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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: BANGLADESH

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

Foam

- Conversion from HCFC-141b to cyclopentane technology in manufacturing refrigeration equipment insulation foam at Walton Hi-Tech Industries Limited

UNDP

**PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECTS
BANGLADESH**

PROJECT TITLE**IMPLEMENTING AGENCY**

(a) Conversion from HCFC-141b to cyclopentane technology in manufacturing refrigeration equipment insulation foam at Walton Hi-Tech Industries Limited

UNDP

NATIONAL CO-ORDINATING AGENCY

Ozone Cell, Department of Environment

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT**A: ARTICLE-7 DATA (ODP TONNES, 2009, AS OF SEPTEMBER 2010)**

HCFCs	67.7		
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B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES 2009, AS OF OCTOBER 2010)

ODS Name	Quantity		Quantity	Totals
HCFC-22	45.38	HCFC-141b	20.02	65.5
HCFC-123	0.15			

HCFC consumption remaining eligible for funding:

n/a

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

PROJECT TITLE:

ODS USE IN SUB-SECTOR:	ODP tonnes	20.2
PROJECT IMPACT:	ODP tonnes	20.2
PROJECT DURATION:	Months	24
INITIAL AMOUNT REQUESTED:	US\$	1,595,157
PROJECT COSTS:		
Incremental Capital Cost	US\$	932,500
Contingency (10%)	US\$	93,250
Incremental Operating Cost	US\$	120,324
Total Project Cost	US\$	1,146,074
LOCAL OWNERSHIP:		100%
EXPORT COMPONENT:		0%
REQUESTED GRANT:	US\$	1,146,074
COST- EFFECTIVENESS:	US\$/kg	6.24
IMPLEMENTING AGENCY SUPPORT COST:	US \$	85,956
TOTAL COST OF PROJECT TO MULTILATERAL FUND:	US \$	1,232,030
STATUS OF COUNTERPART FUNDING:		n/a
PROJECT MONITORING MILESTONES INCLUDED:		Yes

SECRETARIAT'S RECOMMENDATION:

For individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of Bangladesh, UNDP as the lead implementing agency has submitted to the 62nd Meeting of the Executive Committee the following documents:

- (a) A summary of the overarching strategy for the HCFC phase-out management plan (HPMP) of Bangladesh;
- (b) A stand-alone project proposal for the conversion from HCFC-141b to cyclopentane technology in manufacturing refrigeration equipment insulation foam at Walton Hi-Tech Industries Limited at a total cost of US \$1,595,157 plus agency support costs of US \$119,636 for UNDP as submitted. Implementation of the project will result in the phase-out of 20.2 ODP tonnes (183.7 metric tonnes) of HCFC-141b;
- (c) Awareness and information outreach targeted at HCFC consumers and strengthening HCFC servicing industry associations at a total cost of US \$55,650 plus agency support costs of US \$7,234.50 for UNEP; and
- (d) Assistance for training enforcement officials for controlling and monitoring HCFC imports and use at a total cost of US \$175,875 plus agency support costs of US \$22,864 for UNEP.

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

Conversion project for Walton Hi-Tech Industries Limited

3. Walton Hi-Tech Industries Limited, is the largest manufacturer of domestic refrigerators in the country (annual production of about 283,000 units in 2009), and was established in 2006. HCFC-141b is mixed *in situ* with polyol and stored in 250 kg drums. The blended polyol and the isocyanate are supplied to the four foaming machines (all foam dispensers were purchased and installed between 2006 and March 2007). The company has decided to replace HCFC-141b by cyclopentane.

4. Conversion includes a cyclopentane storage and handling system (US \$91,000); pre-mixing station (US \$90,000); retrofitting of foam dispensers, including heating oven modification and retrofitting of jigs and fixtures (US \$492,500); ventilation and safety systems for the use of hydrocarbon (US \$324,000); civil and electrical works, trails, testing, technical assistance and training (US \$195,000); and 10 per cent for contingency (US \$119,250). Incremental operating costs have been estimated at US \$283,407. The proposed time for project implementation is two years.

Non-investment activities

5. The Government of Bangladesh is also requesting funding for the following two activities:

- (a) Awareness and information outreach activities (US \$55,650), for sensitizing stakeholders on HCFC phase-out and alternative technologies to HCFCs in the refrigeration servicing sector. This will be targeted at servicing enterprises which are distributed throughout the country and the industry associations to encourage their active participation, involvement of and pro-active steps to curtail growth and reduce dependence on HCFCs; and
- (b) Training enforcement for officials (US \$175,875), to train 20 officers for controlling and monitoring HCFC imports and use and, through them, 500 customs officers and provide 20 ODS identification kits.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

6. The 2007-2009 HCFC consumption reported by the Government of Bangladesh under Article 7 of the Protocol is presented in Table 1. Based on the 2009 (reported) and 2010 (estimated) consumption, the HCFC baseline for compliance has been estimated at 72.9 ODP tonnes.

Table 1. HCFC imports by substances

Substance	2007	2008	2009	2010*
Metric tonnes				
HCFC-123	-	6.0	8.0	8.0
HCFC-141b	45.0	120.0	190.0	218.5
HCFC-22	586.0	925.0	848.9	976.2
Total (metric tonnes)	631.0	1,051.0	1,046.9	1,202.6
ODP tonnes				
HCFC-123	-	0.1	0.2	0.2
HCFC-141b	5.0	13.2	20.9	24.0
HCFC-22	32.2	50.9	46.7	53.7
Total (ODP tonnes)	37.2	64.2	67.8	77.9

*Forecasted consumption

7. In addressing the sharp increase in HCFC-141b consumption in the recent past (i.e., from 45.0 metric tonnes to 120.0 between 2007 and 2008 and to 190.0 metric tonnes in 2009), UNDP explained that the growth was associated with the expansion of the Walton Hi-Tech manufacturing plant, where the company had commissioned two new production lines in September 2006. Accordingly, production levels increased from 63,850 to 282,600 units between 2007 and 2009. UNDP also indicated that there has been no capacity expansion at Walton since the time the original plant was commissioned in September 2006. Excluding the 183.7 metric tonnes of HCFC-141b used by Walton Hi-Tech, the remaining 6.3 metric tonnes of HCFC-141b are primarily consumed by small and medium size enterprises (SMEs). This consumption will be addressed in Stage II of the HPMP by converting to viable and cost-effective alternatives (e.g. methyl formate, methyl or other emerging substitutes).

8. The growth in consumption of HCFC-22 (from 586.0 to 925.0 metric tonnes between 2007 and 2008) was due to an increasing demand for servicing of residential and light commercial air conditioning equipment; a significant expansion in economic activity in sectors requiring HCFC-22 for refrigeration and air conditioning systems; use of refrigerant blends containing HCFC-22 introduced to substitute CFC-12; and HCFC-22 for servicing HCFC-based equipment installed in the early 2000s.

HPMP strategy

9. UNDP indicated that the Government of Bangladesh has selected the HCFC baseline for compliance (i.e., estimated at 72.9 ODP tonnes) as the starting point for aggregate reduction in HCFC consumption.

10. To meet the 2013 and 2015 compliance targets, the Government of Bangladesh proposes to phase out 183.7 metric tonnes (20.2 ODP tonnes) of HCFC-141b used as the blowing agent for the polyurethane foam insulation in the manufacturing of domestic refrigerators (one enterprise), and curtail the growth in consumption of HCFC-22 in assembly, installation and servicing of commercial and industrial air conditioning equipment, through a combination of regulations, technical assistance and awareness activities.

Technical and cost related issues with Walter Hi-Tech project

11. The Secretariat and UNDP discussed technical issues related to the introduction of a hydrocarbon based technology (considering that the conditions inside the enterprises and/or the surrounding area would not allowed them to convert from CFC-11 to a hydrocarbon-based technology); and issues related to capital and operating costs. These issues were satisfactorily addressed. UNDP indicated that the enterprise is extremely well-organized, with sufficient surface area and infrastructure to allow for the use of cyclopentane. The total capital cost has been agreed at US \$1,025,750 with the following breakdown: cyclopentane storage and handling system (US \$75,000); pre-mixing station (US \$90,000); retrofitting of foam dispensers, including heating oven modification and retrofitting of jigs and fixtures (US \$377,500); ventilation and safety systems for the use of hydrocarbon (US \$240,000); and civil and electrical works, trails, testing, technical assistance and training (US \$150,000); and 10 per cent contingency (US \$93,250). Incremental operating costs have been recalculated by using the same price for the polyol before and after conversion, resulting in US \$120,324. The cost-effectiveness of the project is US \$6.24/kg.

Non-investment activities

12. It was pointed out that in the absence of an HPMP, which would include the overarching strategy and a thorough analysis of the HCFC consumption in the country, the requests for funding awareness and information outreach activities and training of enforcement officials could not be recommended for approval. Furthermore, decision 54/39(d) allow only the submission of investment projects in advance of completion of the HPMP.

13. It was further noted the requirement for demonstrating the need for implementing activities in the servicing sector to meet the reduction steps in 2013 and 2015 (as stipulated in decision 60/44(f)(xv)). Furthermore, implementation of the project for the conversion of the Walter Hi-Tech company will result in the phase-out of 20.2 ODP tonnes of HCFC-141b, representing about 28 per cent of the estimated HCFC baseline for compliance. Therefore, the Government would not need further assistance to meet its 2013 and 2105 compliance obligations. In addressing this issue, UNDP pointed out that the two non-investment activities proposed are critical for compliance since HCFC consumption in the refrigeration servicing sector is growing and could nullify the reductions in HCFC-141b consumption achieved through the investment project. Given the annual growth in HCFC-22 consumption, Bangladesh will need to reduce its growth by at least 8 per cent on a compounded basis if it is to comply with the 2013 freeze or risk non-compliance. Awareness activities and policy/enforcement training are thus essential for addressing the growth in HCFC-22 consumption. However, after further discussions, it was agreed to defer the submission of the non-investment activities to a future meeting of the Executive Committee when included in the HPMP for Bangladesh.

Climate impact

14. A preliminary calculation of the impact on the climate of HCFC consumption through the foam project in Bangladesh based only on the global warming potential (GWP) values of the blowing agents and their level of consumption before and after conversion is as follows: 183.7 metric tonnes of HCFC-141b will be phased out, 113.9 tonnes of cyclopentane will be phased in, and 128,131 tonnes of CO₂-equivalent that would have been emitted into the atmosphere will have been avoided (Table 2).

Table 2. Calculation of the impact on the climate

Substance	GWP	Metric tonnes/year	CO2-eq (tonnes/year)
Before conversion			
Before conversion			
HCFC-141b	713	183.7	130,978
After conversion			
Cyclopentane	25	113.9	2,848
Net impact			(128,131)

RECOMMENDATION

15. The Executive Committee may wish to consider:
- (a) Approving the project proposal for the conversion from HCFC-141b to cyclopentane technology in manufacturing refrigeration equipment insulation foam at Walton Hi-Tech Industries Limited at a total cost of US \$1,146,074 and agency support costs of US \$85,956 for UNDP;
 - (b) Noting that the Government of Bangladesh had agreed at the 62nd Meeting to establish as its starting point for sustained aggregate reduction in HCFC consumption the average level of consumption in 2009 and 2010 (estimated at 72.9 ODP tonnes);
 - (c) Deducting 20.2 ODP tonnes of HCFCs from the starting point for sustained aggregate reductions in HCFC; and
 - (d) Requesting UNDP to provide to the Secretariat, at the end of each year of the projects' implementation period, progress reports that address the issues pertaining to the collection of accurate data in line with the objectives of decision 55/43(b), and to include these reports in the implementation reports of the HPMP, once it is approved.
