Hospital Luis Tisne, which converted its chiller to HFO-1234ze phasing out 0.08 mt of HCFC-22; and
- (d) *Awareness-raising programme:* Awareness-raising activities were continued online through websites and social media; bulletins were published on activities, trainings and regulations; to support the future training of customs officers, the identification of seized refrigerant cylinders was video-recorded to elaborate specific short videos for training; to support the servicing sector, videos were made about the two demonstration projects, the new reclamation center, the certification process, refrigerant recycling, good operation practices for HCFC-based equipment; and new technologies and energy efficiency.

#### *Project implementation and monitoring unit (PMU)*

21. The NOU continued incorporating a gender perspective in all the activities, which are published on the NOU website. Of the US \$14,200 (US \$4,830 for UNDP and US \$9,370 for UNIDO) approved for project monitoring and implementation for the third tranche, a consultant for HCFC consumption verification and experts to provide technical support to the NOU were engaged as well as an assistant.

#### *Status of disbursement*

22. As of 31 December 2023, of the US \$3,394,017 approved for stage II, US \$3,145,830 (93 per cent) had been disbursed (i.e., US \$1,904,955 for UNDP, US \$210,175 for UNEP, and US \$1,030,700 for UNIDO). From the balance of US \$248,187, a total of US \$111,443, plus agency support costs were returned at the 90<sup>th</sup> meeting,<sup>9</sup> and UNDP is returning at the present meeting an additional balance of US \$128,961, which includes balances associated with the withdrawal of the enterprise Multipanel (US \$112,259), and monitoring.<sup>10</sup> Additional unused balances following the financial completion of stage II, if any, will also be returned to the Fund as per existing policies.

#### **Secretariat's comments**

23. The Secretariat notes with appreciation that, despite some delays due to low availability and high price of the selected alternative, Chile with the assistance of UNDP completed the PU foam sector plan with the conversion of 38 enterprises to HFOs (including one to cyclopentane and HFO) phasing out 20.46 ODP tonnes (185.98 mt) of HCFC-141b. UNDP confirmed that balances associated with the conversion of

<sup>9</sup> Annex VIII of document 90/40 returned funding based on decision 90/10(d) from five enterprises that had withdrawn from the project minus the cost of three enterprises that had joined the project and associated agency support costs.

<sup>10</sup> See annex IV of document UNEP/OzL.Pro/ExCom/94/4

the enterprise Multipanel, which withdrew from the project during the reporting period, will be returned to the Fund.

24. The progress achieved in the refrigeration servicing sector was also significant, including the continuous implementation of a well established system for training and certification of technicians, the completion of the demonstration of low-GWP technologies in two end users with associated dissemination of results to other end users and technicians, and the establishment of the three reclamation centres which will have an impact during the implementation of the last stage of the HPMP.

### **Recommendation**

25. The Executive Committee may wish to note:
- (a) The final progress report on the implementation of the third and final tranche of stage II of the HCFC phase-out management plan (HPMP) for Chile, submitted by UNDP and contained in document UNEP/OzL.Pro/ExCom/94/9;
  - (b) That the individual enterprise Multipanel has opted not to participate in the polyurethane foam conversion projects under stage II of the HPMP; and
  - (c) That unused balances of US \$128,961, plus agency support costs of US \$9,027, including those from the enterprise referred to in subparagraph (b)(ii) and from monitoring, has been returned to the Fund by UNDP at the present meeting.

**Jordan: HCFC phase-out management plan (stage II – progress report on the implementation of the work programme associated with the final tranche) (World Bank and UNIDO)**

### **Background**

26. At the 77<sup>th</sup> meeting, the Executive Committee approved, in principle, stage II of the HCFC phase-out management plan (HPMP) for Jordan for the period 2017 to 2022, to reduce HCFC consumption by 50 per cent of the baseline, in the amount of US \$3,289,919, consisting of US \$2,075,236, plus agency support costs of US \$145,267 for the World Bank, and US \$999,455, plus agency supports costs of US \$69,961 for UNIDO (decision 77/45).

27. At the 91<sup>st</sup> meeting, in approving the third and final tranche of stage II of the HPMP for Jordan, the Executive Committee requested the Government, the World Bank and UNIDO to submit a progress report on the implementation of the work programme associated with the final tranche to the first meeting of the Executive Committee in 2024 (decision 91/41(a)).<sup>11</sup>

28. In line with the decision, the World Bank, as the lead implementing agency, has submitted the above-mentioned progress report.

### **Report on HCFC consumption**

29. The Government of Jordan reported a consumption of 14.44 ODP tonnes of HCFCs in 2022, which is 82.6 per cent below the country's HCFC baseline for compliance. The Article 7 data and the country programme (CP) implementation report for 2023 have not been reported yet. The 2019-2022 HCFC consumption is shown in table 3.

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<sup>11</sup> Provision contained in Annex XVI of document UNEP/OzL.Pro/ExCom/91/72.



**Table 3. HCFC consumption in Jordan (2019-2022 Article 7 data)**

HCFC	2019	2020	2021	2022	Baseline
<b>Metric tonnes (mt)</b>					
HCFC-22	305.00	530.00	166.54	262.54	985.30
HCFC-141b	60.00	0.00	0.00	0.00	261.70
<b>Sub-total (mt)</b>	<b>365.00</b>	<b>530.00</b>	<b>166.54</b>	<b>262.54</b>	<b>1,247.00</b>
HCFC-141b in imported pre-blended polyols*	226.19	0.00	0.00	0.00	102.82**
<b>ODP tonnes</b>					
HCFC-22	16.78	29.15	9.16	14.44	54.20
HCFC-141b	6.60	0.00	0.00	0.00	28.80
<b>Sub-total (ODP tonnes)</b>	<b>23.38</b>	<b>29.15</b>	<b>9.16</b>	<b>14.44</b>	<b>83.00</b>
HCFC-141b in imported pre-blended polyols*	24.88	0.00	0.00	0.00	11.31**

\* CP data

\*\* Average consumption between 2007 and 2009

*Country programme implementation report*

30. The Government of Jordan reported HCFC sector consumption data under the 2022 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

**Progress report**

31. The following activities have been undertaken:

- (a) The following table summarizes the status of project completion of the large enterprises in the polyurethane (PU) foam sector.

Name of Enterprise	HCFC-141b consumption (kg)	Alternative technology used	Status of completion
Al Qanadeel	12,000	HFO	Completed
Al Safa for Insulated Boards	35,000	Cyclopentane	Completed
Prefabricated Building	11,829	Cyclopentane	Completed
Yousef Workshop	15,500	Cyclopentane	Completed
Jordan Pioneer	23,800	Cyclopentane	Completed
Abu Haltam	17,000	Cyclopentane	Completed
<b>Total</b>	<b>115,129</b>		

- (b) In the case of conversion in the spray foam sector, all six enterprises covered under the project had converted to HFOs by the end of November 2021. A workshop was organized in Amman to share the experience gained from the implementation of the spray foam subsector plan and to disseminate to the stakeholders as well as the public and private sectors information on the importance of the transition to alternative technologies in building insulation and its benefits in regard to climate and greenhouse gas emissions, energy efficiency and the protection of the ozone layer.
- (c) In March 2021, the amended instructions to control the use, import and re-export of ODS were published in the Official Gazette Issue No. 5706 and through this, prohibition of the import or re-export of HCFC-141b and HCFC-141b contained in pre-blended polyols that are used in foam insulation starting from 1 January 2022 was enforced.
- (d) Technical assistance is being provided for the conversion of small- and medium-sized enterprises (SMEs) for the adoption of alternative foam blowing agents. In 2020, due to restrictions related to the COVID-19 pandemic, the activities were delayed and in 2021,

they continued to be implemented with the Government finalizing a contract with the regional systems houses to assist SME transition to HFO-based formulations. In August 2022, the systems houses supplied HFO-based and water-based formulations for testing at the user levels and for commercial production. The formulations would be supplied in three batches, one of which was concluded in September 2023, and the other two being planned to be completed in September 2024. Of the originally planned 42 foam sector and 22 commercial refrigeration enterprises to receive assistance for the conversion from HCFC-141b to alternatives, 31 foam sector and 10 commercial refrigeration enterprises participated in the conversion.

- (e) As of date, there are no HFC-based foam blowing agents imported and used in Jordan. The Government would continue to monitor imports of blowing agents using HFCs to ensure the sustainable adoption of low-GWP technologies.

32. In the service sector, based on the national strategy for implementation that was developed in 2019, training activities for servicing enterprises on good service practices and safe use of flammable alternatives were conducted for 20 trainers and 140 technicians. Further, 20 enforcement officers, 20 customs officers and other personnel from the Standard and Metrological Organization were trained on the control and monitoring of HCFCs, regulations relating to HCFC import and sale within the country, and other reporting requirements. Recovery and recycling equipment procured under the project are expected to be distributed to 55 workshops after following necessary acceptance procedures. The quantity of HCFCs recovered would be monitored. Further, with the reduced availability and higher prices of HCFCs, it is expected that there would be an increase in recovery and reuse of HCFCs.

#### *Level of fund disbursement*

33. As of March 2024, of the US \$3,074,691 approved for stage II, US \$2,074,394 (67.5 per cent) had been disbursed. The balance of US \$1,000,297 will be disbursed by the end of 2024.

#### **Secretariat's comments**

34. On consumption fluctuations for HCFC-22, the World Bank explained that there could be several reasons such as availability of HCFC-22 on the market from previous years' imports, slower recovery from the economic impact of the COVID-19 pandemic on the country and consequent demand for HCFC-22 in servicing. The consumption in 2022 was lower than the average 2020-2021 HCFC-22 imports, suggesting an overall decreasing trend in HCFC-22 imports. No consumption of HCFC-141b in imported pre-blended polyols was reported for the period 2020-2022.

35. Of the total 64 enterprises proposed to be funded in the foam sector, 41 received assistance and converted from HCFC-141b to cyclopentane, HFO-based formulations and water-blown formulations in non-insulating foam applications. The remaining enterprises ceased operation due to the impact from the COVID-19 pandemic and changes in their business portfolio.

36. On the service sector training, the World Bank explained that the trainings of trainers, technicians, and customs and enforcement officers were conducted utilizing a training manual ("Best Practices in Service Sectors") and a revised curriculum developed by national experts; this included information outreach sessions on flammable and toxic refrigerants. Further, the Ministry of Environment in coordination with UNIDO will distribute the recovery and recycling equipment with leak detectors to 55 workshops.

37. The remaining activities under stage II of the HPMP in the foam sector and the servicing sector are expected to be completed by December 2024. Stage III of the HPMP is expected to be submitted at the 95<sup>th</sup> meeting.

## Recommendation

38. The Executive Committee may wish to note the progress report on the implementation of the work programme associated with the third and final tranche of stage II of the HCFC phase-out management plan for Jordan, as submitted by the World Bank and contained in document UNEP/OzL.Pro/ExCom/94/9.

**Kenya: HCFC phase-out management plan (stage II – Change of technology for a supermarket (Quickmart)) (Government of France)**

## Background

39. At the 80<sup>th</sup> meeting, the Executive Committee approved, in principle, stage II of the HCFC phase-out management plan (HPMP) for Kenya for the period 2017 to 2030 for the complete phase-out of HCFC consumption, in the amount of US \$1,763,850, plus agency support costs of US \$204,023 for the Government of France, on the understanding that no additional funding would be provided to the Government of Kenya for the phase-out of HCFCs (decision 80/58).

40. Stage II of the HPMP included an incentive scheme for the commercial refrigeration sector that comprises, *inter alia*, centralized systems used in supermarkets/grocery stores, horticulture and food processing. Funding was approved to support the adoption of CO<sub>2</sub>-based refrigeration systems in two supermarkets (at maximum) covering equipment with a capacity of 40 to 50 tonne of refrigeration (TR) each.

41. During a mission to Kenya in 2023, eight different supermarkets in greater Nairobi were evaluated. The pilot project is to be done in Nairobi for a maximum visibility within the country and beyond. The mission found that almost all supermarkets had already converted to HFC technologies, including the supermarket that was originally identified for the conversion project. However, the mission identified a supermarket of the Quickmart chain that still uses HCFC-22 and has a cooling capacity of around 60 kW. Further, after having examined in more detail the situation at the supermarket, it was found that a conversion from HCFC-22 to CO<sub>2</sub> is not a feasible option due to product design and technical reasons. Noting that there are no supermarkets yet in Kenya that use hydrocarbons (HC) as a refrigerant, and that demonstration of HC-based equipment could enable the supermarkets and retail sector to adopt this technology, it was suggested to convert to HC instead of CO<sub>2</sub>, the former being a low-global-warming-potential and environmentally friendly refrigerant.

42. In accordance with paragraph 7(a)(vii) of the Agreement between the Government of Kenya and the Executive Committee, the Government of Kenya, through the Government of France, has submitted a request for a change of technology in the conversion of the supermarket from HCFC-22 to R-290 in place of CO<sub>2</sub>-based technology.

## Revised proposal

43. The revised proposal includes an R-290 demonstration project at Quickmart and equipment support<sup>12</sup> for the Nairobi Technical Training Institute along with training of 16 trainers and other technicians by the trainers at a total cost of US \$365,000,<sup>13</sup> as the cost of R-290-based equipment is lower than the originally proposed equipment using CO<sub>2</sub>-based technology. The levels of co-financing by the beneficiary would remain at the same amount as described in the HPMP.

<sup>12</sup> The equipment would include HC-based commercial refrigeration equipment for training, gas detectors, cylinders, training tools and accessories for the safe use of HCs.

<sup>13</sup> US \$365,000 is the originally approved funding for the incentive scheme under stage II of the HPMP.

### Secretariat's comments

44. It was clarified that the revised budget of US \$365,000 includes US \$170,000 for the demonstration project in Quickmart and US \$195,000 for the equipment support and training activities for trainers and technicians; the additional funding that would be provided for the training centre in Nairobi would result in better national capacity in adopting HC-based technologies in different refrigeration and air-conditioning applications. The in-kind contribution from Quickmart is estimated at US \$100,000 and would relate to technical support for the design and installation of R-290-based equipment, training of technicians in the servicing and maintenance of equipment, and support for awareness and outreach activities including site visit.

45. The Secretariat requested additional clarifications on how this project would result in scaling up adoption of R-290-based equipment in supermarkets and other users of commercial refrigeration equipment. The Government of France explained that R-290-based technology in supermarkets is being adopted in other countries; this demonstration project in Kenya will catalyse, and in future, accelerate adoption of this technology in supermarkets, noting that the Quickmart chain would set up 80 additional outlets in the next few years and that there is an additional 150 supermarkets in different parts of the country that are also expected to expand and could adopt HC-based refrigeration equipment. In Kenya, under the HPMP and the national cooling action plan and, in the future, under the Kigali HFC implementation plan (KIP), different activities would be undertaken for technical information outreach and capacity building/training of technicians on the safe adoption of HC-based technology; other regional activities/study tours would be carried out to demonstrate its performance. In light of the above interventions, it is expected that Kenya and other countries would increasingly adopt this technology.

46. Regarding the safe adoption of this technology, the Government of France explained that the equipment would be certified according to IEC 60335-2-89 and EN 378; installation and servicing will be carried out according to international and national safety standards KEN IEC 60335-2-89:2019, which defines the safety measures necessary for working with flammable refrigerants; and servicing companies and technicians as well as equipment operators will be trained on safe servicing practices. Further, support from regional centres of excellence (e.g., Africa Centre of Excellence for Sustainable Cooling, Rwanda) and synergistic planning and implementation of training activities for the safe servicing of R-290-based equipment with ongoing HPMP activities and future KIP activities, are expected to help maximising the safe adoption of HC-based technology.

47. In line with decisions 84/84(d) and 86/53(a),<sup>14</sup> the Government of France will submit detailed reports on the results of the above-mentioned demonstration project once it is completed, to allow the Secretariat to develop fact sheets to inform future projects.

### Recommendation

48. The Executive Committee may wish:

- (a) To note the request submitted by the Government of France, on behalf of the Government of Kenya, for a change of technology in the conversion of a supermarket of the Quickmart chain, from HCFC-22 to R-290 in place of CO<sub>2</sub>-based technology under stage II of the HCFC phase-out management plan for Kenya, as contained in document UNEP/OzL.Pro/ExCom/94/9; and

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<sup>14</sup> Blanket approval decision.

- (b) To approve the change of technology referred to in sub-paragraph (a) above, on the understanding that any additional costs for the conversion would be covered by the beneficiary supermarket.

**Pakistan: HCFC phase-out management plan (stage II – progress report on the implementation of the third and fourth tranches) (UNIDO and UNEP)**

**Background**

49. At the 90<sup>th</sup> meeting, the Executive Committee approved a change in technology for the conversion of the air-conditioner (AC) manufacturing enterprise Dawlance from R-290 to HFC-32 and approved the associated fourth and final tranche of stage II of the HCFC phase-out management plan (HPMP) for Pakistan and requested the Government of Pakistan and UNIDO to submit progress reports on the implementation of the work programme associated with the third and fourth tranches of stage II of the HPMP on a yearly basis through the completion of the project and the project completion report to the first meeting of 2025 (decision 90/47).

50. At the 92<sup>nd</sup> meeting, the Executive Committee requested the Government of Pakistan, through UNIDO, to continue submitting progress reports on the implementation of the work programme associated with the third and fourth tranches of stage II of the HPMP on a yearly basis until the completion of the project and the project completion report to the first meeting of 2025 (decision 92/15(b)).

51. UNIDO has submitted the progress report in line with decisions 90/47 and 92/15(b) to the present meeting.

**Report on HCFC consumption**

52. The Government of Pakistan reported under the country programme (CP) implementation report a consumption of 118.94 ODP tonnes of HCFC in 2023, which is 52 per cent below the HCFC baseline for compliance and 4 per cent below the targets set in the Agreement with the Executive Committee of 124.06 ODP tonnes. The Article 7 data for 2023 has not been reported yet. The 2019-2023 HCFC consumption is shown in table 4.

**Table 4. HCFC consumption in Pakistan (2019-2022 Article 7 data)**

HCFC	2019	2020	2021	2022	2023*	Baseline
<b>Metric tonnes</b>						
HCFC-22	2,752.41	2,021.71	2,045.99	2,032.85	2,030.21	1,908.25
HCFC-123	0.00	0.00	0.00	1.00	1.00	0.00
HCFC-141b	495.50	73.00	73.25	66.00	66.00	1,259.10
HCFC-142b	44.00	46.00	0.00	0.00	0.00	71.55
<b>Total (mt)</b>	<b>3,291.91</b>	<b>2,140.71</b>	<b>2,119.24</b>	<b>2,099.85</b>	<b>2,097.21</b>	<b>3,238.90</b>
HCFC-141b in imported pre-blended polyols*	0.00	690.00	0.00	119.00	317.47	n/a
<b>ODP tonnes</b>						
HCFC-22	151.38	111.19	112.53	111.81	111.66	104.95
HCFC-123	0.00	0.00	0.00	0.020	0.020	0.00
HCFC-141b	54.51	8.03	8.06	7.26	7.26	138.50
HCFC-142b	2.86	2.99	0.00	0.00	0.00	4.65
<b>Total (ODP tonnes)</b>	<b>208.75</b>	<b>122.21</b>	<b>120.59</b>	<b>119.09</b>	<b>118.94</b>	<b>248.11</b>
HCFC-141b in imported pre-blended polyols*	0.00	75.90	0.00	13.09	34.92	n/a

\* CP data

*Country programme implementation report*

53. The Government of Pakistan reported HCFC sector consumption data under the 2022 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

**Progress report**

54. The following activities were implemented under stage II of the HPMP.

Update on the progress of the conversions in the foam sector

55. Of the foam enterprises covered under stage II, the conversion is completed in the polyurethane foam (PU) and extruded polystyrene foam manufacturers. The thermoware foam manufacturers are facing challenges to complete their conversion as the original technology, namely water-blown technology, was not yielding the desired product quality. They are working on formulations using methyl formate to complete their conversion. These enterprises are expected to complete their phase-out by December 2024.

Update on the progress of the conversion in the air-conditioner manufacturing sector

56. Dawlance has installed all equipment for manufacturing HFC-32-based air conditioners. In 2024, the enterprise would produce 80 per cent of its air conditioners with HFC-32; in 2025, it will fully convert to HFC-32. One hundred set of tools and equipment were delivered to the enterprise. It has trained 800 service technicians on the safe handling of HFC-32 during installation, servicing and maintenance.

Servicing sector activities

57. Under service sector activities, the national ozone unit (NOU) is planning to finalize the remaining three customs and enforcement trainings for a total of 73 officers and complete the training on good servicing practices for an additional 200 technicians. A consultant has been hired to update the refrigeration and air-conditioning (RAC) curriculum and develop the roadmap for a pilot certification system for RAC technicians. Once the pilot certification programme is finalized and approved, 120 technicians are expected to be certified by the end of the year. In addition, the NOU will print and disseminate previously developed/translated information materials and standard operating procedures for relevant stakeholders. All activities will be completed by 31 December 2024.

Level of fund disbursement

58. As of March 2024, of the US \$5,614,330 approved, US \$5,252,091 had been disbursed (US \$4,832,043 for UNIDO and US \$420,048 for UNEP). The balance of US \$362,239 will be disbursed in 2024.

**Secretariat's comments**

59. On the technology challenges associated with the conversion of thermoware foam manufacturers, UNIDO informed the Secretariat that it is working closely with the technology supplier for the ongoing formulation testing using methyl formate. By the second half of 2024, the final formulation based on the test results would be adopted.

60. In line with decision 92/15(b), the Government of Pakistan, through UNIDO, would continue submitting progress reports on the implementation of the work programme associated with the third and fourth tranches of stage II of the HPMP on a yearly basis until the completion of the project and the project completion report to the first meeting of 2025.

## Recommendation

61. The Executive Committee may wish to note the update on the progress in the implementation of the third and fourth tranches of stage II of the HCFC phase-out management plan for Pakistan, submitted by UNIDO and contained in document UNEP/OzL.Pro/ExCom/94/9.

**Pakistan: HCFC phase-out management plan (stage III – report on the status of imports of pre-blended polyols containing HCFC-141b and on the progress of implementation of technical assistance for the foam sector) (UNIDO and UNEP)**

## Background

62. At the 90<sup>th</sup> meeting, the Executive Committee approved stage III of the HCFC phase-out management plan (HPMP) for Pakistan and requested the Government of Pakistan and UNIDO to continue monitoring and to report on an annual basis information on the status of imports of pre-blended polyols containing HCFC-141b until the ban on such imports was in place and on the progress of implementation of technical assistance for the foam sector (decision 90/43(a) and (g)(ii)).

63. At the 92<sup>nd</sup> meeting, the Executive Committee requested the Government of Pakistan, through UNIDO, to continue reporting information on the status of imports of pre-blended polyols containing HCFC-141b on an annual basis until the ban on such imports was in place and on the progress of implementation of technical assistance for the foam sector (decision 92/16(b)).

64. In line with decisions 90/43(a) and (g)(ii) and 92/16(b), UNIDO has submitted a progress report to the present meeting.

## Progress report

### Status of imports of pre-blended polyols containing HCFC-141b

65. The total import of HCFC-141b contained in pre-blended polyols for 2022 and 2023 is 13.09 ODP tonnes (119.0 mt) and 34.92 ODP tonnes (317.47 mt), respectively, and no such import was reported in 2021.

66. In response to the request in decision 92/16(b), efforts have been made to fulfill the mandate of reporting information on the status of imports of pre-blended polyols containing HCFC-141b. The NOU has recently led discussions with stakeholders concerning the ban on the import of such substances. Subsequently, a draft regulation has been prepared, indicating progress towards implementing the ban. These proactive measures align with the stipulated request and signify a concerted effort towards compliance and the effective management of HCFC-141b use in the foam sector.

### Implementation of technical assistance for the foam sector under stage III

67. Since November 2023, technical support was provided to the spray foam enterprises in testing the formulation, including assessing the cost-effectiveness of the proposed option (i.e., methyl formate), which led to the finalization and adoption of the formulation. For the PU foam sector, the new foam machine and safety equipment were procured and will be delivered to the beneficiary enterprise in several months. For pipe insulation, technical support was provided to convert from HCFC-141b to low-global-warming-potential (GWP) technologies that are cost effective and comply with the national regulations. The NOU in consultation with UNIDO is closely monitoring the implementation of conversion projects from HCFC-141b through field visits. During the national ozone event in September 2023, the

NOU and UNIDO shared the positive results of the converted projects and disseminated information on proven alternative low-GWP technologies with the foam industry.

### Secretariat's comments

68. UNIDO informed the Secretariat that the prohibition on HCFC-141b contained in imported pre-blended polyols is yet to be enforced due to delays in finalization and approval. Enforcement is expected to be effective in 2024. The Government is fully aware of the non-availability of HCFC-141b in future due to closure of HCFC-141b production facilities by 2025, and that the conversion projects from HCFC-141b in the foam sector could be delayed if the prohibition is not enforced. It is, therefore, working closely with the industry to ensure that the prohibition is put in place in a timeline aligned with the phase-out of HCFC-141b in the conversion projects in the foam sector.

### Recommendation

69. The Executive Committee may wish:

- (a) To note the report on the status of imports of pre-blended polyols containing HCFC-141b and the progress of implementation of technical assistance for the foam sector under stage III of the HCFC phase-out management plan for Pakistan, submitted by UNIDO, and contained in document UNEP/OzL.Pro/ExCom/94/9;
- (b) To request the Government of Pakistan, through UNIDO to continue reporting:
  - (i) On the status of the ban on imports of HCFC-141b contained in imported pre-blended polyols, noting that the ban is expected to be implemented in 2024; and
  - (ii) On the status of imports of pre-blended polyols containing HCFC-141b on an annual basis until the ban on such imports was in place and on the progress of implementation of technical assistance for the foam sector.

### **South Africa: HCFC phase-out management plan (stage I – final progress report on implementation of the fifth and last tranche) (UNIDO)**

### Background

70. Stage I of the HCFC phase-out management plan (HPMP) for South Africa was approved at the 67<sup>th</sup> meeting<sup>15</sup> to phase out 176.72 ODP tonnes of HCFCs used in the polyurethane foam sector and the refrigeration and air-conditioning (RAC) servicing sectors, and to meet the 35 per cent reduction from the baseline by 2020, at a total cost of US \$6,533,556, plus agency support costs. At the 91<sup>st</sup> meeting, in approving the fifth tranche of stage I of the HPMP, the Executive Committee approved an extension<sup>16</sup> of the stage to 31 December 2023 and requested UNIDO *inter alia* to submit a final progress report on the implementation of the work programme associated with the final tranche, and the project completion report to the second meeting of the Executive Committee in 2024 (decision 91/41).<sup>17</sup>

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<sup>15</sup> Decision 67/30

<sup>16</sup> Extension requested to finalize activities and disbursements delayed due to the impact of the COVID-19 pandemic, among other factors.

<sup>17</sup> Based on paragraphs 24 and 25 of document UNEP/OzL.Pro/ExCom/91/51.



71. At the 93<sup>rd</sup> meeting, the Executive Committee took note of the submission by UNIDO of the progress report, to be reviewed and presented by the Secretariat at the 94<sup>th</sup> meeting.<sup>18</sup>

### **Progress report on implementation of the fifth tranche of stage I of the HCFC phase-out management plan**

#### Report on HCFC consumption

72. The Government of South Africa reported a consumption of 74.71 ODP tonnes of HCFCs in 2023 under Article 7 of the Montreal Protocol, which is 80 per cent below the country's HCFC baseline for compliance and 62 per cent below the maximum allowable consumption for the same year.

#### Refrigeration servicing sector

73. The report indicates that all activities under the fifth tranche were completed, as follows:

- (a) The assessment of the potential impact of banning the imports of non-refillable cylinders was completed, the results were presented to the national ozone unit (NOU), and a survey on the storage and handling of refillable cylinders by technicians was carried out. During stage II of the HPMP, the NOU will continue its ongoing consultations with the main stakeholders on the issuance of the ban, with results to be included in the progress report presented with the second tranche request;
- (b) E-licensing training workshops were conducted for 150 refrigeration servicing providers on the forthcoming electronic compliance systems and data requirements; seven training workshops were held for a total of 140 national customs officers and border officials from neighbouring countries, with the focus on preventing illegal shipments of ozone-depleting substances (ODSs) and strengthened coordination across borders;
- (c) Six training workshops were carried out for 312 RAC technicians across the country on the best practices for the installation and servicing of zero-ODP and low global-warming potential (GWP) refrigerant-based equipment to optimize energy efficiency and minimize leakages;
- (d) Training was provided to all operators of the existing refrigerant recovery, recycling and reclaiming (RRR) centres on the best practices and methods of responsible ODS reclamation, monitoring and data reporting;
- (e) Four pilot projects to demonstrate energy and cost savings obtained from the operation of various RAC systems based on refrigerants with zero ODP and low GWP were completed, despite delays due to the unexpected increase of project costs. The breakdown of the four pilot projects' costs, refrigerant savings and co-financing details is presented in table 5;

**Table 5. Progress report on the end-user demonstration projects**

Beneficiary/ Subsector	Replaced equipment			Selected alternative	Total cost of replacement including co-financing (US \$)	Co-financing by beneficiary (%)
	Baseline technology	Unitary charge (kg)	Annual HCFC use (kg)			
Dairy industry	HCFC-22 DX*	800	498	R-717/glycol/R-744** cascade system	871,267	87

<sup>18</sup> Paragraph 78 of document UNEP/OzL.Pro/ExCom/93/105.

Beneficiary/ Subsector	Replaced equipment			Selected alternative	Total cost of replacement including co-financing (US \$)	Co-financing by beneficiary (%)
	Baseline technology	Unitary charge (kg)	Annual HCFC use (kg)			
				Cooling capacity: R-717 MT: 582 kW R-744 LT: 67 kW		
Supermarket	HCFC-22 DX	270	336	R-290-based systems with a charge below 500 g linked through a water-loop system Cooling capacity: R-290: ca.100 kW	136,171	87
Supermarket	HCFC-22 DX	500	192	Trans-critical R-744-based MT/LT system Cooling capacity: MT: 255 kW LT: 50 kW	409,422	87
Hospital	HCFC-22 water loop	61	30	R-290 cold-water chiller Cooling capacity: Cold water (6°C/12°C): 100 kW	120,000	15

\* DX=Direct expansion

\*\* R-717=ammonia; R-744=carbon dioxide

- (f) A monitoring system has been established to measure energy use at the pilot projects' beneficiaries over 12 to 34 months of operation; relevant data will be reported at the time of the second tranche request of stage II of the HPMP;
- (g) Approximately 200 industry and Government stakeholders shared experiences and participated in informative sessions on the transition to low-GWP alternatives, held in the course of conferences on cold-chain management and relevant industry exhibitions; and
- (h) Three workshops designed to enhance the private sector's collaboration were conducted for 150 participants from RAC enterprises to communicate and gather feedback on the upcoming regulatory plans, low-GWP alternative technologies and HCFC phase-out opportunities.

#### Level of fund disbursement

74. As of December 2023, of the US \$6,533,556 approved for stage I, US \$6,500,556 (99 per cent) had been disbursed by UNIDO, as shown in table 6.

**Table 6. Financial report of stage I of the HPMP for South Africa (US \$)**

Funding tranche	Funds approved	Funds disbursed	Balance	Disbursement rate (%)
First	1,960,229	1,960,229	0	100
Second	2,592,620	2,592,620	0	100
Third	1,302,335	1,302,335	0	100
Fourth	499,612	499,612	0	100
Fifth	178,760	145,760	33,000	82
<b>Total</b>	<b>6,533,556</b>	<b>6,500,556</b>	<b>33,000</b>	<b>99</b>

### Secretariat's comments

75. All activities planned under the fifth and final tranche of stage I have been completed. UNIDO confirmed that stage I of the HPMP for South Africa was completed by 31 December 2023, in line with decision 91/41, and that the remaining balance of US \$33,000 would be returned at the 95<sup>th</sup> meeting. The project completion report will be submitted to the second meeting of the Executive Committee in 2024.

76. The Secretariat notes with appreciation the results achieved so far by the four pilot projects to demonstrate energy and cost savings obtained from using low-GWP technologies in a variety of applications. Noting that the monitoring of their results is still ongoing and that the final results would also serve to inform end users in other countries, the Secretariat suggests, in line with decision 92/36(g), that upon completion of the demonstration projects included in stage I, UNIDO submits final reports on their implementation in line with decision 92/36(g), including the HCFC phase-out and energy-efficiency gains achieved.

### Recommendation

77. The Executive Committee may wish to note:

- (a) The final progress report on the implementation of the fifth and final tranche of stage I of the HCFC phase-out management plan (HPMP) for South Africa, submitted by UNIDO and contained in document UNEP/OzL.Pro/ExCom/94/9;
- (b) That an unused balance of US \$33,000 from stage I of the HPMP would be returned at the 95<sup>th</sup> meeting; and
- (c) That upon completion of the end-user demonstration projects included in stage I of the HPMP, UNIDO will submit final reports on their implementation in line with decision 92/36(g), including the HCFC phase-out and energy-efficiency gains achieved.

### **Uruguay: HCFC phase-out management plan (stage II – progress report on the implementation of the conversion of the foam sector) (UNDP)**

### Background

78. Stage II of the HCFC phase-out management plan (HPMP) for Uruguay was approved in principle, at the 77<sup>th</sup> meeting<sup>19</sup> and the second tranche, which included a request for the implementation of a conversion project in 21 small- and medium-sized foam manufacturing enterprises (SMEs) for the phase-out of 5.53 ODP tonnes (50.24 metric tonnes (mt)) of HCFC-141b contained in imported pre-blended polyols to hydrofluoroolefin (HFO) technology, was approved at the 82<sup>nd</sup> meeting<sup>20</sup>. In approving the tranche, the Executive Committee requested UNDP to report on the progress in implementation of the conversion of the SMEs and the availability of HFO/HFO-based polyurethane (PU) systems and their associated components to the 84<sup>th</sup> meeting (decision 82/76(b)(ii)). Following this, the Executive Committee requested UNDP to continue reporting on the implementation of the conversions at subsequent meetings.<sup>21</sup>

79. At the 91<sup>st</sup> meeting, UNDP reported that only two of the conversions of the 21 eligible SMEs participating in the project had been completed;<sup>22</sup> four enterprises had withdrawn from the project and that

<sup>19</sup> UNEP/OzL.Pro/ExCom/77/67 and Annex XXIV of document UNEP/OzL.Pro/ExCom/77/76

<sup>20</sup> UNEP/OzL.Pro/ExCom/82/61.

<sup>21</sup> Decisions 84/37(b); 87/20(e); 90/19(b)

<sup>22</sup> James to cyclopentane and Rivomark to HFOs, with an associated phase-out of 1.14 ODP tonnes (10.42 mt) of HCFC-141b.

the associated 0.09 ODP tonnes (0.79 mt) of HCFC-141b was considered as phased out; that there was still very little availability of HFO in the market with long delays in the supply of material for trials and testing, due to continued problems in the global supply chain; that the high cost of HFO systems was a challenge for the formulation of systems especially for spray foam applications, where the concentration of blowing agent is higher, impacting the cost of the final product; that all suppliers, in particular Polyser (the main supplier for the spray application subsector), had reaffirmed their commitment to transition to low-GWP alternatives but had continued to experience challenges and had expressed the need to conduct additional trials in winter 2023; and that the ban on the import of HCFC-141b initially planned for 1 January 2021 would be implemented from 1 January 2023, and that imports of HCFC-141b contained in pre-blended polyols would be allowed until 31 December 2023.

80. Subsequently, the Executive Committee decided *inter alia* to:

- (a) Approve, on an exceptional basis, the further extension, to 31 December 2023, of the date of completion of stage II of the HPMP for Uruguay, given the delay in completing the conversions of the remaining foam enterprises owing to the lack of availability of the alternative and supply-chain disruptions;
- (b) To note that the ban on imports of pure HCFC-141b would be implemented by 1 January 2023 and that the ban on HCFC-141b contained in imported pre-blended polyols would be effective as of 1 January 2024; and
- (c) To request the Government of Uruguay, through UNDP, to submit:
  - (i) At the 93<sup>rd</sup> meeting, a progress report on the implementation of the conversion of the foam enterprises, the availability of HFO/HFO-based PU systems and the status of the legislation to ban the import and use of HCFC-141b and HCFC-141b contained in imported pre-blended polyols.

81. At the 93<sup>rd</sup> meeting, the Executive Committee requested UNDP to provide, at the 94<sup>th</sup> meeting, an updated progress report, additional to that which had been submitted at the 93<sup>rd</sup> meeting, on the implementation of the project for the conversion of the foam enterprises and the availability of HFO/HFO-based PU systems and their associated components and on the status of legislation to ban the import and use of HCFC-141b and HCFC-141b contained in pre-blended polyols funded under stage II of the HPMP for Uruguay (decision 93/19).

### **Progress report**

82. In line with decision 93/19, UNDP reported to the 94<sup>th</sup> meeting that two additional enterprises completed their conversion to HFOs, Warners a water heater enterprise and Reyes Refrigeración a spray foam enterprise, phasing out 0.26 ODP tonnes (2.30 mt) of HCFC-141b, for a total of four enterprises converted. The conversions at the 17 remaining eligible SMEs participating in the project were not completed. Due to the high cost of the HFO-based systems, the enterprises lost interest in the project and did not complete their tests and conversion and were not willing to commit to avoid the use of HFC-based PU systems.

83. Since the 91<sup>st</sup> meeting, the NOU conducted meetings with the different suppliers which had expressed interest in the project; however, UNDP reported that the availability of HFO is still irregular with long delays in the supply of material for trials and tests. The main challenges to ensuring a steady supply of HFO-based PU systems have been the stability of the systems (due to degradation of the catalyzer which reduces the shelf life of the product) and the high cost that impacts the formulation of spray applications which are the bulk of the Uruguayan market.

84. The NOU discussed with importers and suppliers the ban on imports of HCFC-141b and HCFC-141b contained in pre-blended polyols. No imports of pure HCFC-141b have been allowed from 1 January 2023. Imports of HCFC-141b contained in pre-blended polyols were allowed until 31 December 2023, so that importers could complete ongoing purchase orders that had been delayed due to logistic and production problems and supply the market while the introduction of alternative technologies is completed.

85. The project was operationally completed at the end of 2023 and the balance of US \$309,186 in unspent incremental operational costs associated with the SMEs not converted to low-GWP alternatives will be returned to the Multilateral Fund at the 96<sup>th</sup> meeting upon financial completion of stage II of the HPMP.

### Secretariat's comments

86. Noting that the main issues encountered by the project were the price and availability of the selected technology, the Secretariat asked whether UNDP and the PU foam enterprises considered any other low-GWP technology during the implementation of the project. UNDP informed that only one enterprise had been willing to undertake an additional investment (James) and adopt hydrocarbon-based technology (cyclopentane). Water-based technology was tested for other enterprises, but it showed low performance and poor quality of the foam and was therefore adopted only on a limited basis.

87. Regarding HFOs, UNDP did not have access to local prices indicating that there is not a system house in Uruguay and that the country only imports pre-blended polyol systems. There is limited availability for panels for the three enterprises that converted and no availability in commercial quantities for spray foam, the main application in the country. UNDP also explained that as Argentinian providers are not supplying HFO-based systems, imports come from China or Europe, representing a challenge given the average shelf life of PU systems with HFO-1233zs(E), which is below six months.

88. In summary, four enterprises completed their conversions as follows: James to cyclopentane, and Warners, Rivomark and Reyes Refrigeración to HFOs. The remaining 17 SMEs received technical assistance and trials to adopt HFOs but did not complete their conversions due to the lack of availability of the HFO-based systems. A summary of the funds disbursed under the project and unused balances to be returned to the fund is provided in table 7.

**Table 7. Funds disbursed in the PU foam project in Uruguay (US \$)**

Item	Approved	Disbursed	Balance
ICC	106,180	106,180	0
IOC	416,709	107,523	309,186
<b>Total</b>	<b>522,889</b>	<b>213,703</b>	<b>309,186</b>

89. Noting that no imports of HCFC-141b pure have been allowed from 1 January 2023 and no imports of HCFC-141b contained in imported preblended polyols have been allowed from 1 January 2024, UNDP explained that the HCFC-141b importer has stocks for around six months, depending on demand. Some of the enterprises that did not complete their project will be using HFC-365mfc and HFC-245fa, water (in lower amount) and, in very small amount, HFO.

90. UNDP also confirmed that all substantive activities under the project were completed by 31 December 2023 as per the extended date of completion of the stage and financial completion will take place 31 December 2024.

91. Noting that the issue of availability of alternatives in PU foam manufacturing will be discussed in the agenda item 10 of the 94<sup>th</sup> meeting, the Secretariat has included information related to the PU foam project in Uruguay in document UNEP/OzL.Pro/ExCom/94/58.

## **Recommendation**

92. The Executive Committee may wish to note:
- (a) The report on progress in the implementation of the conversion of the foam enterprises and the availability of hydrofluoroolefin (HFO)/HFO-based polyurethane (PU) systems and their associated components funded under stage II of the HCFC phase-out management plan (HPMP) for Uruguay;
  - (b) That the ban on imports of pure HCFC-141b has been implemented from 1 January 2023 and that the ban on HCFC-141b contained in imported pre-blended polyols is in force as of 1 January 2024; and
  - (c) The completion of stage II of the HCFC phase-out management plan (HPMP) for Uruguay and that unspent incremental operational costs at the amount of US \$309,186, plus agency support cost of US \$21,643, associated with PU foam enterprises not converted, will be returned to the Multilateral Fund at the 96<sup>th</sup> meeting.

### **Viet Nam – HCFC phase-out management plan (stage II – progress report) (World Bank and the Government of Japan)**

## **Background**

93. In approving the fourth and final tranche of stage II of the HCFC phase-out management plan (HPMP) for Viet Nam, the Executive Committee also requested the Government of Viet Nam, the World Bank and the Government of Japan to submit, at the first meeting in 2024, a progress report on the implementation of the final tranche of stage II of the HPMP (decision 91/57(c)).

## **Secretariat's comments**

94. The Secretariat received the final progress report on stage II of the HPMP for Viet Nam on 8 April 2024. Given the date of receipt, the Secretariat will provide a summary of this report at the 95<sup>th</sup> meeting.

## **Recommendation**

95. The Executive Committee may wish to take note of the submission by World Bank of the final progress report on stage II of the HPMP for Viet Nam, which will be reviewed and presented by the Secretariat at the 95<sup>th</sup> meeting.

## **B. Report related to a HFC project**

### **Jordan – Annual Sales Report of R-290 based large commercial unitary roof-top air-conditioning units (decision 90/25(b)(ii)) (UNIDO)**

## **Background**

96. In considering the report on the project for the conversion from HFC to R-290 of the facility manufacturing large commercial unitary roof-top air-conditioning units of up to 400 kW at Petra Engineering Industries Co. submitted by UNIDO at its 90<sup>th</sup> meeting, the Executive Committee noted that Petra Engineering Industries Co. would report, through UNIDO, separately and for each year, through the completion of the project, the annual sales of R-290-based large commercial unitary roof-top air-conditioning units in Article 5 countries and in non-Article 5 countries (decision 90/25(b)(ii)).

**Secretariat's comments**

97. The Secretariat received the report of annual sales of R-290 based large commercial unitary roof-top air-conditioning units in Article 5 countries and in non-Article 5 countries in line with decision 90/25(b)(ii) for Jordan on 27 March 2024. Given the date of receipt, the Secretariat will provide a summary of this report at the 95<sup>th</sup> meeting.

**Recommendation**

98. The Executive Committee may wish to take note of the submission by UNIDO on behalf of Petra Engineering Industries Co. of the report on the annual sales of R-290 based large commercial unitary roof top air-conditioning units in Article 5 countries and in non-Article 5 countries, which will be reviewed and presented by the Secretariat at the 95<sup>th</sup> meeting.





**Annex I**

**PROJECTS THAT ARE CLASSIFIED AS “SOME PROGRESS” AND ARE RECOMMENDED FOR CONTINUED MONITORING**

<b>Country</b>	<b>Code</b>	<b>Project title</b>	<b>Agency</b>
Afghanistan	AFG/PHA/79/INV/22	HCFC phase-out management plan (stage I, third tranche)	UNIDO
Afghanistan	AFG/PHA/85/INV/28	HCFC phase-out management plan (stage I, fourth tranche)	UNIDO
Afghanistan	AFG/PHA/85/INV/30	HCFC phase-out management plan (stage II, first tranche)	UNIDO
Algeria	ALG/PHA/66/INV/76	HCFC phase-out management plan (stage I, first tranche) (conversion from HCFC-22 in the manufacture of room air conditioners at Condor)	UNIDO
Algeria	ALG/PHA/66/INV/77	HCFC phase-out management plan (stage I, first tranche) (activities in the refrigeration servicing sector including phase-out of HCFC-141b used for flushing, and project monitoring)	UNIDO
Barbados	BAR/PHA/84/TAS/29	HCFC phase-out management plan (stage I, third tranche)	UNEP
Botswana	BOT/PHA/82/INV/21	HCFC phase-out management plan (stage I, second tranche)	UNIDO
Botswana	BOT/PHA/86/INV/27	HCFC phase-out management plan (stage II, first tranche)	UNIDO
Cameroon	CMR/PHA/82/INV/45	HCFC phase-out management plan (stage II, first tranche)	UNIDO
Dominica	DMI/PHA/62/TAS/19	HCFC phase-out management plan (stage I, first tranche)	UNEP
Dominica	DMI/PHA/84/TAS/25	HCFC phase-out management plan (stage I, second tranche)	UNEP
Dominica	DMI/PHA/86/TAS/26	Verification report on the implementation of stage I of the HCFC phase-out management plan	UNEP
Guyana	GUY/PHA/83/TAS/31	HCFC phase-out management plan (stage II, second tranche)	UNEP
Indonesia	IDS/PHA/81/INV/213	HCFC phase-out management plan (stage II, second tranche) (refrigeration servicing sector)	UNDP
Jamaica	JAM/PHA/86/INV/43	HCFC phase-out management plan (stage II, first tranche)	UNDP
Mexico	MEX/PHA/77/INV/180	HCFC phase-out management plan (stage II, second tranche) (cleaning agent phase-out in refrigeration servicing sector)	Spain
Mexico	MEX/PHA/77/INV/185	HCFC phase-out management plan (stage II, second tranche) (refrigeration servicing sector)	Spain
Mexico	MEX/PHA/81/TAS/190	HCFC phase-out management plan (stage II, third tranche) (refrigeration servicing sector)	Spain
Mozambique	MOZ/PHA/83/INV/31	HCFC phase-out management plan (stage I, third and fourth tranches)	UNIDO
Pakistan	PAK/PHA/76/INV/94	HCFC phase-out management plan (stage II, first tranche) (polyurethane foam sector)	UNIDO
Pakistan	PAK/PHA/83/INV/102	HCFC phase-out management plan (stage II, second tranche) (polyurethane foam sector)	UNIDO
Pakistan	PAK/PHA/83/TAS/100	HCFC phase-out management plan (stage II, second tranche) (project management unit)	UNIDO



**Annex II**

**PROJECTS THAT ARE CLASSIFIED AS “NO PROGRESS” AND ARE RECOMMENDED FOR CONTINUED MONITORING**

<b>Country</b>	<b>Code</b>	<b>Project Title</b>	<b>Agency</b>
Jordan	JOR/REF/81/INV/103	Conversion of large commercial unitary roof top air-conditioning units of up to 400kW manufacturing facility from HFC (R-134a, R-407c, R-410a) to propane R290 as refrigerant at Petra Engineering Industries Co.	UNIDO
Seychelles	SEY/PHA/70/INV/19	HCFC phase-out management plan (second tranche)	Germany
Sudan (the)	SUD/PHA/75/INV/38	HCFC phase-out management plan (stage II, first tranche) (foam sector)	UNIDO



## Annex III

## PROJECTS FOR WHICH ADDITIONAL STATUS REPORTS ARE REQUESTED

Country	Code	Project Title	Agency	Recommendation
Algeria	ALG/SEV/90/INS/87	Extension of the institutional strengthening project (phase VII: 7/2022-6/2024)	UNEP	To request UNEP to submit a status report to the 95 <sup>th</sup> meeting on implementation progress of activities
Antigua and Barbuda	ANT/PHA/73/PRP/17	Preparation of a HCFC phase-out management plan (stage II)	UNEP	To request UNEP to submit a status report to the 95 <sup>th</sup> meeting on progress in preparation of stage II of the HPMP
Namibia	NAM/PHA/79/INV/23	HCFC phase-out management plan (third tranche)	Germany	To request the Government of Germany to submit a status report to the 95 <sup>th</sup> meeting on implementation progress of activities
Sao Tome and Principe	STP/PHA/81/PRP/28	Preparation of a HCFC phase-out management plan (stage II)	UNEP	To request UNEP to submit a status report to the 95 <sup>th</sup> meeting on progress in preparation of stage II of the HPMP
Seychelles	SEY/PHA/75/INV/23	HCFC phase-out management plan (third tranche)	Germany	To request the Government of Germany to submit a status report to the 95 <sup>th</sup> meeting on implementation progress of activities
South Sudan	SSD/SEV/76/INS/03	Institutional strengthening project (phase I: 5/2016-4/2018)	UNEP	To request UNEP to submit a status report to the 95 <sup>th</sup> meeting on implementation progress of activities
Sudan (the)	SUD/PHA/88/INV/48	HCFC phase-out management plan (stage III, first tranche)	UNIDO	To request UNIDO to submit a status report to the 95 <sup>th</sup> meeting on implementation progress of activities