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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-second Meeting
Montreal, 3-7 December 2018

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, second tranche)

UNIDO

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: 2017	36.61 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2017		
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-141b		25.75							25.75
HCFC-22					10.86				10.86

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:		52.7	Starting point for sustained aggregate reductions:
			50.6
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:		47.49	Remaining:
			3.11

(V) BUSINESS PLAN		2018	2019	2020	Total
UNIDO	ODS phase-out (ODP tonnes)	3.8	0.0	0.4	4.2
	Funding (US \$)	353,572	0	39,286	392,858

(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	
Maximum allowable consumption (ODP tonnes)			47.43	42.13	36.89	36.89	30.81	13.17	
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						2,383,572
		Support costs	166,850						166,850
Total funds requested for approval at this meeting (US\$)		Project costs				330,441			330,441
		Support costs				23,131			23,131

Secretariat's recommendation:	Blanket approval
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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 second tranche of stage II of the HCFC phase-out management plan (HPMP) at the amount of US \$330,441, plus agency support costs of US \$23,131.¹ The submission includes a progress report on the implementation of the first tranche, the verification report for 2017, and the tranche implementation plan for 2018 to 2020.

Report on HCFC consumption

2. The Government of the Sudan reported a consumption of 36.61 ODP tonnes of HCFC in 2017, which is 30.5 per cent below the HCFC baseline for compliance, and 0.8 per cent below the maximum allowable consumption in the Agreement with the Executive Committee. The 2013-2017 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Sudan (2013-2017 Article 7 data)

HCFC	2013	2014	2015	2016	2017	Baseline
Metric tonnes						
HCFC-22	207.0	229.78	209.09	203.58	197.15	218.50
HCFC-141b	362.33	364.54	320.47	280.67	234.1	369.50
Total (mt)	569.33	593.63	530.25	484.25	431.6	588.0
ODP tonnes						
HCFC-22	11.39	12.60	11.54	11.20	10.88	12.02
HCFC-141b	39.85	40.10	35.25	30.87	25.73	40.65
Total (ODP tonnes)	51.24	52.70	46.79	42.07	36.61	52.67

3. HCFC consumption has been declining since 2015 due to the implementation of activities to phase-out the use of HCFC-22 in the refrigeration and air-conditioning (RAC) servicing sector, and HCFC-141b in polyurethane (PU) production and insulation foam for refrigeration equipment, approved under stages I and II of the HPMP and supported by the implementation of the licensing and quota system.

Country programme (CP) implementation report

4. The Government of the Sudan reported HCFC sector consumption data under the 2017 CP implementation report, which is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

5. The verification report for 2017 confirmed that the Government has an effective HCFC licensing and quota system, and that the total HCFC consumption for 2017 was 36.61 ODP tonnes. The verification indicated that the HPMP for the Sudan was being supported by national legislation, management and control of HCFC imports, and made the following recommendations on the activities in the refrigeration servicing sector: conduct more training and provide more equipment because of the increasing numbers of servicing technicians/workshops in the country; provide more support to raise

¹ As per the letter of 29 August 2018 from the Ministry of Environment, Natural Resources & Physical Development of the Government of the Sudan to UNIDO.

awareness on the Montreal Protocol and HCFC phase-out; and for UNIDO to continue building the capacity and providing technical assistance to the NOU in the implementation of HCFC activities.

Stage I of the HPMP

6. The implementation of stage I of the HPMP for the Sudan was completed. The conversion of the four foam enterprises resulted in a phase-out of 11.87 ODP tonnes of HCFC-141b. All RAC servicing sector activities under stage I of the HPMP were also completed between 2015 and 2016, including: the training of 260 technicians on the Montreal Protocol implementation mechanism in the Sudan, best practices in the RAC equipment servicing, and future technological developments in the RAC sector and low-global-warming potential (GWP) substances; and training of four trainers on low-GWP alternatives. As indicated when the last tranche² was submitted, the related project completion report on the implementation of stage I of the HPMP will be submitted by June 2019.

Progress report on the implementation of the first tranche of stage II

Legal framework

7. The Higher Council for Environment and Natural Resources (HCENR), which is part of the Ministry of Environment, Forestry and Physical Development, is responsible for implementing and monitoring the HPMP and the ODS licensing and quota system pursuant to the 2001 Environmental Protection Act, and the Governmental decree regarding management and organization of ozone depleting substances regulations (2001). The National Ozone Unit (NOU), which is under the Ministry of Industry, implements the HCENR mandate, and works closely with the Sudan Customs Administration, which is under the Ministry of Finance and Economic Planning.

8. The Government of the Sudan has initiated the Kigali Amendment ratification process, and plans to amend its ODS control measures, including its licensing and quota system. The country is currently implementing enabling activities that are contributing to the ratification process.

Foam manufacturing sector

9. Stage II of the HPMP included a foam sector plan to completely phase out the remaining consumption of HCFC-141b (26.02 ODP tonnes) through conversion of the following six foam manufacturing enterprises: Mina Refrigeration and Target Steel Industries to cyclopentane (18.08 ODP tonnes of HCFC-141b); and Adison, Al Ikram, Sroji & Hamza (Safari) and Al Magdi (7.94 ODP tonnes of HCFC-141b) to water and CO₂ blend blowing agents. Bidding was undertaken and equipment suppliers had been identified for the six foam enterprises. Commission of equipment at the six enterprises was expected before the end of 2018, and the use of HCFC-141b will cease following the conversion. The HPMP also provided for technical assistance to two small enterprises, one of which is DAM Company, which has an annual consumption of 0.44 ODP tonnes to 0.66 ODP tonnes in spray foaming (insulation) activities. The company has signed a commitment to phase-out HCFC-141b consumption to water and CO₂ alternatives, and the Government has endorsed the commitment. UNIDO indicated that a second polyurethane (PU)-spraying company would be identified in due course.

Refrigeration servicing sector

10. Although the funding of the first tranche of stage II covered only the phase-out of HCFC-141b in the foam sector, some preparatory activities in the refrigeration servicing sector were implemented. For example, UNIDO provided information on safe handling and operation of foam systems based on

² UNEP/OzL.Pro/ExCom/82/49, paragraph 9

flammable blowing agents to beneficiaries in the foam sector; and the NOU received support to initiate the training of customs officers and RAC technicians.

Project implementation and monitoring unit (PMU)

11. A local representative and an international consultant assisted in the preparation of industrial sites for new equipment for the conversion of HCFC-141b-based equipment; and the NOU provided administrative support in organizing regular visits to the sites, and followed up on progress and infrastructure works.

Level of fund disbursement

12. As of October 2018, of the US \$2,383,572 approved so far, US \$1,253,483 had been disbursed (i.e. 52.6 per cent). The balance of US \$1,130,089 will be disbursed in 2019 and 2020.

Implementation plan for the second tranche of the HPMP

13. The following activities will be implemented between December 2018 and December 2020:
- (a) Supporting the updating in 2019 of the legal framework with the help of local consultants (draft new regulations, including restrictions/bans on HCFC-141b and HCFC-141b contained in pre-blended polyols for HCFC-based equipment) (\$7,000);
 - (b) Training of 10-15 customs officers on revised harmonized system and recent experience on tackling illegal trade (\$17,000);
 - (c) Continuing the conversion of the foam sector at the six enterprises and small enterprises to be completed by 2019 (US \$1,130,089 from the first tranche);
 - (d) Implementation of 50 training workshops in 10 locations for 400 technicians on issues related to handling different refrigerants, including flammable, leak prevention, and recycling of refrigerants (\$76,000);
 - (e) Training of 5-6 technicians as trainers on HCFC phase-out, and sustainable alternative technologies, especially on hydrocarbon refrigerants and safety (\$38,000);
 - (f) Distribution of 100 recovery kits (i.e. a twin-cylinder portable refrigerant recovery machine and reusable recovery cylinders) to servicing workshops, and for use in the training of technicians in handling various types of refrigerants (US \$80,000);
 - (g) Distribution of 100 of technicians' toolkits (e.g., copper tube cutters, deburring, flaring, and pipe calibration tools, adjustable wrench, torque wrench, tube expander tool and expander heads, Vernier calliper, leak detector, safety glasses and insulating gloves, manifold gauge hoses, weighing scale, tool kit for press fittings, and flux pipe bending tools) (\$40,000);
 - (h) Distribution of training equipment and tools for the Sudan University of Technology (SUST) (recovery kits, toolkits, Lokring, hygrometer, and computer programme to record refrigerant handling); (\$15,000);
 - (i) Demonstration on the safe handling of flammable refrigerants such as ammonia, CO₂ and R-290, including maintenance and servicing, with priority on the safe handling of R-290-based household air conditioners (\$40,000);

- (j) Awareness activities on the RAC servicing sector and ODS phase-out, presentations in schools on Ozone Day(s), and production of print and radio broadcast materials in Arabic (\$7,000); and
- (k) Project management unit (\$10,441).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Verification report

14. With regard to the recommendations on the need for more training and equipment as the number of servicing technicians and workshops is increasing remarkably; need for more support for awareness raising activities; and need to continue building capacity and providing technical assistance to the NOU, UNIDO explained that the main driver for the increased number of servicing technicians and workshops was rapid urbanization. The number of households with RAC cooling systems and refrigerators was also increasing. UNIDO indicated that it would continue supporting the NOU in capacity building.

Progress report on the implementation of the first tranche stage II of the HPMP

Legal framework

15. The Government of the Sudan has already issued HCFC import quotas for 2018 at 36.89 ODP tonnes (i.e., 25.50 ODP tonnes of HCFC-141b and of 11.39 ODP tonnes of HCFC-22), which is lower than the Montreal Protocol targets and in accordance with the maximum allowable consumption in the Agreement with the Executive Committee. The import ban of HCFC-141b and HCFC-141b contained in pre-blended polyols will enter into force on 1 January 2020.

Manufacturing sector

16. UNIDO indicated that through the implementation of stages I and II of the HPMP all HCFC- 141b consumption in the foam sector would be completely phased out by the end of 2019; and HCFC-141b-based manufacturing equipment would be destroyed and documented as appropriate.

Refrigeration servicing sector

17. UNIDO indicated that in order to maintain the HCFC-22 consumption below the levels allowable under the Agreement, the servicing sector activities will be strengthened with funding from the second tranche in order to reduce leaks and maintain the equipment operating efficiently. The training of technicians will be organized mainly by the Sudan University of Technology (SUST), with the support of the Refrigeration and Air Conditioning Technicians Association (RATA). The SUST has ongoing training courses on the RAC sector on which to continue building capacity. The handling of HFCs and flammable refrigerants would increasingly be addressed in such training workshops. UNIDO has previously confirmed that the Government was not undertaking retrofitting of HCFC-22-based refrigeration equipment to flammable refrigerants.

Conclusion

18. Sudan has an effective licencing and quota system and both HCFC-141b and HCFC-22 consumption is decreasing in the country at a faster rate than the Montreal Protocol schedule. The conversion of HCFC-141b-based equipment at 10 foam enterprises will result in the complete phase-out of 26.02 ODP tonnes of HCFC-141b by 2019. Activities in the second tranche in the servicing sector will build upon progress so far achieved and will ensure that the country meets its targets under the

Agreement with the Committee. The direct involvement of SUST and RATA ensures the long-term sustainability of training for technicians in the servicing sector, and help meet the growing demand influenced by urbanization and improved lifestyles.

RECOMMENDATION

19. The Fund Secretariat recommends that the Executive Committee takes note of the progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan of (HPMP) for the Sudan; and further recommends blanket approval of the second tranche of stage II of the HPMP for the Sudan, and the corresponding 2018-2020 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, second tranche)	330,441	23,131	UNIDO