



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/86/75
29 October 2020

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-sixth Meeting
Montreal, 2-6 November 2020
Postponed to 8-12 March 2021¹

PROJECT PROPOSAL: SUDAN (THE)

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

¹ Due to coronavirus disease (COVID-19)

Pre-session documents of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol are without prejudice to any decision that the Executive Committee might take following issuance of the document.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS**Sudan (The)**

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC Phase Out Plan (Stage II)	UNIDO (lead)	75 th	75% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2019	30.32 (ODP tonnes)
---	------------	--------------------

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2019	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-141b		19.87							19.87
HCFC-22				1.98	8.47				10.45

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:		52.7	Starting point for sustained aggregate reductions:
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:		47.49	Remaining:
			3.11

(V) BUSINESS PLAN		2020	2021	2022	Total
UNIDO	ODS phase-out (ODP tonnes)	0.4	0	0	0.4
	Funding (US \$)	39,286	0	0	39,286

(VI) PROJECT DATA			2015	2016	2017	2018	2019	2020	Total
Montreal Protocol consumption limits			47.43	47.43	47.43	47.43	47.43	34.25	n/a
Maximum allowable consumption (ODP tonnes)			47.43	42.13	36.89	36.89	30.81	13.17	n/a
Agreed funding (US \$)	UNIDO	Project costs	2,383,572	0	0	330,441	0	36,716	2,750,729
		Support costs	166,850	0	0	23,131	0	2,570	192,551
Funds approved by ExCom (US \$)		Project costs	2,383,572			330,441			2,714,013
		Support costs	166,850			23,131			189,981
Total funds requested for approval at this meeting (US \$)		Project costs						36,716	36,716
		Support costs						2,570	2,570

Secretariat's recommendation:	Blanket approval
--------------------------------------	------------------

PROJECT DESCRIPTION

1. On behalf of the Government of the Sudan, UNIDO as the designated implementing agency has submitted a request for funding for the third and final tranche of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$36,716, plus agency support costs of US \$2,570.² The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2019 and the tranche implementation plan for 2020 to 2021.

Report on HCFC consumption

2. The Government of the Sudan reported a consumption of 30.32 ODP tonnes of HCFC in 2019, which is 42 per cent below the HCFC baseline for compliance, and 1.6 per cent below the maximum allowable consumption in its Agreement with the Executive Committee. The 2015-2019 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in the Sudan (2015-2019 Article 7 data)

HCFC	2015	2016	2017	2018	2019	Baseline
Metric tonnes (mt)						
HCFC-22	209.78	203.58	197.5	197.8	190.00	218.50
HCFC-141b	320.47	280.67	234.1	234.1	180.64	369.50
Total (mt)	530.25	484.25	431.60	431.90	370.64	588.00
ODP tonnes						
HCFC-22	11.54	11.20	10.86	10.88	10.45	12.02
HCFC-141b	35.25	30.87	25.75	25.75	19.87	40.65
Total (ODP tonnes)	46.79	42.07	36.61	36.63	30.32	52.67

3. HCFC consumption has been declining due to the implementation of activities under stages I and II of the HPMP to phase out HCFC-141b in the polyurethane (PU) foam sector, as well as the activities implemented in the refrigeration and air-conditioning (RAC) servicing sector with the support of the enforcement of the licensing and quota system. An additional reduction in the consumption of HCFC in 2019 was due to social unrest and subsequent economic slowdown. Some stockpiling of HCFC-141b likely occurred in 2019, in order to enable the foam enterprises (Mina and Target) to operate until the completion of the conversion to cyclopentane is completed.

Country programme (CP) implementation report

4. The Government of the Sudan reported HCFC sector consumption data under the 2019 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 Sudan was in compliance with the Montreal Protocol control target in 2019.

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

Legal framework

6. The Decree for Management and Organization of Ozone Depleting Substances Regulation (2001) was amended in 2013 to include the licensing and quota system for HCFCs. The National Ozone Unit (NOU) works closely with the Sudan Customs Administration to enforce the licensing and quota system to

² As per the letter of 19 August 2020 from the Ministry of Industry of the Sudan to UNIDO.

control the HCFC imports. Currently the ODS regulation is being revised to include control measures for HFCs and the zero quota for HCFC-141b and HCFC-141b contained in pre-blended polyols. To ensure safety of refrigeration technicians, the Government has stipulated that the introduction of flammable refrigerants must meet the existing occupational health and safety standards.

7. The Government of the Sudan has initiated the Kigali Amendment ratification process, and the ODS regulation will be amended to include HFCs in the licensing and quota system. Due to the social and political unrest in the country, the Government has gone through institutional changes which potentially delayed the process of ratification. The newly appointed Secretary General has confirmed that the Kigali Amendment will be given priority. The NOU expects the ratification document to be approved in March 2021.

Progress in the conversion of six foam enterprises and the technical assistance activity

8. The conversion of foam manufacturing from HCFC-141b to CO₂/water-based foam blowing technology at four thermoware companies (Adison, Al Ikram, Magdi, and Sroji and Hamzah) has been completed and all enterprises have stopped using HCFC-141b in their production; 72.19 mt (7.94 ODP tonnes) of HCFC-141b consumption has been eliminated.

9. The conversion of the foam manufacturing from HCFC-141b to cyclopentane in the domestic refrigerator and freezer production at Mina Refrigeration Factory was scheduled for 2018-2019. The equipment specifications were developed and a contract was awarded to the supplier selected through competitive bidding. The beneficiary company has prepared the new site with basic utilities and other auxiliary arrangements to receive the equipment and ensure the necessary safety infrastructure. The company and its factory site were visited and it was confirmed that the preparation is in order. The delivery of equipment originally scheduled in 2019 was delayed due to the social unrest in the country. The contracts for delivery of equipment are still in the course of implementation and the machinery is expected to be delivered in 2020. The current situation due to the COVID-19 pandemic may cause further delays in the delivery, installation and commissioning. The company did not apply for any import quotas of HCFC-141b for 2020.

10. The conversion of the insulation panel manufacturing at Target Steel factory from HCFC-141b to cyclopentane is in a situation similar to that of the Mina Refrigeration Factory. The implementation has been planned in detail, the site has been prepared and the equipment has been ordered/contracted and was scheduled to arrive in Sudan in 2019. The contracts for delivery of equipment are still in the course of implementation and the machinery is expected to be delivered in 2020. The company has not applied for any HCFC-141b import quotas for 2020.

11. With regard to the technical assistance for very small and non-eligible foam enterprises to phase out HCFC-141b, one company (DAM Co.) was assisted with equipment support to convert to CO₂/water-based technology. The equipment delivery was scheduled for May 2020 but has been delayed to a later time due to social unrest and the COVID-19 pandemic. For other non-eligible companies and very small spray-foam users, technical workshops and awareness campaigns have been conducted to provide technical information on available alternatives and PU processing equipment in the market as well as occupational and industrial safety for using hydrocarbons (HC) as blowing/co-blowing agent; to raise awareness about the non-availability of HCFCs in the country in the near future; and to convey the commitment by the Government to ban imports of HCFC-141b in bulk by 1 January 2020 once conversion projects in the foam sector have been completed. These small enterprises were also invited to joint workshops and to attend the start-up trials to learn from earlier investment conversion projects (water/CO₂ in particular) implemented in stages I and II.

12. The Government did not issue any import licences and quotas for HCFC-141b in 2020. Therefore, the consumption of these small enterprises will cease or become temporarily dependent on possible stocks from earlier imports.

Refrigeration servicing sector

13. The following activities were undertaken:

- (a) Five customs officers were trained in the revised harmonized system (HS) and recent experience in tackling illegal trade, and an additional seven customs officers will be trained in the third tranche; several discussions were held with the customs administration on the HS codes; the new/revised HS code that is expected to enter into force on 1 January 2022 has been discussed at a seminar in Khartoum in November 2019;
- (b) Six technicians were trained as trainers through a two-week train-the-trainers course on the operation, maintenance, installation and servicing of RAC equipment including HC-based equipment in the Netherlands; and 400 technicians were trained in handling different refrigerants including flammable refrigerants, leak prevention and the recycling of refrigerants, through the Refrigeration Association and with the support of the Sudan University of Science and Technology (SUST);
- (c) Fifty sets of toolkits, a Lokring tool set and training equipment (e.g., vacuum pumps and gauges, refrigerant control valves, electronic charging scales, adjustable manifold sets, pinch-off and piercing tools, leak detectors) were procured; the equipment was shipped in September 2020;
- (d) Eighty units of R-290 air conditioners have been procured and delivered to demonstrate the use of HC-based equipment. Beneficiaries have been selected (e.g., Governmental institutions, universities, vocational training centres); and information on performance and electricity consumption will be collected to further promote the adoption of HC-based equipment; and
- (e) Awareness-raising activities were conducted in combination with the Ozone Day celebration; and materials containing essential information on HCFC phase-out and the Kigali Amendment were distributed.

Project implementation and monitoring

14. The project was managed by the project management unit (PMU). During the second tranche, US \$10,441 was disbursed for the cost of staff and consultants.

Level of fund disbursement

15. As of August 2020, of the US \$2,714,013 approved so far, US \$2,653,966 had been disbursed, as shown in Table 2. The balance of US \$60,047 will be disbursed in 2020-2021.

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

Tranche	Funds approved	Funds disbursed	Disbursement rate (%)
First	2,383,572	2,332,762	98
Second	330,441	321,204	97
Total	2,714,013	2,653,966	98

Implementation plan for the third and final tranche of the HPMP

16. The following activities will be implemented between December 2020 and December 2021:
- (a) Conducting one seminar with customs to review the new HS code; training of seven customs officers on revised HS code and recent experience tackling illegal trade (US \$9,000 from the second tranche);
 - (b) Training of 50 technicians in good servicing practices and safe handling of flammable refrigerants; distribution of tools and equipment to training institutions; and implementation of technician certification programme to certify 100 technicians (US \$15,000);
 - (c) Continuing to demonstrate R-290 technology, monitoring and analyzing the operation and technical parameters of the installed air-conditioning (AC) units for training purposes; and training of technicians in the installation, servicing and maintenance of R-290 AC units in combination with the demonstration activity (US \$18,000); and
 - (d) Project implementation, coordination, monitoring and reporting (US \$3,716 for staff and consultant).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Legal framework

17. The Government of the Sudan has already issued HCFC import quotas for 2020 at 13.75 ODP tonnes, which is lower than the Montreal Protocol control targets and in accordance with the target in its Agreement with the Executive Committee.

Refrigeration servicing sector

18. The Secretariat enquired about the restrictions on HCFC-141b and HCFC-141b contained in pre-blended polyols, in order to meet decision 75/48(a)(ii), through which the Executive Committee noted the commitment by the Government of Sudan to ban imports of HCFC-141b in bulk by 1 January 2020, once conversion projects in the foam sector had been completed. UNIDO explained that the restrictions on HCFC-141b pure and contained in pre-blended polyols are applied through the licensing and quota system supported by legislation. Since 1 January 2020, the Government of Sudan has not issued any import license or quota for such imports, which makes the ban effective and operational.

19. The Secretariat enquired whether the Government would consider issuing controls over the import of HCFC-based equipment to support the reduction of HCFCs. UNIDO explained that the Government is not planning to impose controls on this equipment; stricter controls (quotas and bans) could be considered later (2023-2024) if the downward trend in consumption does not continue.

20. The Secretariat further discussed with UNIDO the demonstration project for introducing R-290-based AC units and how the Government would implement different activities to maximize the benefit of the demonstration to sustain the introduction and scaling up of the technology. UNIDO explained that the purpose of the demonstration project is to test the operation of this technology and to demonstrate that the split units with a charge of 300 grams do not constitute a fatal risk for customers under standard

operating conditions, in order to remove barriers in adapting this technology. The unit cost of the AC units was US \$450; the cost of installation, refrigerant charge, power meter and materials, estimated at US \$275, will be paid by the beneficiaries.

21. UNIDO further explained that since the R-290 technology is new to the country, the installed units will be closely monitored to ensure safety. The units will be installed by the technicians who are long-standing members of the RAC Association and have received training in handling flammable refrigerants. These technicians have an opportunity to install, maintain and service these R-290-based units in a real environment and learn from practicing the skills obtained in the training workshops and accumulate the practical experience in handling flammable refrigerants, which will form a very important link to the safe adoption of the technology. They will be effective drivers of the new technology.

22. The units are mainly installed in universities, vocational training centres and the RAC Association; these institutions are also effective drivers for new technology and have contact networks at all levels of the society through which information about the advantages of the technology (reduced charge of the refrigerant, reduced cost of the refrigerant, reduced electricity consumption without losses in cooling capacity) will spread.

23. The awareness-raising activities will be held alongside the progress of the demonstration project, and the results will be disseminated to servicing technicians, institutional end-users and the general public to achieve the introduction of this technology.

24. In line with decision 84/84(d), UNIDO will submit a comprehensive report on the results of the above-mentioned demonstration project once completed, to allow the Secretariat to develop fact sheets to inform future projects.

Completion of stage II

25. UNIDO has confirmed that stage II for the Sudan will be completed on 31 December 2021 as established in paragraph 14 of the Agreement.

Gender policy implementation³

26. In line with the gender mainstreaming policies of the Multilateral Fund and UNIDO, the implementation of the third tranche will take into account gender mainstreaming and equity to encourage the full engagement of women in various steps including planning, policy and decision-making, consultation and advisory activities, capacity-building and outreach, and monitoring and evaluation. A checklist has been developed to provide guidance in project preparation, budgeting, implementation and data collection. Gender empowerment will be promoted and gender-disaggregated data has been and will continue to be collected for reporting. The gender issues related to the RAC sector will be taken into consideration in this process.

Sustainability of the HCFC phase-out

27. The capacity of customs officers to control HCFCs is being developed through training and the provision of refrigerant identifiers jointly with the customs department. As of 1 January 2020, the Government did not issue any quota for the import of HCFC-141b in pure and in pre-blended polyols. The training equipment has been provided to the SUST, which has provided ongoing training courses for technicians and continues building capacity for servicing technicians. Equipment and tools have been provided for refrigerant recovery, recycling and reuse to enable technicians to engage in good servicing

³ Decision 84/92(d) requested bilateral and implementing agencies to apply the operational policy on gender mainstreaming throughout the project cycle.

practices and to constantly reduce emissions.

Conclusion

28. The Government of the Sudan has established a licencing and quota system to control the import of HCFCs and no quotas for HCFC-141b has been issued since 1 January 2020. The HCFC consumption in 2019 is 42 per cent below the Montreal Protocol control target and 1.6 per cent below the target in the Agreement with the Executive Committee. The conversion of foam manufacturing at four enterprises had been completed and the remaining two, despite some delays due to the country's and the COVID-19 situation, are on track for completion. Training in good servicing practices and the safe handling of flammable refrigerants have been provided to technicians, and equipment and tools have also been provided to strengthen the training institute and to support refrigerant recovery, recycling and reuse. Low-GWP alternatives are being promoted in the servicing sector to maximize climate benefit. The direct involvement of universities and refrigeration associations in implementation ensures the long-term sustainability of training for technicians in the servicing sector. The overall disbursement has reached 98 per cent. Stage III will be submitted to the 87th meeting.

RECOMMENDATION

29. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of the progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for the Sudan;
- (b) Requests the Government of the Sudan 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 2022;
- (c) Requests UNIDO to submit a detailed report on the results of the demonstration project to promote the conversion of air-conditioning systems to R-290 once completed, to allow the Secretariat to develop fact sheets to inform future projects, in line with decision 84/84(d).

30. The Fund Secretariat further recommends blanket approval of the third and final tranche of stage II of the HPMP for the Sudan and the corresponding 2020-2021 tranche implementation plan, at the funding level shown in the table below:

	Project title	Project funding (US \$)	Support cost (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage II, third tranche)	36,716	2,570	UNIDO