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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Seventy-fifth Meeting  
Montreal, 16-20 November 2015

**PROJECT PROPOSAL: BAHRAIN**

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, second tranche) UNEP and UNIDO

## PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

## Bahrain

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase out plan (Stage I)	UNEP (lead), UNIDO	68 <sup>th</sup>	39% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2014	49.14 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2014	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22				27.0	17.7				44.7
HCFC-123					0.1				0.1
HCFC-124					0.0				0.0
HCFC-141b					0.9				0.9
HCFC-142b									
HCFC-141b in imported pre-blended polyol		9.9							9.9

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	51.9	Starting point for sustained aggregate reductions:	61.39
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	23.21	Remaining:	38.8

(V) BUSINESS PLAN		2015	2016	2017	2018	2019	2020	Total
UNIDO	ODS phase-out (ODP tonnes)	0.0	7.7	0.0	6.0	0.0	1.1	14.8
	Funding (US \$)	0	1,002,211	0	770,811	0	141,775	1,914,797
UNEP	ODS phase-out (ODP tonnes)	1.2	1.0		0.5		0.2	2.9
	Funding (US \$)	163,850	141,250		62,150		28,250	395,500

(VI) PROJECT DATA			2012	2013	2014	2015*	2016	2017	2018	2019	2020	Total
Montreal Protocol consumption limits			n/a	51.9	51.9	46.7	46.7	46.7	46.7	46.7	33.7	n/a
Maximum allowable consumption (ODP tonnes)			n/a	51.8	51.8	46.6	46.5	45.4	43.5	37.3	31.7	n/a
Agreed funding (US \$)	UNEP	Project costs	120,000	0	145,000	0	125,000	0	55,000	0	25,000	470,000
		Support costs	15,600	0	18,850	0	16,250	0	7,150	0	3,250	61,100
	UNIDO	Project costs	549,455	0	0	0	936,646	0	720,384	0	132,500	2,338,985
		Support costs	38,462	0	0	0	65,565	0	50,427	0	9,275	163,729
Funds approved by ExCom (US \$)		Project costs	669,455	0	0							669,455
		Support costs	54,062	0	0							54,062
Total funds requested for approval at this meeting (US \$)		Project costs				145,000						145,000
		Support costs				18,850						18,850

\*Second tranche planned for 2014 but submitted to the 75<sup>th</sup> meeting.

<b>Secretariat's recommendation:</b>	For individual consideration
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## PROJECT DESCRIPTION

1. On behalf of the Government of Bahrain, UNEP as the lead implementing agency, has submitted to the 75<sup>th</sup> meeting a request for funding for the second tranche<sup>1</sup> of stage I of the HCFC phase-out management plan (HPMP), at the amount of US \$145,000, plus agency support costs of US \$18,850 for UNEP only. The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption and the tranche implementation plan for 2015 to 2016.

### Report on HCFC consumption

#### *HCFC consumption*

2. The Government of Bahrain reported a consumption of 49.14 ODP tonnes of HCFC in 2014. The 2010-2014 HCFC consumption is shown in Table 1.

**Table 1. HCFC consumption in Bahrain (2010-2014 Article 7 data)**

HCFC	2010	2011	2012	2013	2014	Baseline
<b>Metric tonnes</b>						
HCFC-22	1,064.4	1,031.1	1,358.8	891.4	876.13	935.8
HCFC-123	0	0	0	2.7	2.724	0
HCFC-124	0	0	2.0	0	1.63	0
HCFC-141b	1.7	5.5	7.3	4.7	7.82	4.0
<b>Sub-total (mt)</b>	<b>1,066.1</b>	<b>1,036.6</b>	<b>1,368.1</b>	<b>898.8</b>	<b>888.30</b>	<b>939.7</b>
HCFC-141b in imported pre-blended polyols	25.8	62.8	82.3	123.1	90.1	91.87*
<b>Total (metric tonnes)</b>	<b>1,091.9</b>	<b>1,099.4</b>	<b>1,450.4</b>	<b>1,022.0</b>	<b>978.4</b>	
<b>ODP tonnes</b>						
HCFC-22	58.5	56.71	74.73	49.0	48.19	51.5
HCFC-123	0	0	0	0.1	0.05	0
HCFC-124	0	0	0.05	0	0.04	0
HCFC-141b	0.2	0.6	0.81	0.5	0.86	0.4
<b>Sub-total (ODP tonnes)</b>	<b>58.7</b>	<b>57.32</b>	<b>75.59</b>	<b>49.6</b>	<b>49.14</b>	<b>51.9</b>
HCFC-141b in imported pre-blended polyols	2.8	6.9	9.1	13.5	9.9	10.11*
<b>Total (ODP tonnes)</b>	<b>61.6</b>	<b>64.2</b>	<b>84.6</b>	<b>63.1</b>	<b>59.05</b>	

\*Average consumption between 2007 and 2009

3. The high consumption in 2012 was due to stockpiling by the air-conditioning (AC) manufacturing enterprise Awal Gulf Manufacturing Company (AGM) in order to meet the Montreal Protocol control target in 2013. From 2013 onwards, the HCFC consumption has been controlled through quotas at levels below the targets in the Agreement between the Government of Bahrain and the Executive Committee. The 2014 HCFC consumption of 49.14 ODP tonnes was below the baseline for compliance of 51.9 ODP tonnes.

#### *Verification report*

4. 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 for 2014 was 49.28 ODP tonnes, slightly higher than the Article 7 data under Montreal Protocol. The verification concluded that Bahrain was in compliance with control targets set in the Agreement in 2013 and 2014.

<sup>1</sup> The second tranche was originally planned for 2014 but only submitted to the 75<sup>th</sup> meeting.

*Country programme (CP) implementation report*

5. The Government of Bahrain reported HCFC sector consumption data under the 2014 CP implementation report which is 3.5 ODP tonnes less than the data reported under Article 7. UNEP explained that the data on imports reported in the CP is consistent with the Article 7 data. The CP data reflects the use of HCFCs in different sectors in the year. Of the total amount of HCFC-22 imported in 2014, 3.5 ODP tonnes were not used in that year.

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

*Legal framework*

6. The Government has issued Law 54/2014 to enforce the Unified Regulation of the Gulf Co-operation Council for Arabian Gulf States (GCC). The GCC Unified Regulation controls import, export and trade of ODS and ODS-based appliances among GCC countries. New law 54/2014 sets penalties for violations, and mandates the Supreme Council for Environment (SCE) to issue the respective bylaws. The SCE has developed a plan for issuing bylaws to cover mandatory refrigerant recovery and recycling, certification of technicians and banning of HCFC-based equipment.

7. Bahrain has established an operational licensing and quota system for HCFCs. The SCE establishes the import quota based on the maximum allowable consumption under the Montreal Protocol and distributes it among importers according to their historical imports. The quota is enforced by customs at the ports of entry. The data on imports and exports were collected from customs and importers, and verified by the SCE for reporting of national consumption.

*Manufacturing sector*

8. Stage I of the HPMP includes the conversion of split-AC and central-AC manufacturing lines in AGM from HCFC-22 to HFC-32 or HC-290 technologies. A line for conducting trials with the alternative technology is being established. An agreement was signed between UNIDO and AGM. After discussions on technical details regarding equipment to be procured, terms of reference were prepared and the procurement process has been initiated. During this process, the possibility of transferring equipment purchased for the cancelled SAGA project in Armenia<sup>2</sup> was explored. However, after reviewing the equipment it was concluded that it did not meet the required specification for the production line at AGM; accordingly it was decided to resume the procurement process. Evaluation of the bids received has been completed and purchase order has been issued. It is expected that the equipment will be delivered by May 2016.

*Refrigeration servicing sector*

9. The Bahrain Society of Engineers (BSE)<sup>3</sup> has been contracted to implement all the activities proposed in the refrigeration servicing sector including training and certification of technicians, updating regulations and developing standards, and public awareness raising activities planned in the HPMP. SCE will continue operating the licensing and quota system. A project steering team represented by UNEP, SCE and BSE was established. A work plan for the national certification programme for technicians has been agreed with the Ministry of Labour, and the first set of updated codes is expected to be released for comments by the first quarter 2016.

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<sup>2</sup> The project for conversion of commercial refrigeration to hydrocarbon technology at the manufacturer SAGA of Armenia was cancelled because the company was in poor financial situation and was not able to implement the project.

<sup>3</sup> BSE is a non-profit technical society that has a good history of successful cooperation with the Supreme Council for Environment (SCE) on different environmental activities including the implementation of the terminal phase-out management plan (TPMP).

10. A plan for the training of custom officers has been developed jointly with the customs department. Fifteen master trainers have been trained and training workshops for customs officers have been scheduled from October 2015 to February 2016. New refrigerant identifiers have been procured and are expected to arrive in mid-2016. The existing e-licensing system is being reviewed to include a separate sector for ODS which enables online registration, licensing, quotas, shipment clearance, monitoring trade and stock, reporting ODS imports, and equipment. After the review, recommendations will be made to introduce the changes. The work will continue in next tranche.

11. A work plan has been developed jointly with the Ministry of Industry and Trade to review and update relevant national standards and codes for HCFCs including the use of hydrocarbon and ammonia refrigerants, national standards for labeling requirements, record keeping and reporting of HCFC consumption. A working committee has been formed and the first batch of updated standards on labeling requirement, record keeping, installation of equipment operating with HC and ammonia and handling and disposal of refrigerant cylinders, is expected to be released in mid-2016. The work will continue over future tranches.

12. The establishment of the national HCFC reclamation center has been initiated. Criteria for the selection of the company to host the reclamation center have been developed and the call for bids has been advertised. Procurement of equipment for the reclamation center has been initiated and will be delivered by May 2016. The center will be operational by mid-2016.

13. Public awareness materials have been developed to promote the new regulations for control of HCFCs. A workshop was held to launch the implementation of the HPMP.

#### Level of fund disbursement

14. As of September 2015, of the US \$774,455 so far approved US \$131,925 (17 per cent) had been disbursed (US \$60,000 for UNEP and US \$71,925 for UNIDO). The balance of US \$642,530 will be disbursed in 2016.

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

Tranche	HPMP 1 <sup>st</sup> tranche	Funds from TPMP	Total approved	Disbursed	Balance	Disbursement rate (%)
UNEP	120,000	105,000	225,000	60,000	165,000	27
UNIDO	549,455	0	549,455	71,925	477,530	13
Total	669,455	105,000	774,455	131,925	642,530	17

#### Implementation plan for the second tranche of the HPMP

15. The second tranche includes funding only for UNEP and will be implemented between December 2015 and December 2016. During this period, the following activities will be implemented:

- (a) Conducting an awareness campaign targeting Government authorities and relevant stakeholders about the introduction and enforcement of the new GCC regulations (UNEP) (US \$10,000);
- (b) Training of 75 customs officers, government officials, importers and distributors in ODS regulations, monitoring and prevention of illegal trade (US \$15,000);
- (c) Continuing the development and implementation of e-licensing system for monitoring imports/exports of ODS and ODS products. The system will also include the monitoring of ODS alternatives (US \$15,000);

- (d) Continuing the development of national standards and codes for the use of hydrocarbon and ammonia refrigerants, labeling requirements, record keeping and reporting of HCFC consumption (US \$20,000);
- (e) Training of 250 technicians in good service practice through the certification programme (US \$25,000);
- (f) Awareness-raising programme targeted at end-users, building owners and key decision-makers to promote low-global warming potential (GWP) technologies (US \$15,000); and
- (g) Project implementation and monitoring including verification of consumption (US \$45,000).

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

#### Progress report on the implementation of the first tranche of the HPMP

##### *Legal framework*

16. The Government of Bahrain has already issued HCFC import quotas for 2015 at 45.97 ODP tonnes in accordance with the Montreal Protocol control targets.

##### *Manufacturing sector*

17. The Secretariat inquired about how the demonstration project promoting low-GWP refrigerants for AC sectors in high-ambient temperature countries in West Asia (PRAHA) has assisted in the technology selection for the conversion project at AGM. UNEP and UNIDO reported that as an original equipment manufacturer, AGM participated in the PRAHA project; currently the prototypes are being tested, and the final report is planned to be released in January 2016. The technologies assessed by PRAHA included HC-290 and HFC-32 which were the technologies selected by AGM. The results from the PRAHA project will provide further guidance to AGM on the final selection of the technology.

18. Under the PRAHA project, AGM is testing prototypes with HFO refrigerants which came only during the second half of 2013, after the HPMP for Bahrain was approved. Accordingly, when submitting the third tranche at the end of 2016, UNEP and UNIDO will be in a better position to decide which technology will best fit the case of AGM. If an HFO-refrigerant is selected UNEP indicated that the third tranche will be adjusted with most likely no significant implication to the incremental capital cost of the project as approved.

19. Upon a request for additional information on the delay in the implementation of the conversion at AGM, UNEP advised that although the conversion at AGM witnessed some delays in the start-up due to the challenges related with the selection of the technology since more than 70 per cent of its products are sold under regional brands, including to manufacturers in neighbouring countries (e.g., Kuwait, Saudi Arabia and United Arab Emirates), where their AC manufacturing enterprises will not be converted during stage I of their HPMPs<sup>4</sup>, currently the project is on track. The equipment for the trial production line will be delivered by May 2016 and installation will be completed by July 2016; and testing and trials will be completed by the end of 2016. Upon completion of the trial, alternative technology (either HC-290 or HFC-32) will be selected and the conversion of the manufacturing line for the split AC units will be initiated.

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<sup>4</sup> Paragraph 15 of document UNEP/OzL.Pro/ExCom/68/22.

*Refrigeration servicing sector*

20. Given that the AC manufacturing lines in AGM will be converted to HC-290 or HFC-32, the development of standards for flammable refrigerants is of the utmost importance for the commercialization of the converted products. In response to the Secretariat's query, UNEP advised that the development of regulations, codes and standards for the use of flammable refrigerants has been put in the work plan of the SCE and the local standard committee as a priority.

21. It was noted that funding approved for stage I did not include a training programme for technicians in the servicing sector. UNEP advised that training for technicians would be carried out through the technician certification programme to be implemented in the second tranche.

*Project implementation and monitoring unit (PMU)*

22. The implementation of the HPMP has been delayed due to the restructuring of SCE in 2013 and the retirement of the Ozone Officer at the end of 2013. However, contracts have already been signed with BSE and the implementation is progressing. Monitoring and coordination of activities will continue.

*Low disbursement rate and the need for the second tranche*

23. The Secretariat noted that disbursement of the first tranche has not met the required 20 per cent level. UNEP explained that the HPMP for Bahrain consists of two components: the investment component for converting the AGM manufacturing AC units, and the non-investment component for building the national capacity to adopt low-GWP alternatives and reduce demand for HCFCs for servicing. The low disbursement in the investment component, which represents 82 per cent of the total funding approved for the first tranche, has resulted in overall low disbursement of the first tranche. However implementation of the non-investment component (i.e., implementation of the licensing and quota system; development of regulations, standards and codes for flammable refrigerants; and technician certification scheme), is progressing. This component is essential to ensure compliance with the Montreal Protocol targets and to support the commercialization of the AC equipment converted to low-GWP technologies. It requires three to four years of continuous work to have the regulations and technical standards issued and enforced. UNEP is expected to process the second payment of contracts of US \$55,000 before the end of 2015 followed by a payment of US \$50,000 in the first quarter of 2016 which will exhaust 73 per cent of UNEP's funding from the first tranche. If the second tranche is further delayed, the non-investment component will face serious discontinuation of activities and the momentum will be lost hindering all efforts made till today.

24. UNEP further informed that Bahrain, as the first high ambient temperature country that addresses HCFC consumption in the AC manufacturing sector, faces multiple challenges in terms of harmonizing its phase-out strategy with development in the regional market, noting that the AC industry in Bahrain relies heavily on neighbouring markets. Although implementation of the conversion of AGM experienced some delay, it is expected that equipment for the trial of split AC unit line will be shipped in February 2016 and the trial for the conversion of central line will be set up in March 2016, which will result in additional disbursements of US \$212,000 from UNIDO. With the additional disbursements from UNEP and UNIDO, the overall disbursement of the first tranche will reach 58 per cent.

25. The Secretariat noted that the second tranche relates only for activities in the servicing sector to be implemented with the assistance from UNEP. While it was suggested to defer the request of the second tranche to the 76<sup>th</sup> meeting and to submit a revised plan of action combining the funding requests for the second and third tranches, UNEP indicated that this option was not possible as the trials for the production of AC units at AGM will be completed sometime after the 76<sup>th</sup> meeting; and delaying the second tranche to the last meeting in 2016 could have major implications in the implementation of the

activities in the servicing sector noting that 80 per cent of the funding available for UNEP will be disbursed by the first quarter in 2016.

### Conclusion

26. After initial delays that have been addressed, the implementation of the first tranche is progressing. The 2014 HCFC consumption is below the maximum allowable consumption in the Agreement between the Government and the Executive Committee. A legal framework, including an HCFC import license and quota system, has been established, and regulations, codes and standards to allow the introduction of low-GWP alternative technologies in the AC sector will be developed. Implementation of the technician certification scheme and training of customs officers are progressing, with a disbursement rate for the non-investment component of 27 per cent. Conversion of the trial production line at AGM has also commenced; with an additional disbursement of US \$212,000 by UNIDO expected before March 2015.

27. Given that the overall disbursement rate has not reached the 20 per cent disbursement threshold and the need for the approval of the second tranche to continue implementing the activities in the refrigeration servicing sector, the Secretariat is submitting the funding request by the Government of Bahrain for individual consideration. The Executive Committee may wish consider the approval of the second tranche on the condition that the funds will only be released when disbursement for the first tranche has reached 20 per cent, and that this should not constitute a precedent for future approvals.

### **RECOMMENDATION**

28. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the first tranche of stage I of the HCFC phase-out management plan (HPMP) in Bahrain; and
- (b) Approving the second tranche of stage I of the HPMP for Bahrain, and the corresponding 2015-2016 tranche implementation plan, in the amount of US \$145,000, plus agency support costs of US \$18,850 for UNEP, on an exceptional basis and on the understanding that the approved funds would not be transferred to UNEP until the disbursement of the first tranche has reached the 20 per cent disbursement threshold in line with paragraph 5(c) of the Agreement between the Government of Bahrain and the Executive Committee.