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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: PHILIPPINES

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

Foam

- Sector Plan to phase out HCFC-141b in the foam sector

UNIDO/Japan

**PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT
PHILIPPINES**

PROJECT TITLE(S)**BILATERAL/IMPLEMENTING AGENCY**

(a) Sector Plan to phase out HCFC-141b in the foam sector	UNIDO/Japan
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NATIONAL CO-ORDINATING AGENCY

Philippines Ozone Desk (National Ozone Unit)/EMB-DENR

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

HCFCs	194.7		
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B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2009, AS OF OCTOBER 2010)

ODS					Totals
HCFC-22	124.29	HCFC-123	1.44		194.5
HCFC-141b	68.74	HCFC-142b	0.0		

CFC consumption remaining eligible for funding (ODP tonnes)

n/a

**CURRENT YEAR BUSINESS PLAN
ALLOCATIONS**

Funding US \$

Phase-out ODP tonnes

(a)	201,408	2.4
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PROJECT TITLE:	Sector plan to phase-out HCFC-141b in the foam sector		
ODS USE AT ENTERPRISE (2009)	40.0	ODP tonnes total	
	28.2	ODP tonnes eligible	
PROJECT IMPACT	40.0	ODP tonnes Total	
	28.2	ODP tonnes Eligible	
PROJECT DURATION	24 months		
TOTAL PROJECT COST	UNIDO	Japan	Total
INCREMENTAL CAPITAL COST US \$	1,895,240	288,500	2,183,740
CONTINGENCY US \$	189,524	28,850	218,374
INCREMENTAL OPERER. COST US \$	110,000	0	110,000
TOTAL PROJECT COST US \$	2,194,764	317,350	2,512,114
LOCAL OWNERSHIP	100%*		
EXPORT COMPONENT	15% to A2		
REQUESTED GRANT US \$	2,512,114		
COST-EFFECTIVENESS	US \$9.79/kg HCFC on eligible consumption		
IMP. AGENCY SUPPORT COST US \$	164,607	41,256	205,863
TOTAL COST OF PROJECT TO MLF US \$	2,359,371	358,606	2,717,977
STATUS OF COUNTERPARTS FUNDING	Y		
PROJECT MONITORING MILESTONES	Y		
SECRETARIAT'S RECOMMENDATION	Pending		

* Exception: Panasonic Mfg Corp (80% Japan), Ultra Insulated Panel (40% Korea), GW Protective Coating (40% US)

PROJECT DESCRIPTION

1. On behalf of the Government of the Philippines, UNIDO has submitted to the 62nd Meeting of the Executive Committee a sector plan to phase out HCFC-141b in the polyurethane foam sector (Foam Sector Plan) at a total cost of US \$2,194,764 plus agency support costs of US \$164,607 for UNIDO, and US \$317,350 plus agency support costs of US \$41,256 for the Government of Japan, as originally submitted. The sector plan will phase out 40.0 ODP tonnes of HCFC-141b, of which 28.2 ODP tonnes is eligible for funding.
2. The HPMP preparation in the Philippines is still in progress and thus the projects have been submitted in accordance with decision 54/39(d).

Foam sector plan

3. The total HCFC-141b consumption in the foam sector is 364.3 metric tonnes (40.0 ODP tonnes). Of this consumption, 107.7 metric tonnes (11.8 ODP tonnes) is used by foreign owned enterprises, and not eligible for funding. An additional 13.3 metric tonnes (0.8 ODP tonnes) of HCFC-142b/HCFC-22 is used by a company producing extruded polystyrene (XPS) foam.
4. Of the 76 foam enterprises using HCFC-141b as a foam blowing agent, 15 enterprises account for 85 per cent of the total consumption. The Foam Sector Plan will address the larger enterprises first in 2011 and the smaller ones in 2012 with the aim of total phase-out of HCFC-141b by 2013. Three enterprises, with a total consumption of 27.4 metric tonnes (3.0 ODP tonnes) have been previously assisted and converted from CFC-11 to HCFC-141b (before the cut-off date of September 2007). The conversion of these three enterprises is essential to achieve the targets set by the Foam Sector Plan.
5. The Foam Sector Plan proposes the conversion of the various foam applications as follows:
 - (a) Insulation foam for refrigeration equipment: One enterprise (Panasonic) has recently converted to cyclopentane technology. Re-imburement of a part of the conversion expenses, discounting 80 per cent of foreign ownership, has been requested;
 - (b) Integral skin foam: One enterprise in this sub-sector will be converted to water-blown technology. The necessary foam dispenser is included in this sector plan;
 - (c) Rigid polyurethane panels: Enterprises with annual consumption of HCFC-141b above 10 metric tonnes (1.1 ODP tonnes) will be converted to cyclopentane technology. Conversion includes a small-capacity high-pressure foam dispenser, safety instruments and training. Enterprises with lower HCFC-141b consumption will be converted to water-blown technology;
 - (d) Spray: Enterprises will be converted to either supercritical CO₂ or water-blown technology depending on the specific circumstances. For supercritical CO₂ technology, either a CO₂ module, or a set of spray unit and CO₂ module will be provided, depending on the status of current equipment. For enterprises with HCFC-141b consumption below 1 tonne (0/1 ODP tonnes), a simple dispenser will be provided to ensure the safe operation of the alternative technology;
 - (e) XPS foam: The only enterprise manufacturing XPS foam (Eastern Wire Manufacturing Inc.) is not eligible for funding as it was established in 2009. Therefore, the enterprise will be converted to non-HCFC technology using its own resources. The Foam Sector Plan programme will monitor the conversion of this enterprise within the timeframe for phasing out HCFCs in the foam sector.

6. The total capital cost associated with the conversion is US \$2,018,500 including 10 per cent for contingency. Incremental operating costs have been estimated at US \$410,614 on the basis of US \$1.60/kg. An additional US \$401,500 is being requested for project management and monitoring, awareness promotion, and assessment of alternatives. The total cost of the Foam Sector Plan is US \$2,830,614 to phase out 256.6 metric tonnes (28.2 ODP tonnes) of HCFC-141b, with a cost-effectiveness of US \$11.03/kg (Table 1).

Table 1. Total cost for the conversion of the foam sector in Philippines

Foam applications	Enterprises	Technology	Cost (US\$)
Conversion costs			
Insulation foam for appliance	4	Cyclopentane	321,000
Foam for automotive applications	1	Water-blown	60,000
Panels	7	Cyclopentane, water-blown	325,000
Panels and spray foam	8	Cyclopentane, super critical CO ₂	779,000
Spray applications	3	Super critical CO ₂	150,000
Various applications	10	Water-blown	150,000
Small and micro enterprises		Various	50,000
Contingency (10 per cent)			183,500
Total capital cost			2,018,500
Incremental operating costs			410,614
Other costs			
Project management/monitoring			401,500
Total cost			2,830,614

7. Given the cost-effectiveness threshold of US \$9.79/kg (rigid foam when low global warming potential (GWP) alternatives are selected), the Government of the Philippines is requesting US \$2,512,114, with counterpart funding of US \$318,500 (representing 11.3 per cent of the total cost).

8. The overall co-funding strategy will be addressed by the World Bank, as the lead implementing agency formulating the overall HPMP. Enterprises in the Foam Sector Plan will have to contribute with substantial co-funding, in kind and in cash, to convert the entire existing production capacity to the alternative technologies selected.

9. The project implementation timeframe has been estimated at two years.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

10. The 2004-2009 HCFC consumption reported by the Government of the Philippines is presented in Table 2. In 2009, HCFC-141b consumption represented 21.2 per cent (measured in metric tonnes) and 35.4 per cent (ODP tonnes) of total HCFC consumption. About 363.6 metric tonnes (40 ODP tonnes) of HCFC-141b were used in the foam sector and 263.3 metric tonnes (29 ODP tonnes) were used in the aerosol and solvent sectors.

Table 2. 2004-2009 HCFC consumption in the Philippines

HCFC	2004	2005	2006	2007	2008	2009
Metric tonnes						
HCFC-22	2,212.9	2,935.2	2,582.1	2,156.4	2,851.7	2,259.8
HCFC-141b	402.3	407.8	516.3	526.1	604.2	626.9
HCFC-123	86.2	70.6	101.1	122.0	137.5	72.8
Total metric tonnes	2,701.4	3,413.6	3,199.5	2,804.5	3,593.4	2,959.5
ODP tonnes						
HCFC-22	121.7	161.4	142.0	118.6	156.8	124.3
HCFC-141b	44.3	44.9	56.8	57.9	66.5	69.0
HCFC-123	1.7	1.4	2.0	2.4	2.8	1.5
Total ODP tonnes	167.7	207.7	200.8	178.9	226.1	194.8
Article 7 data	171.1	210.5	200.9	180.2	226.2	194.7

11. Based on licences issued, customs data and average consumption growth in the past ten years, the HCFC consumption in 2010 has been estimated at 210.0 ODP tonnes. Therefore, the HCFC baseline for compliance, calculated as the average of actual reported 2009 consumption (194.7 ODP tonnes) and the forecast of 2010 consumption, has been estimated at 202.4 ODP tonnes. UNIDO indicated that the Government of the Philippines has selected the HCFC baseline for compliance as the starting point for aggregate reductions in HCFC consumption.

Phase-out strategy

12. The phase-out of 364.3 metric tonnes (40 ODP tonnes) of HCFC-141b in the foam sector, representing 19.8 per cent of the estimated baseline, will allow the Philippines to comply with the 2013 and 2015 control levels. The remaining HCFC-141b consumption in the aerosol and solvent sectors will be addressed during stage II of the HPMP.

13. As of 1 January 2011, no import licenses will be granted to enterprises that were not registered as ODS importers before 31 December 2010. This measure will allow the Philippines to control ODS imports and restrict growth in HCFC consumption to 5 per cent annually until the activities proposed in the HPMP can be fully implemented. Furthermore, the Government of the Philippines will introduce a ban on the use of HCFC-141b in the foam sector, and possibly in other sectors, by 2015. Since the number of enterprises using HCFC-141b in the foam sector is relatively small (between 66 and 76), enforcement will be easier compared to other sectors where there are many more enterprises. Sector plans for the domestic air-conditioning sector (World Bank) and the commercial refrigeration sector (UNDP) will also be developed. UNIDO advised that the HPMP will be submitted to the 64th Meeting.

Selection of alternative technologies

14. The Secretariat noted that several enterprises covered by the Foam Sector Plan have selected cyclopentane as replacement of HCFC-141b used as a blowing agent, despite very low consumption (below 30 metric tonnes in all cases). Cyclopentane-based technologies for enterprises with HCFC consumption below 30 metric tonnes would require counterpart funding ranging from 50 to 90 per cent or more (depending on the level of consumption). UNIDO indicated that the cost of conversion was discussed with the enterprises and that the funds requested would be sufficient to cover core equipment. Auxiliary items will be covered by the enterprises. Ten enterprises have selected cyclopentane technology, of which nine will adopt it for injection technology, panels and appliances. Only one enterprise will use cyclopentane for spray. The other enterprises will adopt either supercritical CO₂ assisted water-blown technology or all water-blown technology for spray foam.

15. In addition to cyclopentane replacement technology, water-blown, methyl formate, and HFC-245fa have also been selected. In fact, in a number of enterprises with very low levels of HCFC

consumption, two alternative technologies have been proposed. The Secretariat noted that, based on foam projects submitted for the conversion to methyl formate so far, very minimal changes are required to the baseline equipment, while the introduction of HFC-245fa technology only requires a small chiller as the major piece of additional equipment. The overall cost-effectiveness of methyl formate technology projects submitted ranges from US \$3.72 to below US \$5.00/kg. Except for insulation foam for domestic refrigerators, methyl formate foams perform similarly to HCFC-141b foams for all the foam applications in the Philippines. UNIDO advised that methyl formate technology is not well-known in the Philippines, except by one enterprise. Difficulties linked to its use and high operational costs have discouraged enterprises from choosing methyl formate technology as an alternative. The possibility of adopting methyl formate technology will be assessed locally during the implementation of the sector plan.

Proposal by the Secretariat

16. Based on the issues raised and observations made by the Secretariat in reviewing the Foam Sector Plan submitted by the UNIDO, the Secretariat is preparing an alternative methodology for determining the incremental cost of the Foam Sector Plan. This methodology will be consistent with the current policies and guidelines of the Multilateral Fund. The Secretariat will make every effort to complete this and communicate the description of the methodology and the results of the calculation of the incremental costs of the Foam Sector Plan to the Executive Committee prior to the 62nd Meeting.

RECOMMENDATION

17. Pending.