



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/84/50
22 November 2019

ORIGINAL: ENGLISH



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

PROJECT PROPOSAL: GHANA

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

Phase-out

- HCFC phase-out management plan (stage I, sixth and final tranche)

UNDP and the
Government of Italy

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Ghana

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out management plan (Stage I)	UNDP (lead), Government of Italy	61 st	35% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	2018	17.8 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2018	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					16.79				16.79
HCFC-142b					1.05				1.05

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	57.30	Starting point for sustained aggregate reductions:	57.30
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	26.27	Remaining:	31.03

(V) BUSINESS PLAN		2019	Total
UNDP	ODS phase-out (ODP tonnes)	2.35	2.35
	Funding (US \$)	130,409	130,409

(VI) PROJECT DATA			2010	2012	2014	2015	2016	2017	2018	2019	2020	Total
Montreal Protocol consumption limits			n/a	n/a	57.30	51.57	51.57	51.57	51.57	51.57	37.25	n/a
Maximum allowable consumption (ODP tonnes)			n/a	n/a	57.30	51.57	51.57	51.57	51.57	51.57	37.25	n/a
Agreed funding (US \$)	UNDP	Project costs	200,000	200,000	190,000	0	195,000	0	125,000	121,311	0	1,031,311
		Support costs	15,000	15,000	14,250	0	14,625	0	9,375	9,098	0	77,348
	Government of Italy	Project costs	70,000	60,000	70,000	0	65,000	0	60,000	0	0	325,000
		Support costs	9,100	7,800	9,100	0	8,450	0	7,800	0	0	42,250
Funds approved by ExCom (US \$)		Project costs	270,000	260,000	260,000	0	260,000	0	185,000	0	0	1,235,000
		Support costs	24,100	22,800	23,350	0	23,075	0	17,175	0	0	110,500
Total funds requested for approval at this meeting (US \$)		Project costs	0	0	0	0	0	0	0	121,311	0	121,311
		Support costs	0	0	0	0	0	0	0	9,098	0	9,098

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of Ghana, UNDP as the lead implementing agency has submitted a request for funding for the sixth and final tranche of stage I of the HCFC phase-out management plan (HPMP) at the amount of US \$121,311, plus agency support costs of US \$9,098 for UNDP only.¹ The submission includes a progress report on the implementation of the fifth tranche, the verification report on HCFC consumption for 2018 and the tranche implementation plan for 2019 to 2021.

Report on HCFC consumption

2. The Government of Ghana reported a consumption of 17.84 ODP tonnes of HCFCs in 2018, which is 69 per cent below the HCFC baseline for compliance. The 2014-2018 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Ghana (2014-2018 Article 7 data)

HCFC	2014	2015	2016	2017	2018	Baseline
Metric tonnes						
HCFC-22	384.70	384.70	318.37	311.60	305.23	774.90
HCFC-142b*	33.58	33.58	15.90	36.70	16.07	225.05
Total (mt)	418.28	418.28	334.27	348.30	321.30	999.95
ODP tonnes						
HCFC-22	21.16	21.16	17.51	17.14	16.79	42.62
HCFC-142b*	2.18	2.18	1.03	2.39	1.05	14.63
Total (ODP tonnes)	23.34	23.34	18.54	19.53	17.84	57.30

* Contained in the blend R-406A, which is 55 per cent HCFC-22, 41 per cent HCFC-142b and 4 per cent R-600a.

3. The country consumes only HCFC-22 and HCFC-142b in the servicing of refrigeration and air-conditioning (RAC) equipment, including domestic refrigerators and freezers. The HCFC refrigerant blend R-406a was being used as a drop-in replacement for CFC-12 during the CFC phase-out and continues to be used for equipment servicing. In recent years, the use of R-406A and HCFC-22 is gradual decreasing, and the use of R-600a has been increasing due to the implementation of the HPMP. In 2018, 89 per cent of the refrigerant used in the country was HCFCs, 10 per cent was HFCs and one per cent was hydrocarbons (HC).

Country programme (CP) implementation report

4. The Government of Ghana reported HCFC sector consumption data under the 2018 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

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 HCFC consumption in 2018 was 17.83 ODP tonnes, which is below the target set in the Agreement with the Executive Committee.

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

Legal framework

6. Ghana has established a licensing and quota system for the imports and exports of HCFCs and HCFC-based equipment. It also banned the import of used refrigeration and RAC equipment under the Energy Efficiency Regulation. In 2016, the Environment Protection Agency issued guidelines on the use

¹ As per the letter of 9 October 2019 from the Environmental Protection Agency of Ghana to the Secretariat.

of HC refrigerants to facilitate their safe introduction in the country. Ghana also follows the Harmonized Regulation on ODS management of the Economic Commission of West African States (ECWAS), collaborating with other countries to control HCFC imports and exports.

7. In 2017, the Government launched a project to introduce a computerized import control system, which connects customs with the national ozone units (NOU), and enhances communications.

Refrigeration servicing sector

8. The following activities were implemented during the fifth tranche:

- (a) Developing a technician certification programme for the refrigeration servicing sector in collaboration with the Energy Commission of Ghana and the Council for technical and vocational education and training (COTVET); a consultant is being employed to develop a curriculum for technician training to be conducted in technical and vocational education institutions;
- (b) Seven workshops were conducted and 778 technicians were trained in good serving practices, refrigerant recovery and reuse, and safe use of flammable refrigerants;
- (c) Procuring of one refrigeration test board for the Accra technical training centre to enhance efficiency in training; the test board is expected to be delivered by the end of 2019; and
- (d) Provision of equipment and tools to selected air-conditioner (AC) workshops to facilitate the conversion of HCFC-22-based ACs to R-290 refrigerant, following strict safety guidelines enforced by the Ministry of Environment, including labeling and registering equipment; and 10,202 units of ACs were converted from HCFC-22 to R-290.

Project implementation and monitoring unit (PMU)

9. One national and one international consultant were employed under the PMU. The total accumulative expenditure of the PMU was US \$280,347.

10. The national consultant supports the NOU in developing programmes and implementing activities, *inter alia*, the memorandum of understanding between the Environmental Protection Agency (EPA) and training institutions; coordinating stakeholders, organizing training workshops, carrying out procurement of goods and services, monitoring activities and preparing progress reports. The accumulative expenditure of the national consultant amounts to US \$149,000.

11. The international consultant is responsible for providing technical advice, assisting the NOU in the planning of training activities; providing guidance on the refrigerant recovery, recycling and retrofitting programme; and on the end-user programme; and coordinating the national team. The accumulative expenditure of the international consultant amounts to US \$55,000.

12. The additional expenditure of US \$76,347 covers development of the online HCFC monitoring system and local travels for implementation of the HPMP.

Level of fund disbursement

13. As of November 2019, of the US \$1,235,000 approved so far, US \$1,093,22 had been disbursed (US \$813,090 for UNDP and US \$280,132 for the Government of Italy), as shown in Table 2. The balance of US \$141,778 will be disbursed in 2020.

Table 2. Financial report of stage I of the HPMP for Ghana (US \$)

Tranche		UNDP	Government of Italy	Total	Disbursement rate (%)
First tranche	Approved	200,000	70,000	270,000	100
	Disbursed	200,000	70,000	270,000	
Second tranche	Approved	200,000	60,000	260,000	100
	Disbursed	200,000	60,000	260,000	
Third tranche	Approved	190,000	70,000	260,000	100
	Disbursed	190,000	70,000	260,000	
Fourth tranche	Approved	195,000	65,000	260,000	96
	Disbursed	195,000	55,000	250,000	
Fifth tranche	Approved	125,000	60,000	185,000	29
	Disbursed	28,090	25,192	53,282	
Total	Approved	910,000	325,000	1,235,000	89
	Disbursed	813,090	280,132	1,093,222	

Implementation plan for the sixth and final tranche of the HPMP

14. The following activities will be implemented during the sixth and final tranche:
- (a) Continuing the development of the legal framework for the management of HCFCs including the technician certification system in collaboration with COTVET; consultation workshop on legislations; training of 200 customs officers; awareness raising and information dissemination; (Government of Italy) (US \$ 18,226 from the fifth tranche);
 - (b) Providing training equipment and upgrading two existing refrigeration training centres to centres of excellence (UNDP) (US \$4,800);
 - (c) Training and certification activities for the refrigeration servicing sector: upgrading a quick reference guide; training 225 inspectors, national fire service staff, distributors, importers and sales personnel in the safe handling of HC refrigerants; training 100 technicians in good servicing practice and the safe handling HCs (UNDP) (US \$33,000);
 - (d) Providing equipment and support to 11 service centres for refrigerant recovery, recycling and conversion of air-conditioning (UNDP) (US \$7,883); and
 - (e) End-user incentive programme to assist the transformation of the commercial refrigeration and cold store sector (UNDP) (US \$37,128 with additional funding of US \$40,000 from the fifth tranche).

Project implementation and monitoring unit (PMU)

15. One national and one international consultant will be employed under the PMU (US \$38,500). The national consultant (US \$21,546) will support the NOU in developing programmes and implementing activities. The international consultant (US \$15,216) will provide technical advice, assisting the NOU in identifying training needs, developing training programmes; providing guidance on the end-user programme; and coordinating the national team. An additional US \$1,738 has also been planned for local travel.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Legal framework

16. The Secretariat noted that the Government of Ghana has established a licensing and quota system for control of HCFC imports and exports and that the system has been operationalized. The Government has already issued HCFC import quotas for 2019 at 17.06 ODP tonnes (783.00 mt); quotas for 2020 will be issued in accordance with the Montreal Protocol control target.

Introduction of HC-290 refrigerant

17. As reported to the Executive Committee at the 72nd meeting², converting/retrofitting HCFC-22 based equipment to R-290 has been a national strategy to phase out HCFCs. The relevant safety guidelines, legal and institutional framework, and certification system have been developed to ensure safety. Training has been provided to technicians and the conversion is performed in 11 designated servicing centers only under strict supervision. So far, a total of 10,202 units have been converted to HC-290 and there has been no safety incident. The Government of Ghana is committed to transforming its AC sector to 70 per cent HC-290 by 2030 as enshrined in its National Determined Contributions (NDC) submitted to the United Nations Framework Convention on Climate Change.

18. The Secretariat inquired about the introduction of new AC units based on HC-290 since the product is available on the market. UNDP reported that, under the Green Cooling Initiative, 410 new HC-290-based AC units have been provided at no cost to Ghana by Midea (China, 380 units) and Godrej (India, 30 units) to encourage the introduction of HC-290 technology in Ghana. The cost of customs clearance was borne by two locally owned companies who will sell, install and maintain these units for one year at discounted prices. These two companies plan to initiate the importation of HC-290-based ACs and expand the use of HC-290 units in the country.

Refrigeration servicing sector

19. A total of US \$79,128 has been budgeted for an end-user programme. As the detailed design of the programme has not been delivered, the Secretariat requested UNDP to provide a detailed plan on the incentive programme, including the level of incentive funding, the number of units to be converted, the targeted end-users, and the alternative technologies selected. UNDP advised that the programme had originally been planned to address consumption in the commercial refrigeration (cold storage) sector, in view of the challenges in finding suitable low-GWP alternatives that are cost effective and commercially available, it is proposed to re-programme the funding partially to train end-users in the adoption of low-GWP technologies and to use the remaining US \$60,000 for an end-user programme promoting HC-290 technology in the residential sector.

20. The organization of 10 training workshops is planned to train 300 technicians covering all the end-users in cold storage facilities with a focus on reducing leakage, improving maintenance, introducing controls on HFCs, in addition to HCFCs, informing future technology options and preparing for the transition to low-GWP technologies (US \$19,628).

21. For the end-user incentive programme in the residential sector, it is planned to cooperate with the Kigali cooling efficiency programme (KCEP) to procure up to 1,000 units of ACs with US \$50 incentive

² Of document UNEP/OzL.Pro/ExCom/72/27, Paragraphs 10-12.

per unit shared by the Multilateral Fund and KCEP, aimed at increasing the market penetration of HC-290 technology (US \$60,000).

Sustainability of the HCFC phase-out

22. Ghana has established two professional training institutions and three centers of excellence to provide systematic training and technical support to technicians. A certification system for servicing technicians is being developed based on the current practice in managing the conversion to HCs. The ozone issue has been integrated into the training of customs officers to ensure the sustainability of training. Training and equipment have been provided to technicians to enable good servicing practices to sustain leakage reduction; and refrigerant identifiers have been provided to customs officers to facilitate the identification of refrigerant to enhance import control. The activities to be implemented in the six tranche, including training the end-users in cold storage subsector for the adoption of low-GWP alternatives and the promotion of HC in the residential AC sector, will ensure long-term sustainability of HCFC phase-out.

Conclusion

23. The Government is enforcing a licensing and quota system for the import and export of HCFCs, and consumption in 2018 is below the control targets of the Montreal Protocol and those stipulated in the Agreement with the Executive Committee. A large number of customs officers have been trained and refrigerant identifiers have been provided to enable close monitoring of imports. The Government is further developing a comprehensive certification system for servicing technicians based on existing practice in managing technicians who have been certified for handling hydrocarbons requirements. Training and equipment has been provided to facilitate good servicing practices. Guidelines for the use of HC refrigerants have been issued and conversions of residential ACs to R-290 are being safely implemented. The disbursement of funding for the fifth tranche reached 29 per cent. The progress achieved so far and the activities implemented under the fifth tranche will ensure the long-term sustainability of the achievements under stage I of the HPMP.

RECOMMENDATION

24. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of the progress report on the implementation of the fifth tranche of stage I of the HCFC phase-out management plan of (HPMP) for Ghana; and
- (b) Requests the Government of Ghana, UNDP and the Government of Italy to submit progress reports on a yearly basis on the implementation of the work programme associated with the final tranche until the completion of the project, verification reports until approval of stage II, and the project completion report to the first meeting of the Executive Committee in 2021.

25. The Fund Secretariat further recommends blanket approval of the sixth and final tranche of stage I of the HPMP for Ghana, and the corresponding 2019-2021 tranche implementation plan, at the funding level shown in the table below, on the understanding that the Government of Ghana is implementing the retrofitting of HCFC-22-based air-conditioning units to hydrocarbon, that it would assume all associated responsibilities and risks, and would only do so in accordance with the relevant standards and protocols.

	Project title	Project funding (US \$)	Support cost (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage I, sixth tranche)	121,311	9,098	UNDP