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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Sixty-second Meeting
Montreal, 29 November - 3 December 2010

PROJECT PROPOSAL: EGYPT

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

Foam

• Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane spray foams at Specialized Engineering Companies (SECC)	UNDP
• Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at MOG for Engineering and Industry	UNDP
• Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane rigid insulation foam for water heaters at Fresh Electric for Home Appliances (FRESH)	UNDP
• Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at Cairo Foam	UNDP
• Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Mondial Freezers Company	UNIDO
• Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Delta Electric Applicances	UNIDO
• Phase-out of HCFC-141b from the manufacturing of polyurethane foam at El-Araby Co. for Engineering Industries	UNIDO
• Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Kiriazi Refrigerators Factory	UNIDO

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT
EGYPT

PROJECT TITLE(S)	BILATERAL/IMPLEMENTING AGENCY
(a) Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane spray foams at Specialized Engineering Companies (SECC)	UNDP
(b) Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane rigid insulation foam for water heaters at Fresh Electric for Home Appliances (FRESH)	UNDP
(c) Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at Cairo Foam	UNDP
(d) Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at MOG for Engineering and Industry	UNDP

NATIONAL CO-ORDINATING AGENCY	Egyptian Environmental Affairs Agency (EEAA)

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2009, AS OF OCTOBER 2010)

HCFCs	396.6		

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2009, AS OF OCTOBER 2010)

ODS				Total
HCFC-141b	132.99	HCFC 142b	15.13	396.6
HCFC-22	248.34	HCFC 123	0.14	

CURRENT YEAR BUSINESS PLAN ALLOCATIONS		Funding US $	Phase-out ODP tonnes
	(a)	0	0

PROJECT TITLE:	(a)	(b)	(c)	(d)
ODS use at enterprise (ODP tonnes):	11.2	2.4	9.9	13.9
ODS to be phased out (ODP tonnes):	11.2	2.4	9.9	13.9
Project duration (months):	18	18	18	18
Initial amount requested (US $):	200,000	124,500	625,900	1,233,540
Final project costs (US $):				
Incremental Capital Cost:	95,000	85,000	371,000	760,000
Contingency (10%):	9,500	8,500	37,100	76,000
Incremental Operating Cost:	73,500	31,000	(22,000)	(45,600)
Total Project Cost:	178,000	124,500	386,100	790,400
Local ownership (%):	100	100	100	100
Export component (%):	0	0	0	0
Requested grant (US $):	178,000	124,500	386,100	790,400
Cost-effectiveness (US $/kg)	1.75	5.66	4.29	6.27
Implementing agency support cost (US $):	16,020	11,205	28,958	59,280
Total cost of project to Multilateral Fund (US $):	194,020	135,705	415,058	849,680
Status of counterpart funding (Y/N):	n/a	n/a	n/a	n/a
Project monitoring milestones included (Y/N):	Y	Y	Y	Y
SECRETARIAT'S RECOMMENDATION	For Individual Consideration			

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT
EGYPT

PROJECT TITLE(S)	BILATERAL/IMPLEMENTING AGENCY
(e) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Mondial Freezers Company	UNIDO
(f) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Delta Electric Applicances	UNIDO
(g) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at El-Araby Co. for Engineering Industries	UNIDO
(h) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Kiriazi Refrigerators Factory	UNIDO

NATIONAL CO-ORDINATING AGENCY	Egyptian Environmental Affairs Agency (EEAA)

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2008, AS OF OCTOBER 2010)

HCFCs	396.6		

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2009, AS OF OCTOBER 2010)

ODS				Total
HCFC-141b	132.99	HCFC 142b	15.13	396.6
HCFC-22	248.34	HCFC 123	0.14	

CURRENT YEAR BUSINESS PLAN ALLOCATIONS		Funding US $	Phase-out ODP tonnes
	(a)	1,521,641	18

PROJECT TITLE:	(e)	(f)	(g)	(h)
ODS use at enterprise (ODP tonnes):	6.6	8.9	11	16.3
ODS to be phased out (ODP tonnes):	6.6	8.9	11	16.3
Project duration (months):	24	24	24	24
Initial amount requested (US $):	818,400	814,240	854,640	905,700
Final project costs (US $):				
Incremental Capital Cost:	449,000	455,000	489,000	
Contingency (10%):	44,900	45,500	48,900	
Incremental Operating Cost:	(57,600)	(77,760)	(81,360)	
Total Project Cost:	436,300	422,740	456,540	
Local ownership (%):	100	100	100	100
Export component (%):	n/a	n/a	n/a	n/a
Requested grant (US $):	436,300	422,740	456,540	
Cost-effectiveness (US $/kg)	7.27	5.22	4.57	
Implementing agency support cost (US $):	32,723	31,706	34,241	
Total cost of project to Multilateral Fund (US $):	469,023	454,445	490,781	
Status of counterpart funding (Y/N):	n/a	n/a	n/a	n/a
Project monitoring milestones included (Y/N):	Y	Y	Y	Y
SECRETARIAT'S RECOMMENDATION	For Individual Consideration			Deferred

PROJECT DESCRIPTION

1. On behalf of the Government of Egypt, UNIDO and UNDP have submitted to the 62nd Meeting of the Executive Committee eight stand-alone foam project proposals for the phase-out of HCFC-141b as shown in Table 1:

Table 1: Foam investment projects submitted to the 62nd Meeting

Project	HCFC-141b (tonnes)		Cost (US $)		
	Metric	ODP	Project	Support	Total
UNDP					
Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at MOG Engineering and Industry	126.0	13.9	1,233,540	92,516	1,326,056
Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at Cairo Foam	90.0	9.9	625,900	46,943	672,843
Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane rigid insulation foam water heaters at Fresh Electric Home Appliances	22.0	2.4	124,500	9,338	133,838
Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane spray foams at Specialized Engineering Contracting Co.	102.0	11.2	200,000	15,000	215,000
Total for UNDP	**340.0**	**37.4**	**2,183,940**	**163,797**	**2,347,737**
UNIDO					
Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Kiriazi Refrigerators Factory	148.0	16.3	905,700	67,928	973,628
Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Mondial Freezers Company	60.0	6.6	818,400	61,380	879,780
Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Delta Electric Appliances	81.0	8.9	814,240	61,068	875,308
Phase-out of HCFC-141b from the manufacturing of polyurethane foam at El-Araby Co. Engineering Industries	100.0	11.0	854,640	64,098	918,738
Total for UNIDO	**389.0**	**42.8**	**3,392,980**	**254,474**	**3,647,454**
Grand total	**729.0**	**80.2**	**5,576,920**	**388,271**	**5,995,191**

2. The total cost of the projects excluding support costs is US $5,576,920 with a cost-effectiveness value of US $8.18/kg.

3. The HPMP preparation in Egypt is still in progress and thus the projects have been submitted in accordance with decision 54/39(d).

Conversion projects

4. Following a review of the available alternative technology, six enterprises selected hydrocarbon-based technologies (n-pentane or cyclopentane) while two selected methyl formate as a replacement of HCFC-141b used as a blowing agent.

5. A brief description of the enterprises is presented below:

(a) MOG Engineering and Industry (MOG), operating since 1999, manufactures polyurethane rigid foam. Conversion to n-pentane technology includes replacement of four low-pressure dispensers and retrofit of two high-pressure units, installation of a premix system, safety-related equipment, trials, training, technology transfer, safety audit, and one year operating costs (US $170,976);

(b) Cairo Foam founded in 1993, is a panel manufacturer serving the cold room and refrigerated truck market. Conversion to n-pentane includes the retrofit of one high-pressure dispenser, three panel presses (one established in 2008); a pre-mixing system, safety related equipment, safety audits, trials and training, and one year operating costs (US $22,000);

(c) Fresh Electric Home Appliances (FRESH), founded in 1993, is a major manufacturer of household appliances including water heaters. It has three production lines each equipped with a high-pressure dispenser. The enterprise has selected methyl formate as the replacement technology. The conversion includes retrofitting of the existing three high-pressure dispensers, trials, training, technology transfer and one year operating costs (US $31,000);

(d) Specialized Engineering Contracting Co (SECC) established in 1991, specializes in heat insulation based on PU foam and works on site either spraying polyurethane (PU) foam on roofs, walls or tanks, or pouring PUF in pipelines, vessels or tanks. SECC will phase out the use of HCFC-141b in its PU spray foam production by conversion to methyl formate technology. The conversion includes retrofitting of the existing nine high-pressure dispensers (four of them purchased in 2008 and 2009), trials, training, technology transfer and one year operating costs (US $73,500);

(e) Kiriazi Refrigerators Factory is one of the largest enterprises manufacturing appliances, including refrigerators and freezers, in Egypt (100,000 freezers manufactured in 2009). The enterprise operates another plant manufacturing refrigeration systems that was converted to cyclopentane with Multilateral Fund support. Conversion to cyclopentane technology will require installation of a cyclopentane storage tank, retrofitting of the three foam machines (two of which were purchased in 2009), pre-mixing facility, safety related equipment, trials and training and technical assistance. Implementation of the project would result in operating savings (US $141,300);

(f) Mondial Freezers Company, was founded in 1997 and manufactures upright freezers (80,000 units in 2009). Conversion to cyclopentane technology includes installation of cyclopentane storage tank, retrofit of two high pressure dispensers, a pre-mixing system, a low pressure piping and pumping system, nitrogen generator, safety related equipment, trials and training and technical assistance. Implementation of the project would result in operating savings (US $57,600);

(g) Delta Electric Appliances (Delta) was founded in 1999 and started manufacturing refrigerators and freezers in 2004 (120,000 units in 2009). Conversion to cyclopentane technology includes installation of cyclopentane storage tank, retrofit of the two high pressure dispensing units, a pre-mixing facility, and safety related equipment, trials and training and technical assistance. Implementation of the project would result in operating savings (US $77,760);

(h) El-Araby Co.Engineering Industries is a locally-owned enterprise established in 2001, that manufactures domestic refrigerators and freezers (150,000 freezers in 2009). It operates under license from Toshiba Industries. Conversion to cyclopentane technology

includes a cyclopentane storage system, retrofit of the two high pressure dispensing units, a pre-mixing facility, and safety related equipment, trials and training and technical assistance. Implementation of the project would result in operating savings (US $81,360).

6. The timeframe for project implementation is 1.5 years for the project submitted by UNDP and 2 years for the projects submitted by UNIDO.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

HCFC consumption

7. The 2005-2009 HCFC consumption reported under Article 7 of the Montreal Protocol by the Government of the Egypt is presented in Table 2. In 2009, the total HCFC-22 and HCFC-141b consumption (measured in ODP tonnes) represented 62.6 and 33.5 per cent respectively of the total consumption.

Table 2: HCFC consumption in the Egypt

HCFCs	2004	2005	2006	2007	2008	2009
Metric tonnes						
HCFC-22	2,080.0	2,050.0	3,319.0	4,696.2	4,178.6	4,515.3
HCFC-123		90.0	3.1		2.0	7.0
HCFC-124		47.0	313.4	32.4		
HCFC-141B	345.0	420.0	587.4	1,411.8	970.1	1,209.0
HCFC-142B	40.0	180.0	29.6	291.1	243.6	232.7
Total metric tonnes	2,465.0	2,787.0	4,252.5	6,431.5	5,394.3	5,964.0
ODP tonnes						
HCFC-22	114.4	112.8	182.5	258.3	229.8	248.3
HCFC-123	-	1.8	0.1	-	-	0.1
HCFC-124	-	1.0	6.9	0.7	-	-
HCFC-141B	38.0	46.2	64.6	155.3	106.7	133.0
HCFC-142B	2.6	11.7	1.9	18.9	15.8	15.1
Total ODP tonnes	155.0	173.5	256.0	433.2	352.3	396.5

8. Based on information from HCFC equipment manufacturers, chemical suppliers and industry experts in Egypt, HCFC consumption is expected to grow by 12 per cent or higher from 2010 onwards. Based on this growth rate the HCFC baseline for compliance, calculated as the average of the actual consumption reported for 2009 (396.5 ODP tonnes) and the estimated consumption for 2010 (444.2 ODP tonnes), has been estimated at 420.4 ODP tonnes and the peak in consumption would be 444.2 ODP tonnes in 2012. UNIDO had indicated that the Government of the Egypt has selected the HCFC baseline for compliance as the starting point for aggregate reductions in HCFC consumption. UNIDO advised that the HPMP will be submitted to the 64th Meeting.

Phase-out strategy

9. In preparing the HPMP phase out strategy, the Government of Egypt established a policy task force consisting of legal, administrative and technical experts. The task force reviewed the regulatory instruments currently in place in Egypt and made recommendations to make them more effective in controlling HCFC consumption beyond 2010 such as criteria for issuing HCFC quotas for the authorized importers, and established quota levels; banning installation of new and import of HCFC-based equipment; adopting a mandatory date for annual reporting by all HCFC importers; and introducing a ban on the use of refillable containers.

10. Given the limited time available the strategy of the Government of Egypt is to expedite the phase-out of HCFCs by submitting phase-out projects in the foam sector in advance of its HPMP. Advancing implementation of the foam projects will ensure their timely completion in order to meet the country's HCFC obligations in 2013 and 2015. The enterprises were selected from different application segments based on their capacity and in-house expertise to meet implementation schedules on time, which is a critical factor given the projects are expected to be completed in 18-24 months. Given the circumstances, including different resource requirements (equipment and chemical suppliers), it would be impractical to submit the projects as one umbrella project or sector/sub-sector plan. A foam sector plan, which will fully account for these advance investment projects, will be submitted with the HPMP.

Technical and cost related issues

11. The Secretariat discussed with UNDP and UNIDO a number of policy issues as well as technical and cost issues. All the issues were satisfactorily addressed and are summarized as follows:

(a) UNDP is currently implementing a demonstration project for the use of hydrocarbon-based pre-blended polyol systems in Egypt. Based on the preliminary results so far achieved with the demonstration project, it was agreed to remove the request for the pre-mixers in the enterprises that selected hydrocarbon technology on the understanding that this equipment could be requested when the HPMP for Egypt is submitted if the results of the demonstration project were not adequate;

(b) In three enterprises, new manufacturing equipment was added after the cut-off date of 21 September 2007 (i.e., a new press at Cairo Foam, two high-pressure foam machines at Kiriazi Refigerators Factory, and four spray foams at Specialized Engineering Contracting). The levels of funding were adjusted after deducting the costs associated with the conversion of the recently installed equipment;

(c) Additional information was requested on the equipment that was used at the Kiriazi Refrigerators Factory that was converted to cyclopentane with Multilateral Fund support. As this information could not be provided on time, the project was withdrawn;

(d) In one enterprise (MOG Engineering and Industry), it was agreed to replace the four-low pressure foam machines in the baseline by two-high pressure machines. Equipment items not related to the replacement of HCFC-141b with hydrocarbon were excluded from the calculation of the total project cost, and costs of eligible equipment were adjusted based on similar requests so far approved;

(e) Considering that six of enterprises selected hydrocarbon technologies, costs for training, trials, testing and safety audits were adjusted;

(f) The incremental operating costs requested in two enterprises (Cairo Foam and MOG Engineering and Industry) were adjusted after removing costs related to maintenance.

12. The revised level of funding is US $2,838,580 with a cost-effectiveness of US $4.89/kg (Table 3).

Table 3: Revised level of funding for the foam projects in Egypt

Project	HCFC-141b (tonnes)		Cost (US $)		
	Metric	ODP	Capital	Operating	Total
UNDP					
MOG Engineering and Industry	126.0	13.9	836,000	(45,600)	790,400
Cairo Foam	90.0	9.9	408,100	(22,000)	386,100
Fresh Electric Home Appliances	22.0	2.4	93,500	31,000	124,500
Specialized Engineering Contracting Co.	102.0	11.2	104,500	73,500	178,000
UNIDO					
Mondial Freezers Company	60.0	6.6	493,900	(57,600)	436,300
Delta Electric Appliances	81.0	8.9	500,500	(77,760)	422,740
El-Araby Co. Engineering Industries	100.0	11.0	537,900	(81,360)	456,540
Kiriazi Refrigerators Factory	Deferred		-	-	-
Total	581.0	63.9	2,974,400	(179,820)	2,794,580

Climate impact

13. A preliminary calculation of the impact on the climate of HCFC consumption through the foam project in Egypt based only on the GWP values of the blowing agents and their level of consumption before and after conversion is as follows: 581.0 metric tonnes of HCFC-141b will be phased out, 275.4 tonnes of cyclopentane and 69.5 tonnes of methyl formate will be phased in, and 405,630 tonnes of CO_2-equivalent that would have been emitted into the atmosphere will have been avoided (Table 4).

Table 4: Calculation of the impact on the climate

Substance	GWP	Tonnes/year	CO2-eq (tonnes/year)
Before conversion			
Before conversion			
HCFC-141b	713	581.0	414,253
After conversion			
Cyclopentane	25	275.4	6,885
Methyl formate	25	69.5	1,738
Total		344.9	8,623
Net impact			(405,630)

RECOMMENDATIONS

14. The Executive Committee may wish:

(a) To consider approving the following projects at the levels indicated below:

(i) Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at MOG Engineering and Industry, at a total cost of US $790,400 plus agency support costs of US $59,280 for UNDP;

(ii) Conversion from HCFC-141b to n-pentane in the manufacture of polyurethane rigid insulation foam panels at Cairo Foam, at a total cost of US $386,100 plus agency support costs of US $28,958 for UNDP;

(iii) Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane rigid insulation foam water heaters at Fresh Electric Home Appliances, at a total cost of US $124,500 plus agency support costs of US $11,205 for UNDP;

(iv) Conversion from HCFC-141b to methyl formate in the manufacture of polyurethane spray foams at Specialized Engineering Contracting Co., at a total cost of US $178,000 plus agency support costs of US $16,020 for UNDP;

(v) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Mondial Freezers Company, at a total cost of US $436,300 plus agency support costs of US $32,723 for UNIDO;

(vi) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at Delta Electric Appliances, at a total cost of US $422,740 plus agency support costs of US $31,706 for UNIDO;

(vii) Phase-out of HCFC-141b from the manufacturing of polyurethane foam at El-Araby Co. Engineering Industries, at a total cost of US $456,540 plus agency support costs of US $34,241 for UNIDO;

(b) To note that the Government of the Egypt agreed at the 62nd Meeting to establish as its starting point for sustained aggregate reduction in HCFC consumption the average level of consumption reported for 2009 and estimated 2010 (resulting in 420.4 ODP tonnes;

(c) To deduct 63.9 ODP tonnes (581.0 metric tonnes) of HCFCs from the starting point for sustained aggregate reductions in eligible consumption; and,

(d) To request UNIDO and UNDP to provide to the Secretariat, at the end of each year of the projects' implementation period, progress reports that addressed the issues pertaining to the collection of accurate data in line with the objectives of decision 55/43(b), and to include those reports in`` the implementation reports on the HPMP, once it had been approved.

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