



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/88/47
4 November 2021

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-eighth Meeting
Montreal, 15-19 November 2021¹

PROJECT PROPOSAL: EGYPT

This document consists of the comments and recommendation of the Secretariat on the following project proposal:

Phase-out

- HCFC phase-out management plan (stage II, third tranche) UNIDO, UNDP, UNEP,
and Government of
Germany

¹ Online meetings and an intersessional approval process will be held in November and December 2021 due to coronavirus disease (COVID-19)

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

EGYPT

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNIDO (lead), UNDP, UNEP, Germany	79 th and 84 th	70 per cent by 2025

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2020	249.95 (ODP tonnes)
--	------------	---------------------

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2020	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22		34.03		97.24	115.24*				246.51
HCFC-142b		3.44**							3.44

* Includes 111.82 ODP tonnes of HCFC-22 pure plus 3.42 ODP tonnes in the blend R-406A.

** Includes 0.43 ODP tonnes of HCFC-142b pure plus 3.01 ODP tonnes in the blend R-406A.

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	386.3	Starting point for sustained aggregate reductions:	484.61
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	386.41	Remaining:	98.2

(V) BUSINESS PLAN		2021	2022	2023	Total
UNIDO	ODS phase-out (ODP tonnes)	45.28	0.00	39.21	84.49
	Funding (US \$)	4,990,690	0	4,322,172	9,312,862
UNDP	ODS phase-out (ODP tonnes)	7.93	0.00	0.00	7.93
	Funding (US \$)	873,783	0	0	873,783
UNEP	ODS phase-out (ODP tonnes)	2.52	0.00	1.75	4.27
	Funding (US \$)	291,064	0	201,506	492,570
Germany	ODS phase-out (ODP tonnes)	0.00	0.00	0.00	0.0
	Funding (US \$)	0	0	0	0

(VI) PROJECT DATA			2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Montreal Protocol consumption limits			347.64	347.64	347.64	251.08	251.08	251.08	251.08	251.08	125.54	n/a
Maximum allowable consumption (ODP tonnes)			347.64	289.70	289.70	251.08	251.08	251.08	241.08*	241.08*	115.54*	n/a
Agreed funding (US \$)	UNIDO	Project costs	3,356,641	0	4,668,214	0	4,664,196	0	4,039,413	0	195,000	16,923,464
		Support costs	234,965	0	326,775	0	326,494	0	282,759	0	13,650	1,184,643
	UNDP	Project costs	1,042,352	0	1,836,750	0	816,620	0	0	0	0	3,695,722
		Support costs	72,965	0	128,573	0	57,163	0	0	0	0	258,701
	UNEP	Project costs	230,000	0	279,500	0	260,000	0	180,000	0	105,500	1,055,000
		Support costs	27,480	0	33,394	0	31,064	0	21,506	0	12,605	126,049
	Germany	Project costs	0	0	207,300	0	0	0	0	0	0	207,300
		Support costs	0	0	26,949	0	0	0	0	0	0	26,949
Funds approved by ExCom (US \$)		Project costs	4,628,993	0	6,991,764	0						11,620,757
		Support costs	335,410	0	515,690	0						851,100
Total funds requested for approval at this meeting (US \$)		Project costs					5,740,816					5,740,816
		Support costs					414,721					414,721

* Maximum allowable total consumption of Annex C, Group I substances was reduced by 10 ODP tonnes upon approval at the 84th meeting of a domestic air-conditioning sector plan as part of stage II.

Note: Agreement was revised at the 84th meeting.

Secretariat's recommendation:	For individual consideration
--------------------------------------	------------------------------

PROJECT DESCRIPTION

1. On behalf of the Government of Egypt, UNIDO as the lead implementing agency has submitted a request for funding for the third tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$6,155,537, consisting of US \$4,664,196, plus agency support costs of US \$326,494 for UNIDO, US \$816,620, plus agency support costs of US \$57,163 for UNDP, and US \$260,000, plus agency support costs of US \$31,064 for UNEP.² The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2019 to 2020 and the tranche implementation plan for 2021 to 2024.

Report on HCFC consumption

2. The Government of Egypt reported a consumption of 249.95 ODP tonnes of HCFC in 2020, which is 35 per cent below the HCFC baseline for compliance. The 2016-2020 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Egypt (2016-2020 Article 7 data)

HCFC	2016	2017	2018	2019	2020	Baseline
Metric tonnes (mt)						
HCFC-22	4,767.59	4,472.52	3,919.38	4,083.33	4,481.91	4,367.16
HCFC-123	5.00	1.64	2.00	3.75	0.00	5.25
HCFC-124	0.00	2.09	0.00	0.00	0.00	0.00
HCFC-141b	731.53	871.01	629.47	547.62	0.00	1,178.26
HCFC-142b	57.53	70.54	40.02	52.37	52.93	251.69
Sub-total (mt)	5,561.66	5,417.80	4,590.87	4,687.07	4,534.84	5,802.36
HCFC-141b in imported pre-blended polyols*	177.80	87.95	0.00	0.00	0.00	894.00**
ODP tonnes						
HCFC-22	262.22	245.99	215.57	224.58	246.51	240.19
HCFC-123	0.10	0.03	0.04	0.08	0.00	0.11
HCFC-124	0.00	0.05	0.00	0.00	0.00	0.00
HCFC-141b	80.47	95.81	69.24	60.24	0.00	129.61
HCFC-142b	3.74	4.59	2.60	3.40	3.44	16.36
Sub-total (ODP tonnes)	346.53	346.46	287.45	288.30	249.95	386.27
HCFC-141b in imported pre-blended polyols*	19.56	9.67	0.00	0.00	0.00	98.34**

* Country programme (CP) data.

**Average consumption between 2007 and 2009.

3. Consumption of HCFC-22 used in the manufacture and servicing of refrigeration and air-conditioning (RAC) equipment increased in 2020 after lifting restrictions on imports imposed by the Central Bank of Egypt in 2018 and 2019. HCFC-22 was also used as a co-blowing agent with HCFC-142b to manufacture extruded polystyrene (XPS) foam; as the price of HCFC-142b increased, XPS manufacturers increased the proportion of HCFC-22 used as a blowing agent resulting in the decrease in the consumption of HCFC-142b. R-406A is used as a drop-in blend for CFC-12-based equipment. Imports of HCFC-141b were banned on 1 January 2020 and of HCFC-141b contained in pre-blended polyols on 1 January 2018.

CP implementation report

4. The Government of Egypt reported HCFC sector consumption data under the 2020 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

² As per the letter of 19 August 2021 from the Ministry of Environment of Egypt to UNIDO.

Verification report

5. The verification report confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2019 to 2020 was correct (as shown in Table 1 above). The verification concluded that Egypt was in compliance with the 2019 and 2020 maximum allowable consumption of all Annex C, Group I substances, as in its Agreement with the Executive Committee. The web-based interface application system between importers and the national ozone unit (NOU) recommended by the verifier is being developed, and is expected to be completed and tested by December 2022.

Progress report on the implementation of the second tranche of the HPMP*Legal framework*

6. The HCFC licensing and quota system (except for HCFC-141b in imported pre-blended polyols) came into force in 2013. The import ban of HCFC-141b in pre-blended polyols is implemented through the cooperation between the Egyptian Environmental Affairs Agency (EEAA) and Customs Authority whereby the customs authority checks all imports under the general Harmonized System code for polyols with the assistance of the NOU. In line with decision 79/34(c)(ii), the Government banned the import, use, and export of HCFC-141b in bulk and the export of HCFC-141b contained in pre-blended polyols as of 1 January 2020.

Activities in the manufacturing sector*Polyurethane (PU) foam manufacturing sector*

7. Stage II included the phase-out of HCFC-141b through the conversion of the remaining enterprises in the PU foam manufacturing sector, as summarized below:

- (a) Eight enterprises (Bahgat, Fresh, Ocean, Siltal, Star, Top Maker, and Tredco, with assistance from the Multilateral Fund, and Everest with its own resources) manufacturing domestic refrigerators to phase-out 372.5 mt of HCFC-141b used as a blowing agent for insulation foam to cyclopentane; equipment was delivered; installation, commissioning and safety audits were completed for Fresh, Siltal, Star, and Tredco, while commissioning for Bahgat, Ocean, Top Maker, and Everest is expected by December 2021; safety audits for Fresh, Siltal, Star, and Tredco were initiated and are expected to be completed by March 2022;
- (b) Two enterprises (Electrostar and Kiriazi) that manufacture electric water heaters to phase-out 50.0 mt of HCFC-141b used as a blowing agent for insulation foam to cyclopentane; equipment was delivered, installed, and commissioned; the conversion to cyclopentane was completed; and
- (c) A group project through the systems house Beta Technical and Trading Bureau to replace 114.4 mt of HCFC-141b used by 38 small- and medium-sized enterprises (SMEs) (28 SMEs with assistance from the Multilateral Fund and 10 SMEs with their own resources) with methyl formate; conversion of the 24 eligible SMEs was completed.

XPS foam manufacturing sector

8. Stage II included the conversion of four XPS foam manufacturers (CMB, Insutech, Chema-Foam, and Modern Plastics) with a total consumption of 559.0 mt of HCFC-22 and 24.3 mt of HCFC-142b to a 60/40 blend of HFO-1234ze and dimethyl ether. Equipment for CMB, Insutech, and Modern Plastics was

purchased, with delivery expected by December 2021; local works for CMB and Modern Plastics were completed and are expected to be completed by March 2022 for Insutech. The memorandum of understanding for the conversion at Chema-Foam was finalized with signature expected by December 2021; conversion of the enterprise was expected by 1 January 2023, in line with the planned 1 January 2023 ban on the use of HCFCs and blends of HCFCs in the manufacture of XPS foam.

Residential air-conditioning (AC) manufacturing sector

9. Stage II included the conversion of five residential AC manufacturing enterprises (El-Araby, Fresh, Miraco, Power, and Unionaire) (with a total consumption of 1,189.78 mt of HCFC-22) to HFC-32 and, should the enterprises so decide once the technology became available, R-454B (decision 84/72(b)). Equipment for El-Araby, Fresh, Power, and Unionaire was purchased with delivery expected by 30 November 2021, while the purchase order for equipment for Miraco was still being finalized; that equipment was expected to be purchased and delivered by August 2022. The first release of a simplified free-to-use modeling software to assist in product development was being tested by the residential AC manufacturers.

10. In line with decision 84/72(e)(i)d,³ UNIDO confirmed that the Government would ban the import and manufacture of HCFC-based equipment by 1 January 2023; UNIDO also indicated that the Government would, between 2028 and 2030, ban the manufacture of R-410A-based residential AC equipment for the local market, and the import for the local market of R-410A- and R-407C-based residential AC equipment. In addition:

- (a) The enterprises would voluntarily develop phase-down plans for manufacturing AC units using R-410A for the local market and report to the NOU. Those plans would be developed between 2023 and 2030; and
- (b) The Government would develop risk assessment and market acceptance studies by March 2023, implement unspecified actions and mechanisms developed from the market study to support the sector, and develop mandatory labelling systems for new products.

Commercial AC manufacturing sector

11. Stage II included the technical assistance for three enterprises (EGAT, Volta, and Delta Construction and Manufacturing (DCM)) that manufacture central AC equipment for light commercial and residential use (below approximately 144,000 BTU/h (12 tonnes of refrigeration (TR)) to low-GWP alternatives and for larger capacity systems to a combination of low-GWP alternatives and indirect evaporative cooling (IEC). During consultations with stakeholders, an additional three commercial AC manufacturers (Tiba Engineering Industries, Misr Engineering and Industries, and Miraco-Carrier)⁴ expressed an interest to participate in the project; following consultations with the Secretariat, letters confirming their participation, including the commitment to ensure that that equipment would be converted to only low-GWP alternatives for the direct expansion component, were received.

12. Of the six enterprises participating in the project, one selected HFC-32 for the direct expansion component of the equipment, while the other enterprises will select the refrigerant after prototype testing. Terms of reference were being finalized to develop a reference testing methodology and field testing of prototype equipment to be developed by the Housing and Building National Research Center (HBRC), a

³ The Executive Committee *inter alia* requested the inclusion of, as part of the submission for the third tranche, an update on regulatory measures planned or introduced and a planned timeline for the enterprises to manufacture exclusively for the local market using HFC-32 or an alternative with lower GWP.

⁴ The participation of these additional enterprises would be at no additional cost to the Multilateral Fund, and no funding would be provided directly to the enterprises under this technical assistance activity; their participation will facilitate the uptake of the low-GWP technology in the market, thus contributing to the sustainability of the activity.

governmental scientific research institution affiliated with the Ministry of Housing. Testing will be carried out in three representative sites with variable climatic conditions, and the enterprises will build a base unit and a IEC-hybrid prototype by November 2021 (DCM and Misr Engineering and Industries) and by September 2022 (EGAT, Volta, Tiba Engineering Industries, and Miraco-Carrier). Terms of reference were finalized for a financial expert that will undertake a cost-benefit analysis of the technology by December 2022.

Activities in the refrigeration servicing sector

13. The following activities were undertaken:

- (a) A new cooperation protocol was signed in January 2021 between the Ministry of Trade and Industry and the EEAA, resulting in cooperation on a study, also with ASHRAE Cairo, to analyze the economic impacts of using alternatives to ODS, including R-600A in domestic and small commercial refrigeration, R-514A and HFO-1233ze in chillers, and ammonia in refrigeration applications; a policy consultation meeting with 26 participants from the AC industry to discuss the upcoming HCFC-22 ban in residential AC, the HFC-32 (or R-454B) conversion timeline, and the need for training and certification of technicians and for a market assessment; a seminar for 60 participants on the HCFC phase-out, the economic impacts analysis, and global and regional policies on controlled substances and the introduction of low-GWP, energy efficient RAC equipment in the market;
- (b) Three training workshops for 90 customs officers (of which 27 were women) on ODS regulations and illegal imports or counterfeit refrigerants; under the refrigerant market surveillance programme, three training workshops for 100 officers (of which 38 were women) from the Consumer Protection Agency, Industrial Control Authority, National Chemicals Agency, Commercial Fraud Department at Ministry of Trade, and the Supply Investigation Directorate at Ministry of Supply and Local Trade, and continued development of a refrigerant tracking systems based on the introduction of quick response (QR) codes for refrigerant cylinders that will be tested during 2022 and mandatory by 31 December 2023;
- (c) Continued collaboration with HBRC to update national and local codes and standards, resulting in development of a national code for the operation, installation, and servicing of RAC equipment for end-users and service providers, and associated training programme developed, with the first trainings for 100 consultants, contractors, government engineering authorities, and municipality authorities expected in October 2021, with additional trainings planned through April 2023; a technical committee met in July 2021 to start the review of local HVAC and refrigeration codes to incorporate the national code of refrigerants, expected to be completed by July 2024; 19 international standards related to identifying and handling of refrigerants and manufacturing of RAC systems were adopted by the Egyptian Organization for Standards and issued as Egyptian standards;
- (d) A technical working group was formed (as part of the refrigerant containment and leakage prevention programme) to categorize buildings based on the national building code, and to prioritize categories with significant use of RAC applications, expected to be completed by December 2021; development of a inspection guide checklist for operators, expected to be completed by December 2021; development of a certification scheme for RAC installations; and training of five building inspectors for pilot inspection and certification of buildings expected by July 2022;
- (e) Nineteen refrigerant identifiers were delivered to RAC training centres and 11 to external monitoring authorities for the training and monitoring programmes;

- (f) Procurement of equipment (e.g., recovery and recycling units, recovery cylinders, vacuum pumps, refrigerant identifiers, hydrocarbon leak detectors, Lokring set, safety equipment, training appliances with different refrigerants including HFC-32, R-410A, HFC-134a, and R-600a) for two training centres for master trainers and a mobile vocational training facility to facilitate the training of technicians in rural areas on good servicing practices and the handling of flammable refrigerants; training of 30 trainers (of which three were women), of which 27 received the European Union F-gas certification; a further eight training centres will be provided equipment (e.g., recovery units, Lokring set, training appliances with different refrigerants, and service tools) by December 2021 for training on good servicing practices and safe handling of flammable refrigerants; procurement of 125 service kits (e.g., recovery unit, cylinder, vacuum pump, set of servicing tools) to be distributed to service shops that employ certified technicians, expected by December 2021;
- (g) A training institute was selected to house the centre of excellence for flammable refrigerants; tools and equipment specifications were prepared (e.g., demonstration AC units, refrigerants, personal protective equipment, and tools for testing, vacuum, brazing, tubing, and electronics) and are expected to be procured and delivered by March 2022, and the centre operational by December 2022, and an agenda for a training-of-trainers was developed;
- (h) A technical task force held meetings to draft a guidebook on good servicing practices for training curricula, expected to be finalized by December 2022. Following consultations, Egypt decided to introduce the Refrigeration Driving License (RDL) as a national parallel certification programme; the pilot launch of the RDL is expected in 2022; and
- (i) An assessment of the business feasibility and technical and institutional capacities to establish a pilot refrigerant recovery and reclamation centre was completed; selection of a local refrigerant enterprise to manage the centre, and finalization of technical specifications for equipment (e.g., reclamation machines,⁵ recovery machines, vacuum pump and gauge, high-accuracy pressure gauges, cylinders, thermometer) to be procured and delivered by December 2021. The centre is expected to recover at least 80 mt and reclaim at least 56 mt of refrigerants by December 2022.

Project implementation and monitoring unit (PMU)

14. The project management was divided into two components, one relating to UNIDO and the other to UNDP, for managing the respective project activities, with the former overseeing all project activities and overall coordination. UNIDO recruited national consultants to coordinate and monitor project implementation, including visiting beneficiaries and stakeholders; organize workshops, meetings, and events; and draft and circulate support documentation and awareness-raising materials (US \$116,735). UNDP recruited an international consultant, a national consultant, and a project manager to visit beneficiaries, provide technical support on available alternatives, develop contracts for beneficiaries, coordinate with the EEAA and the NOU, and control finances (US \$20,574).

Level of fund disbursement

15. As of August 2021, of the US \$11,620,757 approved so far, US \$4,828,785 had been disbursed (US \$3,362,063 for UNIDO, US \$1,056,523 for UNDP, US \$235,699 for UNEP, and US \$174,500 for the Government of Germany) as shown in Table 2. The balance of US \$6,791,972 will be disbursed in 2022 and 2023.

⁵ Capable of recovering a range of refrigerants, including HCFC-22, HFCs, and their blends.

Table 2. Financial report of stage II of the HPMP for Egypt (US \$)

Agency	First tranche		Second tranche		Total approved	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
UNIDO	3,356,641	2,251,413	4,668,214	1,110,650	8,024,855	3,362,063
UNDP	1,042,352	693,523	1,836,750	363,000	2,879,102	1,056,523
UNEP	230,000	229,800	279,500	5,899	509,500	235,699
Germany	0	-	207,300	174,500	207,300	174,500
Total	4,628,993	3,174,736	6,991,764	1,654,049	11,620,757	4,828,785
Disbursement rate (%)	69		24		42	

Implementation plan for the third tranche of the HPMP

16. The following activities will be implemented between January 2022 and December 2024:

- (a) Continued policy development, enforcement, and monitoring, and training for 180 officers from customs, the Consumer Protection Agency, Industrial Control Authority, National Chemicals Agency, Commercial Fraud Department, and Supply Investigation Directorate on illegal and fraudulent refrigerants, the refrigerant market surveillance programme and implementation of the 1 January 2023 bans on the use of HCFCs and their blends in the manufacture of XPS foam, and on the import and use of HCFC-142b; further development of the technician certification scheme, and launching of a pilot certification programme; and training and certification of 500 technicians (UNEP) (US \$155,000);
- (b) Continued collaboration with HBRC to review and update national codes, including codes related to AC equipment, cold-chain, buildings, and district cooling; implementation of the refrigerant containment and leakage prevention programme focused on large RAC equipment, including initiation of the pilot inspection and certification of buildings, and design regulatory and institutional tools to enforce the certification programme; and training and outreach on local codes and standards (UNEP) (US \$60,000);
- (c) Management and awareness-raising of the servicing sector strategy, including green procurement training for the public sector, advisory group, and consultants (UNEP) (US \$45,000);
- (d) Complete the conversion of the five residential AC manufacturing enterprises (US \$3,659,196), continued technical assistance to the commercial AC manufacturing enterprises, including technical assistance in the design and building of prototypes and prototype field testing, including for the development of the IEC technology; and regulatory evaluation and feasibility assessment, building the prototypes, development of a financial model and comparison with direct expansion AC systems, and a campaign to raise awareness of low-GWP, energy efficient commercial AC equipment (US \$260,000) (UNIDO);
- (e) Complete the conversion of the four XPS foam manufacturers (UNDP) (US \$816,620);
- (f) Procurement of equipment (e.g., recovery units, Lokring set, training appliances with different refrigerants, service tools and consumables) for an additional eight training centres (UNIDO) (US \$80,000);
- (g) Procurement of 167 service tool kits (e.g., recovery unit, cylinder, vacuum pump, set of servicing tools) to be distributed to service shops that employ certified technicians; and an assessment of equipment needs for the AC after-sales service network and, based on that assessment, procurement of portable service tool kits for field teams and support tools for after-sales centres (UNIDO) (US \$400,000);

- (h) On-site training programme on good servicing practices for small workshops employing one or two technicians and consuming two to three cylinders of refrigerants per month. Between 150 and 200 technicians are expected to be trained and will be awarded certification of participation (UNIDO) (US \$20,000); and
- (i) The PMU will continue coordinating and monitoring implementation of the HPMP, including visiting beneficiaries and stakeholders, organizing workshops and meetings, and preparation of relevant reports (UNIDO) (US \$245,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Progress report on the implementation of the second tranche of the HPMP

Legal framework

17. The Government of Egypt has already issued HCFC import quotas for 2021 at 249.70 ODP tonnes, which is lower than the Montreal Protocol control targets.

18. In line with decisions 79/34(c)(iii) and 79/34(c)(iv), the Government was committed to ban by 1 January 2023 the use of HCFCs and blends of HCFCs in the manufacture of XPS foam, and the import of (neat) HCFC-142b. However, the Government was still assessing demand of R-406A to service CFC-12-based equipment; it was agreed that UNIDO would include an update on the status of the ban on imports of R-406A as part of the fourth tranche submission.

PU foam manufacturing sector

19. The commissioning of equipment at all but four enterprises had been completed; the conversion at those enterprises was expected by December 2021. UNIDO confirmed that, in line with the 1 January 2020 ban, those enterprises were not using HCFC-141b; the enterprises had in 2020 temporarily stopped their operations during the COVID-19-induced lockdowns and might temporarily use HFO and water-based alternatives until the commissioning of the equipment was completed.

Residential AC manufacturing sector

20. At the 84th meeting, it was noted that all the enterprises except Power manufactured both HCFC-22- and R-410A-based units on their manufacturing lines; accordingly, an enabling framework that included regulatory measures would be required to ensure the successful uptake of HFC-32 (and R-454B) technology. In reviewing the planned regulatory measures submitted in line with decision 84/72(e)(i)d, the Secretariat considered those measures would be insufficient to enable the successful uptake of the technology by the completion of stage II; moreover, the Secretariat recalled that a number of AC conversions to low-GWP alternatives in other Article 5 countries could not be implemented and the funding for those conversions was returned to the Multilateral Fund; in light of those experiences, more robust policy measures with specific and measurable milestones were desirable. Accordingly, the Secretariat discussed with UNIDO whether a more ambitious timeline and additional measures could be considered.

21. UNIDO emphasized that a lesson from other conversions that introduced AC units with flammable or mildly flammable refrigerants was the need to proceed in a step-wise manner: to start by placing into the market a limited supply of equipment based on the new technology for selected projects, with close monitoring of operation and service for a sufficient period (two years) before offering the units as off-the-shelf products. Such a stepwise approach helps build market confidence and ensure the safe installation, use, and servicing of the equipment. In addition, the Government and industry were challenged

in further specifying a timeline for ensuring the progressive manufacturing of low-GWP-based equipment for the local market given the risk assessment and market acceptance studies had not yet been undertaken, the desire of industry to better understand the supply of HFC-32 components, and the maturity of an appropriate training and certification programme on safety issues for field technicians, as well as the time needed to design, test, and certify new models in accordance with local standards, including minimum energy performance standards. Notwithstanding those challenges, industry was committed to the conversion to HFC-32 (and R-454B), and agreed to introduce the agreed technology, except for export purposes, based on the timeline specified in Table 3. In support of this commitment by the manufacturers, the Government would propose a comprehensive regulatory framework in line with that timeline as part of the fourth tranche request.

Table 3. Timeline of manufacturing low-GWP-based AC residential units for the local market

Date	Action
2023-2024	Offering units in controlled environment (projects)
2024-2025	25 per cent of products offered to local market
2025-2026	50 per cent of products offered to local market
2026-2027	75 per cent of products offered to local market
1 January 2028	100 per cent of products offered to local market

22. Noting that the risk analysis and market acceptance studies may allow a more ambitious timeline, and that those studies and the comprehensive regulatory framework would only be available when the fourth tranche was submitted, it was agreed that the Government would consider whether a more rapid timeline for the transition of the residential AC manufacturing enterprises to exclusively manufacture low-GWP equipment for the local market was feasible based on the results of those studies and, if so, would include such a proposal in the fourth tranche submission; a slower timeline would not be considered. The Secretariat noted that depending on that revised timeline, there may be a need to extend the duration of stage II of the HPMP, as well as to revise the tranche distribution to more accurately reflect the timeline of planned activities. UNIDO confirmed that incremental operating costs (IOCs) would only be disbursed in line with decision 77/35(a)(vi). Regarding the regulatory framework to be submitted as part of the fourth tranche request, the Secretariat emphasized that the framework would not only need to include domestic measures, but also measures addressing imports of high-GWP HFC-based residential AC equipment.

23. As noted at the 84th meeting, absent the implementation of the project, four of the five enterprises would likely start to exclusively manufacturing R-410A equipment on their existing lines. Noting that Egypt is a group 1 country under the Kigali Amendment, the Secretariat considers that the proposed approach, including the proposed timeline, which may be further accelerated in the fourth tranche submission, and which would also include the regulatory framework to enable the transition, will allow the successful implementation of the project, which could bend the trajectory of market transformation in this sector in favour of low-GWP alternatives.

Commercial AC manufacturing sector

24. At the 79th meeting, it was noted that the sustainability of the conversion in the commercial AC manufacturing sector was a primary concern given that the market already used high-GWP HFCs in package units, central units, and chillers, including HFC-134a and R-410A. Accordingly, it was agreed that the Government, through UNIDO, would report on the implementation of policies and measures to ensure the sustainability of the conversion through the tranche implementation progress report of stage II of the HPMP until the successful uptake in the market of the alternatives.⁶ UNIDO noted that the selection of policies and measures depended on the successful completion of the technical assistance activities, including the building and testing of prototypes, and for the development of the IEC technology, which was

⁶ Paragraph 50(b) of document UNEP/OzL.Pro/ExCom/79/32.

expected to be completed by September 2022. Accordingly, UNIDO would include the proposed policy measures as part of the fourth tranche submission.

Gender policy implementation⁷

25. Stage II of the HPMP was approved prior to the approval of the operational policy on gender mainstreaming (decision 84/92(d)). Nonetheless, the NOU tracked the participation of women in training activities, and actively encouraged the participation of female engineers in the conversion projects at El-Araby and Fresh; it is hoped that the participation of women in the train-the-trainers will help encourage the participation of further women trainers and women technicians in subsequent trainings. In addition, the NOU prepared a draft outline for a policy to promote gender mainstreaming that includes: improving reporting and monitoring systems to track and record gender issues, including specific measurable targets; including gender in the design and implementation of new projects, including a section with gender-specific targets; capacity-building (e.g., specific courses for women RAC technicians); and allocating sufficient human and financial resources for the policy.

Sustainability of the HCFC phase-out

26. The Government of Egypt has promulgated regulations that support the conversions in the PU foam manufacturing sector, including a ban on the import of HCFC-141b contained in pre-blended polyols as of 1 January 2018, and the ban on the import, use, and export of HCFC-141b pure and contained in pre-blended polyols as of 1 January 2020. The Government has further committed to ban the import of (neat) HCFC-142b and the use of HCFCs and blends of HCFCs in the manufacture of XPS foam by 1 January 2023, and was collecting additional data to implement a ban on the import of R-406A as soon as possible. The Government was committed to ban the import and manufacture of HCFC-22-based residential AC equipment by 1 January 2023; to ensure full control of R-410A- and R-407C-based AC residential equipment, imported or placed in the local market; and to secure the uptake of HFC-32 and, should the residential AC manufacturing enterprises so decide once the technology becomes available, R-454B technology by the local market.

Conclusion

27. The implementation of the HPMP is progressing, the country's import licensing and quota system is operational, and the verified 2019 and 2020 consumption is below the targets specified in the country's Agreement with the Executive Committee. The conversions in the PU foam sector are almost complete, and all enterprises are complying with the 1 January 2020 ban on the import, use, and export of HCFC-141b pure and contained in pre-blended polyols. The level of disbursement of the second tranche is 24 per cent, and 42 per cent of the funds approved to date. The Government will propose a regulatory framework to ensure the uptake of the agreed low-GWP technology for the residential and commercial AC manufacturing sectors, as well as a possible acceleration of the timeline for conversion of the residential AC manufacturers, as part of the fourth tranche submission, when additional information will be available. The activities planned under the third tranche, which will be complemented in the fourth tranche, will enable the conversion of the XPS foam, residential AC, and commercial AC manufacturing sectors, and will further build the capacity of customs and enforcement officers and strengthen the servicing sector, thereby helping ensure that the country continues to meet its compliance obligations under the Protocol.

⁷ Decision 84/92(d) requested bilateral and implementing agencies to apply the operational policy on gender mainstreaming throughout the project cycle.

RECOMMENDATION

28. The Executive Committee may wish to consider:

- (a) Noting:
 - (i) The progress report on the implementation of the third tranche of stage II of the HCFC phase-out management plan (HPMP) for Egypt;
 - (ii) That UNIDO would present as part of the submission of the fourth tranche in 2023:
 - a. The results of the risk assessment and market acceptance studies for the residential air-conditioning (AC) manufacturing sector, a comprehensive regulatory framework to ensure the uptake of the agreed low-global-warming-potential (GWP) technology, and, if considered feasible by the Government, a more rapid timeline for the transition of the residential AC manufacturing enterprises to exclusively manufacture low-GWP equipment for the local market than that indicated in Table 3 of document UNEP/OzL.Pro/ExCom/88/47;
 - b. Proposed policy measures to ensure the sustainability of the conversion to low-GWP alternatives in the commercial AC manufacturing sector;
 - c. An update on the status of the ban on imports of R-406A, used to service CFC-12-based equipment; and
- (b) Approving the third tranche of stage II of the HPMP for Egypt, and the corresponding 2021-2024 tranche implementation plan, at the amount of US \$6,155,537, consisting of US \$4,664,196, plus agency support costs of US \$326,494 for UNIDO; US \$816,620, plus agency support costs of US \$57,163 for UNDP; and US \$260,000, plus agency support costs of US \$31,064 for UNEP.