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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Sixty-sixth Meeting
Montreal, 16-20 April 2012

PROJECT PROPOSALS: INDIA

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

Phase-out

- HCFC phase-out management plan (stage I, first tranche) UNDP/UNEP/Germany

Production

- Accelerated CFC Production Phase-out (second tranche) World Bank

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

India

(I) PROJECT TITLE	AGENCY
HCFC phase out plan (Stage I)	UNDP (lead), UNEP, Germany

(II) LATEST ARTICLE 7 DATA (Annex C Group l)	Year: 2010	1,617.6 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)										Year: 2010
Chemical	Aerosol	Foam	Fire fighting	Halon	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
					Manufacturing	Servicing				
HCFC-123				1.30		1.00				2.30
HCFC-124		0.78				12.49				13.27
HCFC-141b		862.05								862.05
HCFC-142b		19.50				32.83				52.33
HCFC-22				11.00	357.50	319.17				687.67

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	1,608.2	Starting point for sustained aggregate reductions:	1,691.25
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	0.0	Remaining:	1,382.48

(V) BUSINESS PLAN		2012	2013	2014	2015	Total
UNDP	ODS phase-out (ODP tonnes)	164.01	95.67	0	17.73	277.38
	Funding (US $)	12,900,000	7,525,000	0	1,394,275	21,819,275
UNEP	ODS phase-out (ODP tonnes)	25.70	25.70	0.0	51.50	102.9
	Funding (US $)	1,228,000	1,228,540	33,900	211,170	2,667,710
Germany	ODS phase-out (ODP tonnes)	10.90	10.60	2.80	0	24.3
	Funding (US $)	1,010,000	983,000	261,000	0	2,254,000

(VI) PROJECT DATA			2012	2013	2014	2015	Total
Montreal Protocol consumption limits			n/a	1,608.20	1,608.20	1,447.38	n/a
Maximum allowable consumption (ODP tonnes)			n/a	1,608.20	1,608.20	1,447.38	n/a
Project Costs requested in principle(US$)	UNDP	Project costs	10,000,000	7,500,000	0	1,588,490	19,088,490
		Support costs	750,000	562,500	0	119,137	1,431,637
	UNEP	Project costs	430,800	344,640	0	86,160	861,600
		Support costs	52,388	41,910	0	10,478	104,776
	Germany	Project cost	925,452	869,508	0	199,440	1,994,400
		Support cost	106,440	100,006	0	22,938	229,384
Total project costs requested in principle (US $)			11,356,252	8,714,148	0	1,874,090	21,944,490
Total support costs requested in principle (US $)			908,828	704,416	0	152,553	1,765,797
Total funds requested in principle (US $)			12,265,080	9,418,564	0	2,026,643	23,710,287

(VII) Request for funding for the first tranche (2012)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNDP	10,000,000	750,000
UNEP	430,800	52,388
Germany	925,452	106,440

Funding request:	Approval of funding for the first tranche (2012) as indicated above
Secretariat's recommendation:	Individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of India, UNDP as the lead implementing agency, has submitted to the 66th meeting of the Executive Committee stage I of the HCFC phase-out management plan (HPMP) at a total cost of US $26,675,295 consisting of US $20,297,800, plus agency support costs of US $1,522,335 for UNDP; US $2,361,600, plus agency support costs of US $269,776 for UNEP; and US $1,994,400, plus agency support costs of US $229,384 for Germany, as originally submitted. The HPMP covers strategies and activities to achieve 10 per cent reduction in HCFC consumption, with an associated phase-out of 308.77 ODP tonnes.

2. The first tranche for stage I of the HPMP being requested at this meeting amounts to US $15,143,288, consisting of US $12,000,000, plus agency support costs of US $900,000 for UNDP; US $1,087,200, plus agency support costs of US $124,196 for UNEP; and US $925,452, plus agency support costs of US $106,440 for Germany.

Background

3. India, with a total population of approximately 1.2 billion inhabitants, has ratified all the amendments to the Montreal Protocol.

ODS policy and regulatory framework

4. The Ministry of Environment and Forests has been designated as the nodal ministry for the Montreal Protocol. It has established a special directorate, the Ozone Cell, dedicated to managing and coordinating the implementation of the Montreal Protocol in India; and also an Empowered Steering Committee, comprised of representatives of various line ministries and other national stakeholders, to provide an overall policy direction for implementation of the Protocol, and to review the various policies and implementation modalities, including project approvals and monitoring.

5. The Ozone Depleting Substances (Regulation and Control) Rules entered into effect in January 2000. Five amendments to these rules were issued from 2001 to 2007. ODS production, consumption and trade have been regulated through these rules. With regard to ODS production, registration with the Ministry of Environment and Forests is mandatory; production levels are restricted as per base level; and creating new capacity or expansion of capacity is prohibited. With regard to ODS consumption, the rules ban new capacity or expansion of capacity for manufacturing products and equipment containing designated ODS; a declaration in prescribed format is required at the time of procurement of ODS; and the manufacturing of ODS-based products in various sectors is restricted from 2003 to 2010. The rules also require mandatory registration with designated authorities for exporters and importers; the import of ODS and ODS-based equipment is permitted only with a license; and export is restricted to countries that are parties to the Montreal Protocol and its amendments, according to quota.

HCFC consumption, production and sector distribution

6. HCFC consumption increased from 8,097.12 metric tonnes (mt) (592.47 ODP tonnes) in 2006 to 21,863.00 mt (1,617.63 ODP tonnes) in 2010, as shown in Table 1. Additionally, 755.00 mt (83.05 ODP tonnes) of HCFC-141b were imported in pre-blended polyols in 2009. The HCFC baseline for compliance has been established at 1,608.20 ODP tonnes.

Table 1. HCFC consumption in India (*)

HCFC	2006	2007	2008	2009	2010	Baseline
Metric tonnes						
HCFC-123	20.00	27.00	101.00	238.00	115.00	176.50
HCFC-124	-	-	-	620.00	603.00	611.50
HCFC-141b	2,672.82	4,712.00	12,589.00	7,900.00	7,837.00	7,868.50
HCFC-142b	82.00	-	390.00	3,001.00	805.00	1,903.00
HCFC-22	5,322.30	13,577.00	10,831.00	9,387.00	12,503.00	10,945.00
Total (mt)	8,097.12	18,316.00	23,911.00	21,146.00	21,863.00	21,504.50
ODP tonnes						
HCFC-123	0.40	0.54	2.02	4.76	2.30	3.53
HCFC-124	-	-	-	13.64	13.27	13.46
HCFC-141b	294.01	518.32	1,384.79	869.00	862.07	865.54
HCFC-142b	5.33	-	25.35	195.07	52.33	123.70
HCFC-22 (**)	292.73	746.74	595.71	516.29	687.67	601.98
Total (ODP tonnes)	592.47	1,265.60	2,007.87	1,598.76	1,617.64	1,608.20

(*) Article 7 data.

(**) 117.43 ODP tonnes, 70.40 ODP tonnes and 102.74 ODP tonnes were imported in 2007, 2009 and 2010, respectively, mainly as a component of blends. The remaining amounts were produced in India.

7. The increase in HCFC-22 consumption from 2006 to 2007 was mainly due to the increased demand for manufacturing and servicing residential and commercial air-conditioning equipment. A substantial proportion of the installed base of such equipment, produced in earlier years, came up for servicing in 2007. Furthermore, a significant manufacturing capacity was added after 2004-2005, which was fully utilized from 2006-2007 onwards. However, due to the global economic downturn in 2009, HCFC-22 consumption in the manufacturing sector was reduced; although demand began to increase again from 2010. The demand for HCFC-141b followed a similar pattern, with significant capacity added during the 2004-2007 period, which reached full capacity by 2008 due to the boom in construction and infrastructure development. Thereafter, the global economic downturn caused a reduction in demand during 2009 and 2010.

8. HCFC-22 is produced in India for both the local market (60 per cent of total production) and for export (Table 2).

Table 2. HCFC-22 production in India (Article 7 data)

HCFC-22	2006	2007	2008	2009	2010
Metric tonnes					
Production	29,639.00	40,214.00	41,057.00	46,586.00	40,669.00
Export	23,502.00	28,772.00	30,226.00	38,478.00	30,034.00
Import (*)	-	2,135.00	-	1,280.00	1,868.00
ODP tonnes					
Production	1,630.15	2,211.77	2,258.14	2,562.23	2,236.80
Export	1,292.61	1,582.46	1,662.43	2,116.29	1,651.87
Import (*)	-	117.43	-	70.40	102.74

(*) As a component of refrigerant blends (i.e., R-401A, R-406A, R-409A and R-415B).

9. HCFCs are mainly used as refrigerants (both for manufacturing and servicing), blowing agents (for polyurethane and extruded polystyrene foams), industrial aerosol propellants, solvents and cleaning agents, and fire suppressants, as shown in Table 3.

Table 3. Main uses and applications of HCFCs in India

HCFC	Uses and applications
HCFC-123	* Refrigerant in centrifugal chillers in new installations and servicing * Component of blends used in portable fire extinguishers
HCFC-124	* Component of refrigerant blends for industrial refrigeration applications (i.e., R-401A, R-409A) * Component of blends used in flooded fire extinguishing systems
HCFC-141b	* Blowing agent in the manufacture of polyurethane and polyisocyanurate foams * Propellant in industrial aerosols * Solvent and cleaning agent in specialized operations for precision metal, optical and electronic equipment
HCFC-142b	* Blowing agent in the manufacture of extruded polystyrene foams * Component of refrigerant blends (R-406A, R-409A) for industrial applications
HCFC-22	* Refrigerant in air-conditioning and medium-temperature refrigeration systems * Component of refrigerant blends (R-401A, R-406A, R-409A and R-415B) * Blowing agent in the manufacture of extruded polystyrene foams

Foam sector

10. There are about 450-500 enterprises manufacturing polyurethane foam, including large, medium and small-sized enterprises, covering different sectors/sub-sectors and geographical locations. There is also one extruded polystyrene (XPS) foam enterprise, established in 2006, which manufactures insulation boards and is also a producer of the upstream feed material, polystyrene. The XPS sector is expected to grow rapidly and new capacities based on non-HCFC blowing agents are expected to be established to meet the increasing demand for cost-effective alternatives to polyurethane sandwich panels.

11. HCFC-141b is the predominant blowing agent used in the sector; small amounts of HCFC-142b and HCFC-22 are also used as blowing agents. HCFC-141b is used raw or pre-blended in polyols, supplied by 20 systems houses (fifteen locally-owned and 5 foreign-owned) or chemical distributors. Pre-blended polyols containing HCFC-141b are also imported into the country as shown in Table 4. These polyols are imported only by locally-owned systems houses for use by small and medium sized enterprises (SMEs) engaged in the manufacture of general insulation products and thermoware. These enterprises will be converted in subsequent stages of the HPMP. Exports of HCFC-141b-based pre-blended polyols are also considered to be very incidental and in trace quantities.

Table 4. HCFC-141b contained in imported pre-blended polyols in India

HCFC-141b in imported polyols	2007	2008	2009	2010	Average (07-09)
Metric tonnes	450.00	1,203.00	755.00	755.00	802.67
ODP tonnes	49.50	132.33	83.05	83.05	88.29

12. The total amount of HCFCs used in the foam industry in 2009 is shown in Table 5.

Table 5. HCFC consumption in the foam sector in India (2009)

Sub-sector	HCFC-141b (*)	HCFC-142b	HCFC-22	Total
Metric tonnes				
Domestic refrigeration (insulation)	1,625.00			1,625.00
Continuous sandwich panels	527.00			527.00
Discontinuous sandwich panels (**)	2,119.00	45.00	45.00	2,209.00
Thermoware	985.00			985.00
Water heaters	684.00			684.00
General insulation (**)	990.00	45.00	45.00	1,080.00
Spray/in-situ insulation	520.00			520.00

Sub-sector	HCFC-141b (*)	HCFC-142b	HCFC-22	Total
Integral skin	415.00			415.00
Extruded polystyrene foam		150.00	150.00	300.00
Total (mt)	7,865.00	240.00	240.00	8,345.00
ODP tonnes				
Domestic refrigeration (insulation)	178.75	-	-	178.75
Continuous sandwich panels	57.97	-	-	57.97
Discontinuous sandwich panels (**)	233.09	2.93	2.48	238.50
Thermoware	108.35	-	-	108.35
Water heaters	75.24	-	-	75.24
General insulation (**)	108.90	2.93	2.48	114.31
Spray/in-situ insulation	57.20	-	-	57.20
Integral skin	45.65	-	-	45.65
Extruded polystyrene foam	-	9.75	8.25	18.00
Total (ODP tonnes)	865.15	15.61	13.21	893.97

(*) Including 755.00 mt (83.05 ODP tonnes) contained in imported pre-blended polyols.
(**) The amounts of HCFC-22 and HCFC-142b in these two subsectors are estimated. "General insulation" includes enterprises manufacturing boards, blocks, slabs, and pipe sections.

Air-conditioning sector

13. The air-conditioning sector is a large HCFC-consuming sector, with the potential for significant future growth considering the low current market penetration of air conditioners. HCFC-22 is the predominant refrigerant, followed by HCFC-123. The sector is classified into various sub-sectors as shown in Table 6.

Table 6. HCFC consumption in the air-conditioning sector in India (2009)

Sub-sector	HCFC consumption		% of total (*)
	mt	ODP tonnes	
Room and non-ducted split air conditioners	3,414.00	187.77	73.9
Packaged air conditioners	696.00	38.28	15.1
Precision air-conditioning	177.00	9.74	3.8
Industrial air-conditioning and chillers (**)	318.00	14.34	6.9
Transport air-conditioning	12.00	0.66	0.3
Total	4,617.00	250.79	100.0

(*) Measured in metric tonnes.
(**) Includes 228 mt (12.54 ODP tonnes) of HCFC-22 and 90.00 mt (1.80 ODP tonnes) of HCFC-123.

14. Approximately 2.65 million room and non-ducted split air conditioners (capacity between 9,000 and 36,000 BTU/hr) were manufactured and 0.65 million units were imported in 2009. There are approximately 66 enterprises manufacturing this equipment locally. Most of the large manufacturers are multinational or joint-venture enterprises, the top ten accounting for over 80 per cent of production. Due to rapid urbanization, expansion of residential facilities and support services, rising incomes and low market penetration, this sub-sector is experiencing annual growth rates averaging 25 to 30 per cent, reaching an estimated 6 million units by 2013, 8 million units by 2015 and 15 million units by 2020.

15. Approximately 60,000 packaged air conditioners (i.e., air-cooled and water-cooled ducted air-conditioning systems with condensing units incorporating single or multiple compressors) were manufactured by over 20 organized enterprises in 2009. The most commonly-used units are for commercial air-conditioning applications, with capacities ranging from 36,000 BTU/hr to 120,000 BTU/hr. Given the annual growth rate of this type of equipment (approximately 15 per cent), several enterprises (both locally- and foreign-owned) are planning to expand their production capacities.

16. In 2009, approximately 35,000 precision air-conditioning units used for temperature control of data centres, telecommunication equipment and instrumentation were manufactured by fifteen medium and large enterprises, and 1,500 industrial air-conditioning and chiller units for process and comfort cooling applications were manufactured by 38 medium and large enterprises. Growth in these sub-sectors is estimated to be 10 per cent annually. Also, 1,800 air-conditioning units for railway coaches were manufactured by ten medium-sized enterprises.

Refrigeration sector

17. The refrigeration sector is considered critical for the economic development of India due to the growing demand for equipment for food preservation and cold chain. This sector has a total HCFC consumption of 910.00 mt (73.42 ODP tonnes), comprising 340.00 mt (18.70 ODP tonnes) of HCFC-22; 450.00 mt (49.50 ODP tonnes) of HCFC-141b used for polyurethane foam insulation; and 60.00 mt (3.90 ODP) of HCFC-142b and 60.00 mt (1.32 ODP tonnes) of HCFC-124 used in refrigerant blends.

18. There are approximately 23 manufacturers and suppliers of compressors in India. Reciprocating hermetic compressors are manufactured by one foreign-owned enterprise, while open-type reciprocating compressors used for air-conditioning and refrigeration applications are manufactured by seven enterprises, most of them categorized as SMEs. Small-sized condensing units are imported, although there are several manufacturers of custom-built units.

19. Approximately 118,000 commercial refrigerators of various sizes and configurations (e.g., beverage coolers, water coolers, deep freezers, display cabinets, small-sized walk-in coolers) were manufactured by over 100 SMEs in 2009. The total consumption of HCFCs amounts to 706.00 mt, consisting of HCFC-22 used for medium temperature applications and larger equipment and HCFC-141b used as a blowing agent for foam insulation. Additionally, 8,000 industrial refrigeration systems (e.g., cold storages and warehouses, freezing rooms, controlled atmosphere storages, ripening chambers, process refrigeration) were manufactured by over 20 enterprises, five of which are large-sized and others are SMEs, with a total consumption of 160 mt of HCFCs. There are also 53 enterprises engaged in the installation of marine air conditioning, refrigeration systems in vessels and other refrigerated transport applications, with a total consumption of 44.00 mt of HCFCs.

Refrigeration and air-conditioning servicing sector

20. The refrigeration servicing sector has a significant consumption of HCFCs, namely, HCFC-22, HCFC-123, HCFC-124 and HCFC-142b (both used as blend components), due to the extensive and increasing population of refrigeration and air-conditioning equipment. There are approximately 37,000 enterprises in the servicing sector with approximately 115,000 service technicians. The estimated amount of refrigeration equipment in operation is shown in Table 7. During servicing, the refrigerant is often vented into the atmosphere; once the equipment is serviced it is completely recharged. Often the equipment is just recharged with refrigerant without proper leak detection. Accordingly, significant savings in refrigerant use could be achieved if good servicing practices, including recovery and recycling, were implemented.

Table 7. Estimated numbers of refrigeration and air-conditioning units in operation

Equipment *	2008	2009	2010	2011	2012	2013
Air conditioners (<3 TR)	17,301,000	20,609,000	24,959,000	29,839,000	37,335,000	47,108,000
Air conditioners (>3 TR)	32,500	40,000	48,300	57,400	67,400	78,400
Water coolers	433,156	551,156	680,956	823,756	980,856	1,153,656
Process chillers	43,500	53,500	64,500	76,600	89,900	104,500
Milk chillers	3,250	4,000	4,830	5,740	6,740	7,840
Cold storage	19,600	24,100	29,100	34,600	40,700	47,400
Ice candy	65,500	80,500	97,000	115,200	135,200	157,200

Equipment *	2008	2009	2010	2011	2012	2013
Display cabinets	130,600	160,600	193,600	229,900	269,800	313,700
Industrial refrigeration	1,090	1,340	1,620	1,930	2,270	2,640

* TR: tonne refrigerant.

21. The estimated amount of HCFC-22 used for servicing the refrigeration and air-conditioning equipment in operation is shown in Table 8.

Table 8. Estimated demand for HCFC-22 in servicing refrigeration and air-conditioning equipment

Equipment	2009	2010	2011	2012	2013	2014	2015
Metric tonnes							
Air conditioners (< 3 TR)	3,842.00	5,271.00	5,968.00	7,467.00	9,422.00	8,955.00	8,896.00
Air conditioners (> 3 TR)	40.00	48.00	57.00	67.00	78.00	75.00	72.00
Water Coolers	44.00	54.00	66.00	78.00	92.00	82.00	79.00
Process Chillers	32.00	39.00	46.00	54.00	63.00	60.00	57.00
Milk chillers	9.00	10.00	12.00	14.00	17.00	16.00	15.00
Cold Storage	139.00	168.00	200.00	235.00	274.00	261.00	251.00
Ice Candy	129.00	155.00	184.00	216.00	252.00	200.00	192.00
Display cabinets	32.00	39.00	46.00	54.00	63.00	55.00	53.00
Industrial Refrigeration	14.00	17.00	21.00	25.00	29.00	28.00	26.00
Total (mt)	4,281.00	5,801.00	6,600.00	8,210.00	10,290.00	9,732.00	9,641.00
ODP tonnes							
Air conditioners (< 3 TR)	211.31	289.91	328.24	410.69	518.21	492.53	489.28
Air conditioners (> 3 TR)	2.20	2.64	3.14	3.69	4.29	4.13	3.96
Water Coolers	2.42	2.97	3.63	4.29	5.06	4.51	4.35
Process Chillers	1.76	2.15	2.53	2.97	3.47	3.30	3.14
Milk chillers	0.50	0.55	0.66	0.77	0.94	0.88	0.83
Cold Storage	7.65	9.24	11.00	12.93	15.07	14.36	13.81
Ice Candy	7.10	8.53	10.12	11.88	13.86	11.00	10.56
Display cabinets	1.76	2.15	2.53	2.97	3.47	3.03	2.92
Industrial Refrigeration	0.77	0.94	1.16	1.38	1.60	1.54	1.43
Total (ODP tonnes)	235.46	319.06	363.00	451.55	565.95	535.28	530.28

Other sectors

22. Approximately 80.00 mt (8.80 ODP tonnes) of HCFC-141b were used as propellants in the manufacture of aerosols for industrial cleaning applications in 2009. Also, 36.00 mt (0.72 ODP tonnes) of HCFC-123 and 220 mt (4.84 ODP tonnes) of HCFC-124 were used in the fire-fighting sector in 2009. HCFC-123 has been a preferred blend component in portable fire extinguishing systems because of its ability to counter combustion chemically, without use of water, foam or powder, while HCFC-124 is used as a blend component in flooded systems.

Summary of HCFC consumption by sector

23. The distribution of the main HCFCs used in India by sector and sub-sector is summarized in Table 9.

Table 9: Sector distribution of HCFC consumption in India (2009)

Sector/sub-sector	HCFC-22	HCFC-141b (*)	HCFC-142b	HCFC-123	HCFC-124	Total
Metric tonnes						
Aerosol	-	80.00	-	-	-	80.00
Air-conditioning	4,527.00	-	-	90.00	-	4,617.00
Fire-fighting	-	-	-	36.00	220.00	256.00
Polyurethane foam	90.00	7,110.00	90.00	-	-	7,290.00

Sector/sub-sector	HCFC-22	HCFC-141b (*)	HCFC-142b	HCFC-123	HCFC-124	Total
Refrigeration	340.00	450.00	60.00	-	60.00	910.00
Solvent	-	260.00	-	-	-	260.00
Extruded polystyrene	150.00	-	150.00	-	-	300.00
Total (manufacturing)	5,107.00	7,900.00	300.00	126.00	280.00	13,713.00
Total servicing	4,281.00	-	2,701.00	112.00	340.00	7,434.00
Grand total (mt)	9,388.00	7,900.00	3,001.00	238.00	620.00	21,147.00
ODP tonnes						
Aerosol	-	8.80	-	-	-	8.80
Air conditioning	248.99	-	-	1.80	-	250.79
Fire-fighting	-	-	-	0.72	4.84	5.56
Polyurethane foam	4.95	782.10	5.85	-	-	792.90
Refrigeration	18.70	49.50	3.90	-	1.32	73.42
Solvent	-	28.60	-	-	-	28.60
Extruded polystyrene	8.25	-	9.75	-	-	18.00
Total (manufacturing)	280.89	869.00	19.50	2.52	6.16	1,178.07
Total Servicing	235.46	-	175.57	2.24	7.48	420.74
Grand total (mt)	516.34	869.00	195.07	4.76	13.64	1,598.81

(*) An additional 755 mt (83.05 ODP tonnes) of HCFC-141b were imported in pre-blended polyols.

Prices of HCFCs and refrigerants

24. The prevailing ranges of local bulk prices per kilogram of the main HCFCs/HFCs are: US $5.00 to US $7.00 for HCFC-22; US $4.00 to US $6.00 for HCFC-141b; US $7.00 to US $9.00 for HFC-134a; and US $12.00 to US $20.00 for HFC-410A.

HCFC phase-out strategy

25. The Government of India has developed a staged approach to comply with the adjusted control schedule for HCFCs. Stage I of the HPMP covering the 2012-2015 period will focus on converting HCFC-based manufacturing enterprises in sectors where non-HCFC, zero-ODP and low-global warming potential (GWP) technologies can be applied, supported by targeted and specific regulations that will be promulgated. Capacity-building programmes for refrigeration technicians will be implemented to control growth of HCFCs in the servicing sector. A national enabling programme will also be implemented to further support the sustainability of HCFC reductions, incorporating education, communication and outreach activities, capacity-building for enforcement and targeted stakeholder and public awareness activities.

26. The following rationale and strategic considerations have been taken into account in the design of stage I of the HPMP:

(a) Replacement of HCFC-141b (i.e., highest ODP value) used as a foam blowing agent in the polyurethane foam sector by mature and relatively benign alternatives to the environment;

(b) Wherever possible, complete phase-out of HCFC-141b at the sub-sector level is targeted, to enable enforceable regulations;

(c) Selection of enterprises is based on their technical and managerial capacities and levels of HCFC consumption, to ensure implementability and maximum impact;

(d) Interventions in the refrigeration servicing sector are proposed to adapt and build on the existing infrastructure, to contribute to the 2013 and 2015 control targets and control the growth in HCFC consumption in this sector; and

(e) The air-conditioning and refrigeration manufacturing sectors are not addressed due to the lack of commercially available non-ODP and low-GWP alternative technologies.

27. Stage II (2015-2020) will focus on the phase-out of HCFC consumption in the remaining manufacturing sectors and in the servicing sector, and the sustained monitoring and enforcement of legislation. Subsequent stages (beyond 2020) will focus on further reductions in HCFC demand in the servicing sector and introduce decentralized enforcement mechanisms to mainstream the Montreal Protocol in all institutions.

Phase-out activities for stage I of the HPMP

28. The following specific activities are proposed for stage I of the HPMP for India: reduction of HCFC-141b used in polyurethane foam applications; technical assistance to systems houses; activities in the refrigeration servicing sector; support for national enabling activities; and activities related to monitoring, coordination and management.

Phase-out activities in the foam sector

29. For stage I of the HPMP, the Government of India decided to phase out the consumption of HCFC-141b in eight enterprises manufacturing insulation foam for domestic refrigeration equipment and three enterprises manufacturing continuous sandwich panels, resulting in the complete phase-out of HCFCs in these two sub-sectors; additional phase-out will be achieved through the conversion of the five largest enterprises manufacturing discontinuous sandwich panels. These three sub-sectors have significant HCFC consumption and are also growing rapidly.

30. Only two of the 16 enterprises included in stage I of the HPMP have received assistance from the Multilateral Fund:

(a) At the 17th meeting (July 1995), US $224,000 was approved for the World Bank for phasing out 13.00 ODP tonnes of CFC-11 used for the manufacturing of sandwich panels at Blue Star. The conversion included the replacement of two low-pressure foam dispensers by one high-pressure dispenser and a pre-mixer. Of the total funding approved, US $55,898 was returned to the Fund. Currently the enterprise has four high-pressure dispensers in the baseline, three of which were established after January 1997 when the conversion of the enterprise was completed; and

(b) At the 26th meeting (November 1998), US $62,980 was approved for UNDP for phasing out 10.90 ODP tonnes of CFC-11 used for the manufacturing of rigid insulation foam at Sintex Industries. The conversion included retrofits of the high-pressure foam dispenser and the pre-mixer in the baseline. Of the total funding approved, US $1,589 was returned to the Fund. Currently the enterprise has two high-pressure dispensers in the baseline.

31. The selected enterprises manufacturing continuous and discontinuous panels will convert to hydrocarbon technology[1], while the eight enterprises manufacturing insulation foam for domestic refrigeration equipment will convert to formulations containing 75 per cent cyclopentane and 25 per cent HFC-245fa as blowing agents. HFC-245fa is required to improve insulation performance[2] and miscibility with polyol, in order to comply with the stringent energy-efficiency standards recently introduced in India. Other technologies considered but not selected were HFC-based systems due to high-GWP and

[1] The technologies selected for the continuous sandwich panels are n-pentane and iso-pentane, while that for discontinuous sandwich panels is cyclopentane.

[2] Based on tests carried out by domestic refrigerator manufacturers in the United States, the technology provider indicated an energy-efficiency gain of 2 to 5 per cent with respect to cyclopentane alone.

high operational costs; water-based systems given the unsatisfactory density and insulation values, and commercial availability; and methyl formate, since it is currently in an initial stage of adoption.

32. The conversion of the 16 enterprises to hydrocarbon technology requires changes to their manufacturing lines to conform to safety standards for storage, delivery and handling of flammable substances. Conversion of these enterprises includes: installation of storage tanks and handling systems (US $120,000/unit); premixing stations (US $90,000/unit); additional polyol buffer tanks (US $20,000/unit); retrofitting of high-pressure foam machines (US $90,000 each unit available in the baseline); water conditioning system (US $30,000/each); safety-related equipment for the use of a flammable blowing agent (US $300,000/enterprise); retrofit of jigs and moulds (US $120,000 for each enterprise manufacturing insulation foam for domestic refrigeration equipment, and US $60,000 for each enterprise manufacturing discontinuous panels); civil and electrical works (US $120,000/enterprise); training, trials, testing and certification (US $150,000/enterprise); and contingencies (estimated at 10 per cent of the capital cost). Incremental operating costs were calculated based on baseline prices and formulations from the participating enterprises. Conversion of these enterprises will result in the phase-out of 2,523 mt (277.53 ODP tonnes) of HCFC-141b.

33. The total cost of the conversions has been estimated at US $27,533,000. Applying the cost-effectiveness threshold for the foam sector (US $7.83/kg plus 25 per cent for introducing a low-GWP technology), and deducting the foreign ownership portion of three of the enterprises, the eligible funding for the investment component is US $14,058,800, with an overall cost-effectiveness of US $5.57/kg. The enterprises are committed to contributing counterpart funding of US $7,835,200 during the implementation of the project. The consumption by enterprise and incremental costs are presented in Table 10.

Table 10: Total cost of the conversion of the foam enterprises included in stage I of the HPMP

Enterprise	HCFC-141b		Cost (US $)			% counterpart
	(mt)	(ODP t)	Total	Eligible	Counterpart	
Insulation foam						
Applicomp	110.00	12.10	1,826,000	1,076,900	749,100	41.0
Empire	82.00	9.02	1,781,200	802,780	978,420	54.9
Haier	93.00	10.23	1,545,800	910,470	635,330	41.1
Techno	155.00	17.05	1,645,000	1,517,450	127,550	7.8
Value	63.00	6.93	1,497,800	616,770	881,030	58.8
Videocon	107.00	11.77	1,568,200	1,047,530	520,670	33.2
Whirlpool (*)	630.00	69.30	2,977,000	744,250	-	
Whirlpool (*)	385.00	42.35	3,091,000	772,750	-	
Sub-total	1,625.00	178.75	15,932,000	7,488,900	3,892,100	
Continuous panels						
Metecno (**)	76.00	8.36	1,088,000	-		
Sintex (***)	139.00	15.29	1,404,000	1,360,810	43,190	3.1
Synergy	312.00	34.32	1,577,000	1,577,000	-	0.0
Sub-total	527.00	57.97	4,069,000	2,937,810	43,190	
Discontinuous panels						
Aster	60.00	6.60	1,391,000	587,400	803,600	57.8
Blue Star (***)	96.00	10.56	1,933,000	939,840	993,160	51.4
Isolloyd	71.00	7.81	1,402,000	695,090	706,910	50.4
Lambda	81.00	8.91	1,412,000	792,990	619,010	43.8
Rinac	63.00	6.93	1,394,000	616,770	777,230	55.8
Sub-total	371.00	40.81	7,532,000	3,632,090	3,899,910	
Total	2,523.00	277.53	27,533,000	14,058,800	7,835,200	

(*) 25 per cent foreign ownership. The enterprise has two production facilities located in Faridabad and Pune.
(**) 100 per cent foreign ownership.
(***) Second-stage conversion.

34. In addition to the conversion of the 16 foam enterprises, stage I of the HPMP also includes technical assistance to the fifteen locally-owned systems houses in operation in India for customizing formulations using new and emerging low-GWP alternative technologies (mainly FEA-1100, HBA-2, AFA-L1, methyl formate and methylal). The technical assistance will be provided during the next three years to ensure the availability of cost-effective alternatives, particularly to SMEs, and to reduce the capital and operating costs required for their conversion to non-HCFC blowing agents. It will also contribute to the overall reduction in the use of HCFCs in the foam sector at the time of stage II. The Government of India considers this component critical as it takes between two and three years to stabilize a technology for pre-blended polyols and ensure cost-effectiveness and market acceptance.

35. The project will provide the 15 systems houses with pilot-scale facilities for customizing trials, evaluation and validation of non-HCFC formulations. The equipment required by each systems house includes a pre-mixing station (ranging from US $75,000 to US $90,000 depending on the size of the systems house), laboratory-scale reactor (US $30,000 to US $60,000), a pilot ethylene propylene oxide blending and storage facility (US $60,000 only for the three largest systems houses), retrofitting of the existing foam dispensers for trials (US $45,000 to US $90,000, excluding the five smallest systems houses), evaluation and measuring equipment (US $5,000 to US $45,000) and technical assistance, trials and training (US $45,000 to US $135,000). The systems houses involved and the cost are presented in Table 11.

Table 11. Technical assistance for fifteen systems houses in India

Systems houses	HCFC-141b		Cost (US $)
	(mt)	(ODP tonnes)	
Jai Durga	25.00	2.75	154,000
Organometallic	25.00	2.75	154,000
Pine Resins	35.00	3.85	154,000
Shiv Polymers	26.00	2.86	154,000
Shivathene	30.00	3.30	154,000
Amritchem	318.00	34.98	297,000
Bestopuf	90.00	9.90	297,000
Gomti Impex	110.00	12.10	297,000
Manya	200.00	22.00	297,000
Royal	180.00	19.80	297,000
Shakun	90.00	9.90	297,000
Tandy	123.00	13.53	297,000
Expanded Polymer Systems	713.00	78.43	660,000
Industrial Foams	585.00	64.35	660,000
Manali Petrochemicals	527.00	57.97	660,000
Total	3,077.00	338.47	4,829,000

36. Technical assistance is also included in stage I of the HPMP to keep SMEs informed of the latest technological developments, share information and exchange experiences on alternatives, and document positive results for wider acceptance. The technical assistance includes five workshops and the dissemination of material at an estimated cost of US $240,000.

37. The total cost of the phase-out activities in the foam sector included in stage I of the HPMP has been estimated at US $19,127,800 with an overall cost-effectiveness of US $7.58/kg, as shown in Table 12.

Table 12. Total cost of phase-out activities in the foam sector included in stage I of the HPMP

Component	HCFC-141b (mt)	Total cost (US $)
Conversion of 16 foam enterprises to cyclopentane	2,523.00	14,058,800
Technical assistance for 15 locally-owned systems houses		4,829,000
Technical assistance for SMEs		240,000
Total	2,523.00	19,127,800

Technical assistance for the servicing sector

38. The Government of India considered it necessary to implement phase-out activities in the servicing sector during stage I of the HPMP to control growth in HCFC consumption, in particular of HCFC-22. If the servicing sector is not addressed, the total demand for HCFCs across all sectors would most likely exceed the allowable level of consumption established in the phase-out schedule. It is estimated that 568.00 mt (31.24 ODP tonnes) of HCFC-22 will be reduced by 2015 through implementation of the following activities at a total cost of US $2,556,000:

(a) Training programme in good servicing practices for 10,200 technicians selected from institutions, franchisees and the semi-organized sector, as most of these would be able to avail themselves of the required tools and equipment; equipment support for the training centres; development of training material; and monitoring of the training programmes. The existing infrastructure for training available in India, comprising 15 training cells in central locations with more than 100 specialised trainers, which was established under the bilateral Indo-Swiss project on human and institutional development for ecological refrigeration and the national CFC consumption phase-out plan supported by the Multilateral Fund, will be used for phasing out HCFCs (US $1,570,660);

(b) Institutional strengthening activities, including training of 60 trainers from the Government's industry training institutes and equipment to support the training institutes; training programmes on good servicing practices, recovery and recycling and use of alternatives, for 275 technicians from different Government institutions (e.g., Railways, Army, Navy and Air Force); implementation of a retrofit pilot programme including procurement of basic tools, instruments and alternative refrigerants; support for seven reclamation centres including workshops and refrigerant identifiers (US $229,800);

(c) Awareness activities, including workshops, flyers for training promotions, posters for servicing workshops, newsletters, development of a website, and facilitating the establishment of a refrigeration and air-conditioning servicing enterprise association (pilot in Delhi, Mumbai and Chennai) (US $561,600); and

(d) Monitoring and evaluation of the activities in the refrigeration servicing sector, including mid-term monitoring of a sample of 500 technicians that have been trained (about 5 per cent of the total number to be trained), and annual monitoring of ongoing training programmes (US $193,940).

Enabling activities for compliance with stage I of the HPMP

39. The main purposes of the enabling activities are to ensure effective implementation of the policy/regulations required to meet the HCFC phase-out compliance targets for 2013 and 2015; create measures to strengthen ODS import/export control mechanisms to enable regional/global cooperation on ODS trade control and avoid illegal trade; and enhance awareness and outreach activities to stimulate demand for non-HCFC-based equipment. The enabling activities, at a total cost of US $1,800,000, will focus on two main areas:

(a) Enforcement of capacity-building through timely implementation of new regulations for HCFC control, more vigorous and targeted measures to combat illegal ODS trade, and assistance to neighbouring countries to comply with their commitments. Training will be provided to customs officers on control of cross-border trade in HCFCs and combating illegal trade in ODS, and to various enforcement authorities and stakeholders at the state and central levels performing different enforcement functions relating to ODS (US $1,300,000); and

(b) Awareness and information outreach activities related to HCFC phase-out for relevant stakeholders (i.e., industry associations, manufacturers, dealers and vendors), including the informal and the SME segments (US $500,000).

Project management unit

40. Stage I of the HPMP also includes a management, coordination and monitoring component to ensure timely implementation of the activities being proposed at a total cost of US $1,170,000. The main activities to be implemented are: coordination with all stakeholders; preparation/review of terms of reference for consultancy services; preparation, implementation and review of annual implementation plans and relevant progress reports as may be required; financial management to ensure effective use of resources; facilitating project supervision, or evaluation and performance verification as required; organizing meetings and workshops to ensure full cooperation of all stakeholders; and supervision and evaluation of conversion projects with assistance from technical experts.

41. In addition, the following specific policies and regulations are planned to be developed and enforced without distorting the markets to meet the 2013 and 2015 HCFC control targets:

(a) To restrict the amount of HCFCs that can be sold on the domestic market, effective 1 January 2013;

(b) To prohibit the establishment of new capacities or the expansion of existing capacities for manufacturing HCFC-based products, effective 1 January 2013;

(c) To prohibit imports of polyols pre-blended with HCFCs, effective 1 January 2013;

(d) To prohibit manufacturing of domestic refrigerators and continuous sandwich panels with HCFCs as blowing agents, effective 1 January 2015; and

(e) To prohibit imports of HCFC-based air-conditioners effective 1 January 2015.

Total cost of stage I of the HPMP of India

42. The total cost for the implementation of stage I of the HPMP of India, as originally submitted, has been estimated at US $24,653,800 (excluding agency support cost) to reduce 308.77 ODP tonnes of HCFCs, representing 19.2 per cent of the HCFC consumption baseline, as shown in Table 13. The overall cost-effectiveness of stage I of the HPMP is US $8.80/kg.

Table 13: Total cost of stage I of the HPMP of India, as originally submitted

Activities	Metric tonnes		ODP tonnes		Cost (US$)
	HCFC-141b	HCFC-22	HCFC-141b	HCFC-22	
Conversion of 16 enterprises	2,523.00		277.53		14,058,800
Technical assistance to 15 system houses					4,829,000
Technical assistance to the foam sector					240,000
Refrigeration servicing sector		568.00		31.24	2,556,000
Enabling activities					1,800,000

Activities	Metric tonnes		ODP tonnes		Cost (US$)
	HCFC-141b	HCFC-22	HCFC-141b	HCFC-22	
Project management unit					1,170,000
Total	2,523.00	568.00	277.53	31.24	24,653,800

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

43. The Secretariat reviewed the HPMP for India in the context of the guidelines for the preparation of HPMPs (decision 54/39), the criteria for funding HCFC phase-out in the consumption sector agreed at the 60th Meeting (decision 60/44) and subsequent decisions on HPMPs and the 2012-2014 business plan of the Multilateral Fund. The Secretariat discussed with UNDP, UNEP and the Government of Germany technical and cost-related issues, which were addressed as summarized below.

Status of implementation of the CFC phase-out plan

44. The national CFC consumption phase-out plan focusing on the refrigeration service sector has been fully implemented with the assistance of the Governments of Germany, Switzerland, and UNDP and UNEP. As of December 2011, all the funding of US $5,276,207 approved for this plan has been disbursed. Regarding the plan for phase-out of CFCs in the manufacture of pharmaceutical metered dose inhalers (MDIs), UNDP reported that conversion of all manufacturing enterprises has been completed and that all except for two formulations have been converted over to HFA-based formulations. Over 90 per cent of the total funding approved of US $10,082,267 has been disbursed. The exact disbursement figures will be available by the end of March 2012.

Starting point for aggregate reduction in HCFC consumption

45. The Government of India agreed to establish as its starting point for sustained aggregate reduction in HCFC consumption the baseline of 1,608.20 ODP tonnes, calculated using actual consumption of 1,598.76 ODP tonnes and 1,617.64 ODP tonnes reported for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol, plus 83.05 ODP tonnes of HCFC-141b contained in imported pre-blended polyol systems in 2009, resulting in 1,691.25 ODP tonnes. The Government of India decided to use in the calculation of the starting point the amount of HCFC-141b in pre-blended polyols imported in 2009 (which is similar to that imported in 2010) rather than the 2007-2009 average consumption of 88.29 ODP tonnes (i.e., 5.24 ODP tonnes higher).

Issues regarding the overarching strategy

46. Several issues were raised with regard to the overarching strategy. Noting the increasing demand in HCFC-22 for servicing refrigeration and air-conditioning equipment in India (estimated at 9,640.00 mt (530.26 ODP tonnes) by 2015), the Secretariat enquired about the Government's strategy and specific actions to limit the growth rate in HCFC consumption. UNDP explained that, further to intensive discussions with key stakeholders, the Government is planning to enact regulations governing local manufacturing and imports of equipment, including a ban on the establishment of new HCFC-based enterprises or the expansion of existing HCFC-based enterprises as of 1 January 2013, as well as a ban on imports of HCFC-based air conditioners by 1 January 2015. The Government will monitor and review the situation in 2012 and, if necessary, the regulation may be implemented earlier (likely by 1 January 2013). Furthermore, HCFC consumption will be allowed to increase by only 4 per cent in 2012, and the increase will be partially compensated by a corresponding reduction in HCFC consumption for the foam and servicing sectors. The Government will also promote the introduction of energy-efficient and environment-friendly alternative technologies. The combination of these measures will ensure that the total national consumption of HCFCs is within the allowable limits under the Protocol.

47. During the discussions, the Secretariat suggested that stage I of the HPMP should include technical assistance programmes to eliminate the use of 340.00 mt (37.4 ODP tonnes) of HCFC-141b in emissive applications in the aerosol and solvent sectors (i.e., 80.00 mt (8.80 ODP tonnes) used as industrial aerosol propellants, and 260.00 mt (28.60 ODP tonnes) used as a solvent). However, as explained by UNDP, during stage I of the HPMP it would not be possible to eliminate this consumption given the fact that its use is spread over a large number of SMEs in various sub-sectors and throughout the country; cost-effective alternative technologies for these users are not yet available; and the total amount of HCFCs used is relatively low to make a significant impact and result in cost-effective implementation in the short time available to meet the freeze and the 10 per cent reduction on the HCFC baseline. For these reasons, these two sectors were not prioritized for stage I.

Technical and cost-related issues associated with the foams manufacturing sector

48. During the project review, UNDP confirmed that all the enterprises covered under stage I of the HPMP and related manufacturing facilities were established prior to the cut-off date of 21 September 2007, and that they will be prohibited from using HCFCs once the conversion is completed. The current regulatory framework in India allows for enforcement of this long-standing policy.

Selection of alternative technologies

49. The Secretariat and UNDP discussed issues related to the selection of hydrocarbon-based technologies as replacement of HCFC-141b by the 16 enterprises. Introduction of these technologies will require installation of new equipment, retrofit of the foam dispensers, and installation of safety-related equipment at very high costs, resulting in counterpart funding by all enterprises. The Secretariat also noted that, according to data provided by one manufacturer of alternative blowing agents, optimized HBA-2 (an HFO with an estimated GWP of 6 to 7) is a near drop-in replacement for liquid HCFC, HFC, hydrocarbons and other blowing agents; it is non-flammable; it has a low GWP value (below 7); exhibits 1.5 to 2.0 per cent energy efficiency improvement compared to baseline HFC-245fa; and might be commercially available in 2012-2013. On this basis, HBA2 formulations appear to be more cost-effective and sustainable than the formulations proposed for the conversion of the 16 enterprises.

50. UNDP indicated that the technical elements described above are consistent with information available to UNDP. However, the technology is still undergoing regulatory clearances and is expected to be commercially available from June 2013; however, available quantities and costs are unknown. UNDP is in contact with the chemical producers and is closely monitoring the situation. Moreover, the agency is speedily implementing demonstration projects to introduce more cost-effective foam blowing alternatives, through bilateral initiatives outside of India's HPMP, funded from sources other than the Multilateral Fund. Given these facts, UNDP conducted a special stakeholder consultation in October 2011, specifically to discuss these technical and cost issues in detail. The consultation workshop was attended by all the key manufacturers and suppliers, including the 16 enterprises to be converted. Therefore, all enterprises participating in stage I are fully aware of the implications of the technology selection.

Second-stage conversion

51. Two of the enterprises manufacturing foam included in stage I, namely Sintex and Blue Star, had received prior assistance for CFC phase-out. In line with decisions 60/44(b) and 62/16, UNDP provided an analysis and justification for inclusion of the two second-stage conversions in stage I. Stage I proposes to phase out 2,523.00 mt (277.54 ODP tonnes) of HCFC-141b used by 16 large enterprises. Of this amount, 235.00 mt (25.85 ODP tonnes) are used by the previously funded enterprises. Table 14 below shows the proportion of HCFC consumption by enterprises that had received assistance from the Fund for CFC phase-out, as a percentage of total HCFC consumption; total HCFC consumption in the manufacturing sectors; and total consumption of HCFC-141b in the foam sector:

Table 14. Analysis of second-stage conversion enterprises included in stage I of the HPMP

Parameter	HCFC consumption (ODP tonnes)	HCFC consumption by enterprise previously assisted and included in stage I
Total baseline HCFC consumption	1,608.20	1.61%
Total HCFC consumption in manufacturing sectors	1,178.07	73.25%
HCFC-141b consumption in the polyurethane foam sector	792.90	3.26%
HCFC-141b consumption by enterprises already assisted	182.37	14.17%
HCFC-141b consumption by enterprises previously assisted and included in stage I	25.85	100.00%

52. Table 15 below shows the estimated cost-effectiveness of the proposed second-stage conversion enterprises as compared with the estimated cost-effectiveness of phasing out HCFC consumption in other manufacturing enterprises in all sectors in India.

Table 15. Cost-effectiveness of second-stage conversion enterprises as compared to other manufacturing enterprises

Manufacturing sector	HCFC	Consumption (ODP t)	CE (mt)	CE (ODP t)
RAC foreign-owned enterprises (estimated)	HCFC-22	75.24	7.00	127.27
RAC locally-owned enterprises (estimated)	HCFC-22	175.55	7.00	127.27
Refrigeration	HCFC-22; HCFC-141b	73.42	13.00	144.61
XPS foam	HCFC-22; HCFC-142b	18.00	8.23	137.13
Aerosol	HCFC-141b	8.90	4.40	40.00
Fire-fighting	HCFC-123	5.56	5.00	250.00
Solvent	HCFC-141b	28.60	13.00	185.71
Foam first conversion included in stage I	HCFC-141b	251.69	5.03(*)	45.74
Foam second conversion included in stage I	HCFC-141b	25.85	9.62(*)	87.45
Foam first conversions not included in stage I	HCFC-141b	358.84	9.79	89.00
Foam second conversion not included in stage I	HCFC-141b	156.52	9.79	89.00
Total for manufacturing sectors		1,178.17		
Total eligible manufacturing sector (excluding foreign owned enterprises)		984.67		
Total eligible manufacturing sector that has not previously received assistance		744.10		

(*) Actual cost-effectiveness as recommended by Secretariat.

53. Based on the established HCFC baseline for compliance (1,608.20 ODP tonnes), India would have to phase-out 562.88 ODP tonnes to meet the 2020 phase-out target. This amount is lower than the 744.10 ODP tonnes of HCFCs used by eligible enterprises that have not received funding in the past. Accordingly, India has sufficient HCFC consumption to phase out from first-stage enterprises to meet the 2020 target. However, as shown in the above analysis (Table 15), the cost-effectiveness in ODP tonnes of phase-out by the selected combination of first-stage and second-stage conversions as proposed, is better than that of other first-stage enterprises in all sectors, except for the aerosol sector. However, as previously indicated, this sector would be addressed in stage II as it comprises a large number of SMEs throughout the country and where cost effective technologies are not yet available. Therefore, the combination of first-stage and second-stage conversions included in HPMP Stage I constitute the most cost-effective conversions the country could take to meet targets up to 2020, and thus meet the second criteria under decision 60/44(b)(i).

Cost-related issues associated with the conversion of the enterprises

54. With regard to the incremental costs of the conversion of the foam manufacturing enterprises, the following issues were addressed: the higher unitary costs proposed for several equipment items, such as storage tanks, dispenser retrofit, and safety-related equipment, as compared to other similar costs agreed in previously approved projects; the application of similar unitary costs to all enterprises irrespective of the output capacity or the age of the equipment, or the number of equipment items in the baseline; the feasibility of reducing the number of premixing stations and polyol buffer tanks; and the potential for rationalizing costs related to product and process trials, process and safety training, safety audit/certification and external expertise given that among other considerations, several enterprises will be converted to the same technology.

55. UNDP advised that the costs of the equipment required for the conversion have been harmonized to ensure that maximum possible cost-savings are realized. The costs in the enterprises in India are higher because it is more expensive and time-consuming to execute the same interventions due to the significant difference in distances, quality of infrastructure and accessibility as compared to most countries, increasing the costs of capital equipment by 20 to 30 per cent. The same percentage increase in costs applies to travel costs and time for field trips and expert missions. The larger production scale of the enterprises covered under stage I also increases the unitary costs of items related to safety, electrical and civil works. Due to the miscibility issues of hydrocarbons in polyols, closed static premixers are required to ensure thorough and uniform mixing. Each production line needs to function independently of the other to maintain the flexibility and efficiency required to make different products with different formulations. Moreover, location of production lines can be such that the cost of additional tanks, piping, valves, fittings and controls needed for serving two foaming lines with one premixing station, will be equal to or exceed the cost of the additional premixing station, while losing flexibility.

56. At the conclusion of the discussion on incremental costs, UNDP agreed to rationalize costs at the enterprise level, consolidating costs to achieve economy of scale, while ensuring that enterprises could be converted within the available timeframe. Specifically, costs for ventilation and exhaust systems; product and process trials; and process and safety training have been rationalized for each enterprise. Accordingly, the overall total cost of the conversion of the 16 foam enterprises was reduced from US $27,533,000 to US $25,207,500. Applying the cost-effectiveness threshold and deducting the foreign ownership portion of three of the enterprises, the eligible funding was reduced from US $14,058,800 to US $13,771,990 with a cost effectiveness of US $5.46/kg.

57. In addressing the Secretariat's concern about the level of counterpart funding required from the majority of the enterprises (i.e., US $6,884,510, excluding contribution by foreign-owned enterprises), UNDP advised that it has received letters from the enterprises indicating their commitment for counterpart funding to implement the conversions.

Issues related to technical assistance for systems houses

58. Several issues were discussed with UNDP on the technical assistance programme for systems houses proposed in stage I of the HPMP, given the environmental benefits and potential cost savings associated with this programme. UNDP confirmed that, based on submitted data through questionnaires, all of the systems houses addressed under the technical assistance programme are financially viable and have been in business for several years.

59. In responding to a question on the eligibility of the technical assistance programme considering that one of the core operations of a systems house is customizing formulations using new blowing agents, UNDP explained that testing and customization is undertaken by systems houses when alternative formulations are commercially available and technically viable, otherwise such development work would be wasted. Currently, there are no commercially available, safe, low-GWP and efficient alternatives on

the market that can cost-effectively and sustainably meet the needs of SMEs. However, there are some alternatives that are emerging, which could potentially meet those needs. Therefore, assisting the systems houses now, which are the first point of contact for SMEs, will ensure that formulations based on these alternatives are available in a timely and cost-effective manner for immediate adoption. UNDP also noted that the approach of assisting systems houses has proven to be successful in the past during CFC phase-out. The only difference is that alternatives were well established at the time of implementing those projects. In the present situation, alternatives are not yet in place and therefore the approach needs to be slightly modified by advancing the systems house component before addressing the SMEs.

60. Upon a request to further elaborate on the urgency of introducing alternative non-HCFC low-GWP blowing agents in stage I of the HPMP, the potential savings for the Multilateral Fund, and how these technologies would be introduced in foreign-owned systems houses, UNDP explained that although it is not possible to associate a reduction in HCFC-141b to this technical assistance component, the Government and the industry consider that it will be instrumental in reducing the demand for HCFC-141b, particularly by SMEs. UNDP also noted that at the current cost-effectiveness level (US $9.79/kg), and with the technologies available to date, the cost of converting the foam SMEs in India would be over US $16 million (i.e., based on an estimated consumption 1,656.60 mt (182.23 ODP tonnes) of HCFC-141b). By providing the technical assistance to systems houses as proposed in stage I, the costs for converting the SMEs can be reduced by up to 50 per cent, and substantial savings can also be realized in the remaining foam enterprises (not categorized as SMEs and with an overall consumption of 3,865.40 mt (425.19 ODP tonnes) of HCFC-141b) when converted at future stages. It is also expected that upon successful completion of the systems house component, many enterprises will choose to convert to one of the customized formulations even before stage II commences, depending on the timeframes.

61. UNDP further stressed that the systems house intervention will send a very strong market signal to chemical suppliers and downstream users in India of the need for timely and sustainable availability of cost-effective and suitable alternatives. This assistance from the Multilateral Fund would bring the required level of confidence as well as accountability to the supply industry. Investing in systems houses now will ensure a level playing field for all the competing emerging alternatives in an orderly timeframe. Based on prior experience, in a business-as-usual scenario, different emerging technologies will enter the market at different times and different availability levels, including non-benchmarked costs and performance, and the phase-out in stage II will cost more even with the participation of systems houses. UNDP also expects that, considering the competitive nature of the market and in order to maintain their credibility and market share, the foreign-owned systems houses in India will introduce the same technologies at their own costs, within similar timeframe if the technical assistance programme for systems houses proposed in stage I is approved.

62. Given the potential benefits of the technical assistance programme for systems houses in accelerating the introduction of low-GWP alternatives and generating potentially lower incremental costs as compared to technologies currently available, UNDP was asked about the expected approach of the foam enterprises covered in stage I of the HPMP. The question was whether those enterprises have committed to waiting for the results of the systems houses, or will they work with the systems houses to expedite the introduction of the emerging technologies before commencing the procurement process for the equipment required for the hydrocarbon technology selected. UNDP emphasized that all issues related to the polyurethane foam sector were exhaustively discussed with all stakeholders during the consultation workshop in October 2011. The foam enterprises participating in stage I are willing to consider emerging technologies if they become available during the course of implementation. They are also committed to the hydrocarbon technologies as selected in the HPMP, in the event the emerging alternatives are not available within acceptable timeframes. In either case, both the foam enterprises and the systems houses will work together towards best solutions that maintain performance cost-effectively. In the event that any enterprise covered in stage I decides to introduce a technology other than hydrocarbon, any savings associated with the change of technology will be returned to the Multilateral Fund.

63. Although the HCFC-141b contained in imported polyols, mainly used by SMEs, will be addressed in future stages of the HPMP, the Government of India is proposing to ban these imports from 1 January 2013. Given this situation, an explanation was sought from UNDP on two issues: how the demand for HCFC-141b blowing agent by SMEs would be supplied from 1 January 2013; and whether it would not be more cost-effective and sustainable to introduce the ban at the end of 2020 (i.e., completion of stage II of the HPMP) when cost-effective alternative technologies will be fully available. UNDP explained that the demand for HCFC-141b by SMEs will be supplied by the local systems houses once the ban on imports is introduced, and the enterprises included in stage I are converted to an alternative technology. The ban on imports of HCFC-141b pre-blended polyols must be in place as soon as possible to prevent clandestine use of and dependence on HCFC-141b.

64. Under the discussion on incremental costs for the systems houses, it was agreed to delete one pre-mixing station, and rationalize the costs for testing, evaluation and laboratory equipment, training and trials at each of the large systems houses, resulting in a reduction of US $742,500. An additional issue discussed was that related to the request for US $240,000 for keeping the industry abreast of the latest technological developments, sharing information and exchanging experiences, which seems to be provided by systems houses as part of their business. UNDP explained that this activity and associated funding targets specifically relates to the downstream foam users and not the systems houses themselves. If this support is not provided, the different systems houses are likely to promote themselves rather than the technologies. However, it was agreed to rationalize the cost associated with this activity, resulting in a reduction of US $30,000.

65. In concluding the discussion on the technical assistance programme for systems houses, the following points were determined:

(a) Assistance provided to the locally-owned systems houses during stage I of the HPMP will accelerate by at least three years the introduction of low-GWP, safe and cost-effective alternative technologies for phasing out HCFC-141b used in the foam sector in India, with major potential savings to the foam industry and the Multilateral Fund. Additional savings could be realized if any of the 16 enterprises manufacturing foams covered under stage I decides to introduce an emerging technology rather than the hydrocarbon technology already selected;

(b) The implementation of the technical assistance programme will strengthen the ban on imports of HCFC-141b-based pre-blended polyols to be issued by the Government of India effective from 1 January 2013;

(c) Although at present it is not possible to estimate the amount of HCFC-141b that could be associated with this technical assistance programme, it was agreed that all the systems houses would be required to have at least one low-GWP formulation ready upon completion of their respective sub-projects, to be commercially available on the market no later than 1 January 2014. Furthermore, each systems house would be required to demonstrate the application of the new formulations at a minimum of two downstream SMEs with a total consumption of at least 10.00 mt (1.10 ODP tonnes) of HCFC-141b. This would represent a total of 300.00 mt (33.00 ODP tonnes) for the 15 systems houses. While UNDP cannot assure at this point the sustainable phase-out at downstream enterprises without accurate knowledge of the costs, it expects that a much larger number of SMEs would adopt the alternatives prior to implementation of stage II as these alternatives are expected to have established supply chains; and

(d) The technical assistance to the downstream users will be included in the systems houses component; and

(e) No further assistance from the Multilateral Fund will be provided to any systems house in India.

Agreed level of funding for phase-out activities in the foam sector during stage I of the HPMP

66. The total cost of the phase-out activities in the foam sector included in stage I of the HPMP of India has been agreed at US $18,068,490 with an overall cost-effectiveness of US $7.16/kg, as shown in Table 16.

Table 16. Total agreed cost of phase-out activities in the foam sector included in stage I of the HPMP

Component	HCFC-141b (mt)	Total cost (US $)
Conversion of 16 foam enterprises to cyclopentane	2,523.00	13,771,990
Technical assistance for 15 locally-owned systems houses and SMEs		4,296,500
Total	2,523.00	18,068,490

Technical and cost-related issues associated with the servicing sector

67. Under decision 60/44 (f) (xv) (i.e., Article 5 countries may request funding for activities in the servicing sector provided that it is clearly demonstrated that these are required to meet the reduction steps in 2013 and 2015). The Secretariat therefore discussed the technical assistance programme for the refrigeration and air-conditioning servicing sector mainly with the Government of Germany and UNEP as the agencies selected by the Government of India for implementing this programme.

68. Further to a request to substantiate the need for addressing the servicing sector during stage I of the HPMP to prevent the demand for HCFCs across all sectors exceeding the allowed consumption levels in 2013 and 2015, the agencies indicated that the demand for HCFC-22 in the servicing sector will peak in 2014. Implementation of the activities in the servicing sector proposed in stage I will contribute to approximately 10 per cent of the overall reduction in consumption as shown in Table 17 below. If these estimates are correct, the cumulative demand for HCFC-22 for servicing could be reduced by approximately 4,000.00 mt (220.00 ODP tonnes) between 2012 and 2020.

Table 17. Estimated reduction in HCFC-22 consumption associated with activities in the servicing sector

Description	2012	2013	2014	2015	2016	2017	2018	2019	2020
Metric tonnes									
With service activities	8,211.00	10,288.00	10,298.00	10,204.00	9,798.00	9,143.00	8,592.00	7,958.00	7,345.00
Without service activities	8,108.00	9,848.00	9,730.00	9,642.00	9,259.00	8,641.00	8,120.00	7,521.00	6,942.00
Reduction (mt)	103.00	440.00	568.00	562.00	539.00	503.00	472.00	437.00	403.00
ODP tonnes									
With service activities	451.61	565.84	566.39	561.22	538.89	502.87	472.56	437.69	403.98
Without service activities	445.94	541.64	535.15	530.31	509.25	475.26	446.60	413.66	381.81
Reduction (ODP tonnes)	5.67	24.20	31.24	30.91	29.65	27.67	25.96	24.04	22.17

69. Upon a request for further clarification on the training activities proposed during stage I of the HPMP and their linkage with the national CFC consumption phase-out plan (NCCOPP), the Government of Germany explained that the training programmes previously funded were designed for servicing refrigerators and did not include specific information on room air-conditioners and/or other HCFC-based equipment. Accordingly, all trainers need to upgrade their knowledge, additional training equipment and tools need to be supplied to the training cells, and training materials need to be revised and translated into the most common local languages. The training activities proposed in stage I will be delivered entirely through the infrastructure that was established under the NCCOPP, and will focus on the room air-conditioning, and commercial refrigeration sub-sectors. Training materials already developed by equipment manufacturers will form an important basis for the preparation of materials for the training programmes under the HPMP. Also, the experiences gained during implementation of the NCCOPP have

led to the conclusion that activities related to training, recovery and recycling, and awareness should focus more on institutional users during stage I. Equipment will only be provided to training cells so that they can continue to provide hands-on training for service technicians. The awareness activities will be targeted for industry representatives and industry associations to better link the phase-out activities with the change of technology and to make the training activities more sustainable.

70. The Secretariat noted that trials are being proposed for retrofitting older HCFC-based systems to alternative technologies. However, the abundance of HCFC-22 at a relatively low price (assumed given that HCFC-22 is locally produced and is the cheapest refrigerant in the market) shed doubt on the economic viability of the pilot retrofit programme. Rather than retrofitting HCFC-based equipment, it was suggested that a demonstration activity be conducted to assess the feasibility of replacing all HCFC-based air-conditioning units installed in one or two buildings with non-HCFC-based and more energy-efficient units. The amount of HCFC-22 in the systems could be recovered and reused. A more comprehensive and sustainable programme could be developed at a much lower/no cost to the Multilateral Fund, depending on the savings resulting from the operation of the higher energy-efficient units. In addressing this suggestion, the Government of Germany indicated that it is already implementing a bilateral demonstration project in India for conversion of air-conditioning manufacturing from HCFC-22 to HC-290 (funded outside the Multilateral Fund), and that the proposed activities would take place during the market introduction of these air-conditioners. Experiences from similar projects in other countries (i.e., Maldives where 100 air-conditioners will be replaced) will be available soon. The Bureau of Energy Efficiency in India has introduced a highly successful mandatory star-rating labelling system that indicates and rates the energy consumption of each air-conditioner sold in the country. Therefore, consumers are already aware of the energy savings of new air-conditioners. The trials proposed in stage I will be mainly for other commercial refrigeration equipment (i.e., bottle coolers, display cabinets), which are not yet covered by such initiatives and where retrofits might be more likely, potentially resulting in a 15 per cent increase in energy efficiency.

71. The Secretariat also raised issues regarding the awareness activities included in the servicing sector at a total cost of US $565,000. UNEP explained that the experience gained during the phase-out of CFCs has shown that such activities play an important role in the rapid adoption of alternative technologies. The focus of these activities should be on industry representatives, industry associations, enforcement agencies and academia, in addition to the general public. The website developed through the NCCOPP has been an important and appreciated source of updated information for various stakeholders; and training materials, newsletters and other technical information will be available for downloading on the website.

72. In addition to the project management unit for stage I of the HPMP, US $193,940 was also requested for a project management unit under the servicing sector. The Government of Germany indicated that the funding requested for managing the servicing sector component had not been included in the project management unit for stage I of the HPMP. Coordinating training programmes for more than 10,000 technicians across the country and the other activities under the servicing sector plan requires two half-time positions, a certain office structure within the country, and adequate budget for travel.

73. In view of the significant consumption of HCFCs for servicing purposes, and the extensive and increasing population of refrigeration and air-conditioning equipment that will further increase the demand for HCFCs, and in light of the explanations provided by the Government of Germany and UNEP during the project review process, the Secretariat concluded that the activities in the servicing sector proposed in stage I of the HPMP will assist the Government of India in complying with the 2013 and 2015 control measures, and reducing post-2014 demand. The Secretariat further notes that all the activities proposed, including the monitoring unit for the servicing sector, have an associated HCFC-22 phase-out cost-efficiency calculated at US $4.50/kg in accordance with decision 60/44 (f) (xv).

Issues regarding the enabling activities

74. The Secretariat noted the relatively large number of enabling activities included in stage I, the high costs associated with many of the activities and the apparent ineligibility of others (i.e., evaluation by UNEP, study tours for enforcement officers, and the administrative cost for foreign faculty, and awareness activities in addition to those under the servicing sector). UNEP explained that the change in the ODS rules to enable the accelerated phase-out of HCFCs requires an update to the training materials to take note of these new developments, and for additional training to be provided for 7,500 of the estimated 75,000 enforcement officers on the amended regulations and the quota system. Under these activities, tools to identify HCFCs, HCFC-based blends and HCFC-based equipment will be provided to customs and enforcement officers, especially for HCFCs that are in demand domestically, and additional training on the specifics of that phase-out. The customs training modules will be linked to the newly established national sub-codes under the latest harmonized system of the World Customs Organization.

75. Noting that the e-learning approach will be used to train enforcement agencies during stage I of the HPMP, the Secretariat considered that overall training costs could be reduced. UNEP pointed out that approximately 7,500 of the estimated 75,000 enforcement officers will be trained during stage I, and e-learning is envisaged to be delivered in conjunction with face-to-face training, especially for those modules where it is difficult to get the expert faculty to the regional centres. In border areas and places where the infrastructure is inadequate to deliver online training, face-to-face training would be provided. Funding for the participation of customs officers in regional enforcement network meetings has been requested because the regional enforcement networking was funded only up to May 2011. Trans-boundary networking among customs officers has proven to be a very effective way of ensuring high level enforcement of national ODS policies, especially the licensing system.

76. UNEP also explained that according to the Bureau of Energy Efficiency the energy consumption in buildings is increasing by 12 per cent annually while the national energy production is increasing at 6 per cent. Given that most of the energy demand in buildings is associated with the operation of the refrigeration and air-conditioning equipment installed (the majority based on HCFC-22), the enabling activities component proposed to add ODS related issues to the ongoing efforts of various Government agencies issuing codes/standards for buildings.

77. After further consultations with the key stakeholders in India, UNEP revised the enabling activities and prioritized those that could add value to the existing and upcoming administrative, policy and regulatory regime, build on the work that has already been done under CFC phase-out and synergise with the policies and measures that India is in the process of implementing. The components of the enabling activities will focus on two initiatives described below, at a total cost of US $300,000:

(a) The policy and enforcement component, aimed at mainstreaming the ODS policy and enforcement issues in the training curricula of NACEN (i.e., as the nodal institution); providing guidance and capacity development for state of the art risk profiling, intelligence sharing to check illegal trade in ODS, and coordinated enhancement of capacities of several agencies such as Customs, Directorate of Revenue Intelligence, Border Security Force, and National Investigation Agency; and

(b) Building sector interventions on ODS related issues (given that most of the energy demand in building is associated with the operation of the refrigeration and air-conditioning deployed), in order to engage with regulatory authorities like the Ministry of Urban Development, the Bureau of Energy Efficiency, the Ministry of New and Renewable Energy, that have issued codes/standards for buildings and incorporate appropriate specifications for alternatives to HCFC-based equipment in these codes; promote HCFC-free building design and construction through local agencies such as the Green Building Congress; enhance the capacity of architects through the Council of

Architecture, and prepare a template for amending curriculum in architectural institutes to mainstream HCFC free building design and construction.

78. In reviewing the enabling activities for compliance with stage I of the HPMP, UNEP had taken into consideration the infrastructure established during the phase-out of CFCs and had also addressed the issues raised by the Secretariat. The revised activities will focus mainly on enhancing the capacity of the customs and enforcement officers to control and monitor consumption of HCFCs and prevent, to the extent possible, the illegal trade in HCFCs. The proposed activity for building sector interventions will facilitate implementation of the policies and regulations proposed by the Government of India to meet the 2013 and 2015 control targets, specifically the ban on imports of HCFC-based air-conditioners effective from 1 January 2015.

Issues regarding monitoring, coordination and management

79. The Secretariat discussed with UNDP the proposed activities to be implemented under the monitoring, coordination and management component and its cost, in light of the phase-out activities included in stage I (i.e., conversion of 16 enterprises manufacturing foam products, a technical assistance programme for 15 systems houses, and a technical assistance programme addressing the servicing sector supported by implementation of enabling activities). UNDP explained that a large amount of phase-out at the enterprise level, a strategic market transformation through the systems houses and downstream users, and a reduction in HCFC demand in servicing refrigeration and air-conditioning equipment has to be implemented in a very short timeframe, while at the same time ensuring accountability (implementation oversight, monitoring, reporting and verification) to the Executive Committee. The project management components have been designed taking this into account. UNDP also agreed to rationalize some of the costs associated with stakeholder meetings and documentation, resulting in a reduction of the cost by US $150,000.

80. In discussing with the implementing agencies, it was agreed that the cost for the enabling activities (US $300,000) be included under project monitoring, co-ordination and management as these activities would provide overall support for the HPMP of India and cover capacity building. With the inclusion of this component, the total cost for the PMU for India would be 6.0 percent of the overall HPMP funding, which is considered within reasonable limits for this activity.

Agreed cost of stage I of the HPMP of India

81. The total cost for the implementation of stage I of the HPMP of India has been agreed at US $21,944,490 (excluding agency support cost) to reduce 308.77 ODP tonnes of HCFCs, representing 19.2 per cent of the HCFC consumption baseline, as shown in Table 18. The overall cost-effectiveness of stage I of the HPMP is US $7.10/kg.

Table 18. Total agreed cost of stage I of the HPMP of India

Activities	Metric tonnes		ODP tonnes		Cost (US$)
	HCFC-141b	HCFC-22	HCFC-141b	HCFC-22	
Conversion of 16 enterprises*	2,523.00		277.53		13,771,990
Technical assistance to 15 system houses and SMEs					4,296,500
Refrigeration servicing sector		568.00		31.24	2,556,000
Enabling activities					300,000
Project management unit					1,020,000
Total	2,523.00	568.00	277.53	31.24	21,944,490

(*) Cost to the Multilateral Fund.

82. The Secretariat noted that stage I of the HPMP is proposing an HCFC consumption reduction of 308.77 ODP tonnes that corresponds to 19.2 per cent of the baseline. Given the amount of HCFC consumption to be reduced in stage I of the HPMP, the associated assistance should help India make progress toward meeting control measures beyond 2015. In response, UNDP advised that given the substantial HCFC consumption growth rates in sectors that would not be addressed during stage I of the HPMP, such as the air-conditioning sub-sector, the overall growth in national HCFC consumption would need to be controlled at a maximum of 4 per cent in 2012, although unconstrained growth would be significantly higher, as substantiated by the sector surveys. This will be done by the Government of India through appropriate and sustainable regulations. However, phase-out in the prioritized sectors (i.e., polyurethane foams and servicing) has been designed to ensure compliance with the 2013 and 2015 targets. Thus, the phase-out of 308.77 ODP tonnes during stage I represents the minimum amount needed for compliance. Therefore, any commitment for phase-out beyond 2015 is neither envisaged nor feasible in the current formulation of stage I of the HPMP.

Impact on the climate

83. Implementation of stage I of the HPMP for India would avoid the emission into the atmosphere of some 1,386,597 tonnes of CO_2-equivalent associated with the conversion of the HCFC 141b-based enterprises manufacturing foam (based only on the GWP values of the different blowing agents), as shown in Table 19. The proposed technical assistance activities in the servicing sector, which include the introduction of better containment of refrigerants and leakage control, and the enforcement of HCFC import controls, will reduce the amount of HCFC-22 used for refrigeration servicing. Each kilogram (kg) of HCFC-22 not emitted due to better refrigeration practices results in approximately 1.8 CO_2-equivalent tonnes saved. However, at this time, the Secretariat is not in a position to quantitatively estimate the impact on the climate. The impact might be established through an assessment of implementation reports by, *inter alia*, comparing the levels of refrigerants used annually from the beginning of HPMP implementation, the reported amounts of refrigerants being recovered and recycled, the number of technicians trained and the HCFC-22-based equipment being retrofitted or replaced.

Table 19. Impact on the climate

Substance	GWP	Tonnes/year	CO2-eq (tonnes/year)
Before conversion			
HCFC-141b	725	2,523.00	1,829,175
Total			
After conversion			
Hydrocarbon	20	1,207.05	24,141
HFC-245fa	1,030	406.25	418,438
Total		1,613.30	442,579
Net impact			(1,386,597)

Co-financing

84. In response to decision 54/39(h) on potential financial incentives and opportunities for additional resources to maximize the environmental benefits from HPMPs pursuant to paragraph 11(b) of decision XIX/6 of the Nineteenth Meeting of the Parties, UNDP indicated that the focus of the Government of India and the industrial sector has been to ensure that environment-friendly, safe and cost-effective alternatives to HCFCs that do not compromise performance are selected and promoted. The Government's existing policies for promoting such technologies will be continuously adapted to respond to evolving situations. At the present time, such alternative technologies are not yet available for all applications. In line with current guidelines and decisions of the Multilateral Fund, stage I of the HPMP prioritizes substances, sectors and sub-sectors where such alternatives can be applied within the timeframe available for complying with the 2013 and 2015 control targets. Thus, presently, it appears that

even with additional resources, it may not be possible to further increase the environmental benefits of HCFC phase-out to be achieved in stage I, given the current status of alternative technologies. It is also noted that counterpart funding estimated at US $6,884,510 will be provided by the enterprises converting to non HCFC-141b technologies during stage I of the HPMP.

2012-2014 business plan of the Multilateral Fund

85. UNDP is requesting US $23,710,287 including agency support costs for the implementation of stage I of the HPMP. The total value requested for the 2012-2014 period of US $21,683,644 including support costs is below that in the business plan (i.e., US $29,397,000). The reason for this is that the activities selected for stage I of the HPMP are more cost-effective than those included in the business plan (investment projects to reduce HCFC-141b in the foam sector and enabling activities).

86. The Executive Committee may wish to note that documents "Bilateral agencies business plans for the years 2012-2014" (UNEP/OzL.Pro/ExCom/66/8), and "Bilateral cooperation (UNEP/OzL.Pro/ExCom/66/21/Add.1), present an issue related to the bilateral contributions from the Government of Germany for the 2012-2014 that has already exceeded its bilateral allocation for the same period.

Draft Agreement

87. A draft Agreement between the Government of India and the Executive Committee for HCFC phase-out is contained in Annex I of the present document. The following clause has been included in the draft Agreement: "should the Country decide during implementation of the agreement to introduce an alternative technology other than that proposed in the approved HPMP, this would require approval by the Executive Committee as part of an Annual Implementation Plan or the revision of the approved plan. Any submission of such a request for change in technology would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable. The Country agrees that potential savings in incremental costs related to the change of technology would decrease the overall funding level under this Agreement accordingly."

RECOMMENDATION

88. In light of the Secretariat's comments above, in particular paragraph 82 on the level of reduction being covered, the Executive Committee may wish to consider:

(a) Approving, in principle, stage I of the HCFC phase-out management plan (HPMP) for India for the period 2012 to 2015 to reduce HCFC consumption by 10 per cent of the baseline, at the amount of US $23,710,287, consisting of US $19,088,490, plus agency support costs of US $1,431,637 for UNDP, US $861,600, plus agency support costs of US $104,776 for UNEP, and US $1,994,400, plus agency support costs of US $229,384 for Germany;

(b) Noting that the Government of India had agreed to establish as its starting point for sustained aggregate reduction in HCFC consumption the baseline of 1,608.20 ODP tonnes, calculated using actual consumption of 1,598.76 ODP tonnes and 1,617.63 ODP tonnes reported for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol, plus 83.05 ODP tonnes of HCFC-141b contained in imported pre-blended polyol systems, resulting in 1,691.25 ODP tonnes.

(c) Deducting 308.77 ODP tonnes of HCFCs from the starting point for sustained aggregate reduction in HCFC consumption;

(d) Approving the draft Agreement between the Government of India and the Executive Committee for the reduction in consumption of HCFCs, as contained in Annex I to the present document; and

(e) Approving the first tranche of stage I of the HPMP for India, and the corresponding implementation plan, at the amount of US $12,265,080, consisting of US $10,000,000, plus agency support costs of US $750,000 for UNDP; US $430,800, plus agency support costs of US $52,388 for UNEP, and US $925,452, plus agency support costs of US $106,440 for Germany.

REQUEST FOR THE SECOND TRANCHE UNDER THE ACCELERATED CFC PRODUCTION SECTOR PHASE-OUT PLAN

Background

89. On behalf of the Government of India, the World Bank had submitted the second and final tranche of the India CFC production sector phase-out programme for approval by the Executive Committee at its 61st meeting, and has resubmitted it to the 62nd, 65th, and 66th meetings. The amount being requested is US $1,057,000 for the accelerated phase-out, plus support costs of US $238,000 for the World Bank, together with a report on the annual programme achievements for the years 2010 and 2011.

90. The 2010 CFC production verification report was submitted to the 65th meeting. A summary of the submission is provided in Table 1.

Table 1

SUMMARY OF SUBMISSION

Country	India
Project title	Accelerated CFC production sector phase-out plan
Year of plan	2010 – 2011
Number of tranches completed	1
Number of tranches remaining under the plan	1
Ceiling for 2009 and 2010 CFC production (in metric tonnes)	0 metric tonnes
Total funding approved in principle for the Accelerated CFC production sector phase-out plan (including agency fees)	$3.408 million
Total funding released as of Dec. 2009	$2.113 million
Level of funding requested for Accelerated CFC production phase-out plan (APP)	$1.057 million
Level of funding for support costs	$238,000

91. The 2010 verification was carried out between 14 March and 6 April 2011 by Mukund M. Chitale and Company, Chartered Accountants. The verification report, which included an introduction and an executive summary, reported on each of the four CFC producers, and included annexes that defined the molecular weights and formulas for CFCs and HCFCs and provided certificates of analysis for the contaminated quantities.

2010 verification report and activities completed in 2011

92. At its 56th meeting, the Executive Committee approved an Agreement for the accelerated CFC production sector phase-out for India. In accordance with this Agreement, the Government of India committed itself to the cessation of CFC production in India as of 1 August 2008. The review reported on the achievement of the 2010 CFC production phase-out target.

93. The Government issued licenses under the CFC import and export management scheme in 2010 for four producers totalling 343.6 metric tonnes (mt) for the production of pharmaceutical-grade CFCs only. The producers sold, under licenses issued by the Government, 290.73 mt of CFCs to metered-dose-inhalers (MDI) producers plus 2.24 mt for export for MDI uses. The closing stock from 2010 production of 24.4 mt is of non-MDI grade, for which the producer was in the process of identifying suitable parties for sending the material for destruction. This is added to the 11.74 mt of contaminated CFCs reported previously for which the verification report included a chemical analysis showing that the contamination was due to moisture, residue and acidity exceeding the specification and where the purity was lower than 99.85 per cent.

94. A summary of the CFC production by the four producers is shown in Table 2.

Table 2

SUMMARY OF CFC PRODUCTION BY PRODUCER (MT)

Producer	**NFIL**			**CSL**	**GFL**	**SRF**	**Total**
	CFC-11/ 12	**CFC-113**	**CFC-113a**	**CFC-11/12**	**CFC-11/12**	**CFC-11/12**	
Opening stock 01.01.2010	-	-	-	-	-		-
Gross production for quota	110.50	-	-	-	-	207.82	318.32
Sales return							
Handling losses	0.95						0.95
Other loss							
Sales in 2010 (domestic)	102.73					188.00	290.73
Sales in 2010 (export)	2.24						2.24
Closing stock 31.12.2010	4.58					19.82	24.40*

*Excludes 11.74 mt of contaminated CFCs reported previously.

95. The table indicates the overall results of the verification, with information on the opening CFC stocks, handling losses, gross production, sales return, sales in 2010, and closing stock. Decision 43/5 allowed the use of net saleable CFC production to measure the achievement of the target in the Agreement with India in years other than 2005 and 2007.

96. There was 318.32 mt of production of CFCs in 2010.

97. The report described the methodology employed in the verification, which included site visits and a random check of pertinent records for consistency in reported results. The production log books and the laboratory and analytical records were correlated for the sample days to assess whether the records were appropriately maintained for the products that had been produced. Samples from existing stocks were taken for gas chromatography analysis for product identification. The report also provided a list of data examined, and the verification team held discussions with the plant personnel. Based on their responses, subsequent checks on the records, if found necessary, were conducted.

98. The report provided observations and results of the visit to each plant. It included an overview on the history and technology of the plant, audit methodology, the sales records in 2010 and conclusions on the status of compliance with the allocated quota. The verification did not include HCFC-22 production data and data on other products using the same raw materials as CFCs (i.e. HF and CTC).

2010 imports

99. The Ozone Cell specified that it had not authorized any import of CFCs in calendar year 2010 as CFCs were made available to MDI manufacturers as per the essential use authorizations from domestic production.

2010 exports

100. During the course of the verification reports, the auditors noted that one producer had exported 2.24 mt of CFCs to Iran (Islamic Republic of) under specific purchase orders. The audit team reviewed the letter from the Government of Iran (Islamic Republic of) specifying that they had the necessary permission to import CFCs. Based on an approval from the Ozone Cell, a CFC export license was issued by Foreign Trade to export 2.24 mt of CFCs to Iran (Islamic Republic of). The audit team has verified the documentation during the audit. The Secretariat received confirmation from the Government of the

Islamic Republic of Iran of the import and quantities and its use to fulfil the approved essential use exemption as per decision XXI/4.

Technical assistance activities and policy measures

101. All technical assistance activities have been completed and relevant funds have been disbursed. These activities include: awareness, training/capacity building, data collection, operations of project management unit (PMU), monitoring, information exchange and studies. Policy measures were also implemented during the course of 2010 and 2011, at the amount of US $199,000, and include: production quota licenses, registrations, and issuance of licenses.

Disbursement

102. Total disbursement under the original project was 100 per cent of the total project allocation of US $82 million. This cumulative disbursement includes US $80 million disbursed by 2010 for CFC producer compensation and US $2 million for technical assistance activities.

103. Under the accelerated CFC production sector phase-out plan, the first tranche of disbursement amounting to US $2.113 million was made to the four CFC producers in January 2012. The second payment will be released upon approval for disbursement by the Executive Committee, following review of all compliance requirements, including the CFC import audit.

Second tranche request

104. The World Bank indicated that the funding of US $1,057,000 plus support costs associated with this second tranche is wholly comprised of the final payments due to the producers, which have successfully met their obligations for accelerated phase-out. There is no 2012 work programme envisaged under the project, therefore no other activities or costs are expected.

105. The remaining activities to be completed in 2012 are summarized in the following table:

Activity	Key Actions	Target date	Budget (US$)
Accelerated CFC production sector phase-out plan, 2nd tranche release	Release of funds from the Industrial Development Bank of India to producers, subject to Executive Committee approval.	April –May 2012	1,057,000

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Signature of agreements and disposition of contaminated stock

106. As mentioned above, the present request was first submitted to the 61st meeting. It was also presented to the 62nd meeting at which time it was deferred for consideration until the 63rd meeting (decision 62/29). The report of the 62nd meeting states that "the representative of the World Bank indicated that the grant agreement, not signed to date, would be signed soon and that the stockpiled 11.74 mt of CFCs was contaminated. The availability of a destruction facility to destroy the CFCs was also an issue. It was felt that, under those circumstances, it was premature for the Committee to approve the request." (UNEP/OzL.Pro/ExCom/62/62, para. 85).

107. In the context of the report on annual tranche submission delays presented to the 63rd meeting, the Committee decided to request the World Bank to work with the Government of India to expedite the

signing of the agreements for the accelerated CFC production sector closure project as soon as possible to enable the second tranche of the agreement to be submitted to the 64th meeting (decision 63/12(c)). The Committee reiterated this decision at its 64th meeting (decision 64/3(b)).

108. The Bank indicated that the relevant agreements between the Government of India and the World Bank and between the Government of India and the producers have been signed, and payment for the first tranche, amounting to US $2.113 million was made to the producers in January 2012. The second instalment, amounting to US $1.057 million will be released upon approval of the Executive Committee.

109. The other issue raised in the context of the 62nd meeting was the availability of a destruction facility for the 11.74 mt of contaminated CFCs. The CFC producer submitted, through the Government of India, the results of the chemical analysis conducted by its Quality Assurance Department that confirmed that the remaining highly contaminated stock of 11.74 mt was non-sellable.

Compliance with decision 56/63

110. The total level of production is confirmed to be consistent with the accelerated CFC production phase-out plan agreement (Annex XVII to the report of the 56th Executive Committee meeting and decision 56/63). The auditors verified that the production of pharmaceutical-grade CFCs was solely for the purpose of meeting approved essential use authorizations as per decision XXI/4 of the Twenty-first Meeting of the Parties, including the 2.24 mt of CFCs exported to Iran (Islamic Republic of). The Government of India has already fulfilled its commitments under paragraph 2(a)-(g) of the Agreement between India and the Executive Committee of the Multilateral Fund for the accelerated production phase-out. The verification report also confirms that the total CFC production for essential use in 2010 is not excessive as it is well within the quantity approved by the Parties. The World Bank indicated that on the basis of these facts, the annual tranche should be approved because the decision states that "this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the Funding of any other production sector projects or any other related activities in the Country" (paragraph 8 of the Agreement).

Import customs data

111. Decision 59/18 stated with respect to the approval of the first tranche of the Accelerated CFC production phase-out that the World Bank and the Government of India were requested to ensure that customs records were available to auditors for the next import audit report associated with the final funding tranche. The Ozone Cell specified that in 2010 no licenses had been issued and imports had been nil. The World Bank indicated that it had hired an independent audit team to verify the customs records, which are to be provided by the Ozone Cell, and that a short report on the verification would be shared with the Multilateral Fund Secretariat prior to the 66th meeting.

Implementation of decision 60/47

112. Decision 60/47(b)(vii) requires that the 24.4 mt of non-pharmaceutical-grade CFCs should have been destroyed and documentation on the transport, storage, and disposal should be provided as part of the current verification report. The Bank reiterated what was indicated in the verification report and at the 65th meeting, namely, that the two companies involved indicated to the auditors that they were "in the process of identifying suitable parties for sending this material for incineration" and that "the producing country agreed to limit the production of non-pharmaceutical specification grade CFCs to the extent possible and pay for their destruction". As of March 2012, the World Bank was not able to confirm whether the non-pharmaceutical-grade CFCs had been destroyed. The Executive Committee may wish to take this fact into consideration when considering the approval of the tranche request.

RECOMMENDATIONS

113. The Executive Committee may wish to consider approving the request for the second and final tranche under the accelerated CFC production sector phase-out plan in India at the amount of US $1,057,000 plus agency support costs of US $238,000 for the World Bank, taking into consideration:

(a) The report on the verification of customs records to be provided prior to the 66th meeting; and

(b) That the World Bank was not able to confirm whether the 24.4 metric tonnes of non-pharmaceutical-grade CFCs was destroyed, and that documentation on the transport, storage, and disposal was not provided as part of the verification report, in accordance with decision 60/47(b)(vii).

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Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF INDIA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS

1. This Agreement represents the understanding of the Government of India (the "Country") and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A ("The Substances") to a sustained level of 1,447.38 ODP tonnes by 1 January 2015 in compliance with Montreal Protocol schedules.

2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A ("The Targets, and Funding") in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3, 4.5.3 and 4.6.3 (remaining eligible consumption).

3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

4. The Country agrees to implement this Agreement in accordance with the HCFC phase-out sector plans submitted. In accordance with sub-paragraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

5. The Executive Committee will not provide the Funding in accordance with the Funding Approval Schedule unless the Country satisfies the following conditions at least eight weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) That the Country had met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which no obligation for reporting of country programme data exists at the date of the Executive Committee meeting at which the funding request is being presented are exempted;

(b) That the meeting of these Targets has been independently verified, unless the Executive Committee decided that such verification would not be required;

(c) That the Country had submitted annual implementation reports in the form of Appendix 4-A ("Format of Implementation Reports and Plans") covering each previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent;

(d) That the Country has submitted an annual implementation plan in the form of Appendix 4-A covering each calendar year until and including the year for which the

funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen; and

(e) That, for all submissions from the 68th meeting onwards, confirmation has been received from the Government that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and that the system is capable of ensuring the Country's compliance with the Montreal Protocol HCFC phase-out schedule for the duration of this Agreement.

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous annual implementation plans in accordance with their roles and responsibilities set out in Appendix 5-A. This monitoring will also be subject to independent verification as described in paragraph 4 above.

7. The Executive Committee agrees that the Country may have the flexibility to reallocate the approved funds, or part of the funds, according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances specified in Appendix 1-A:

(a) Reallocations categorized as major changes must be documented in advance either in an annual implementation plan submitted as foreseen in sub-paragraph 5(d) above, or as a revision to an existing annual implementation plan to be submitted eight weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Changes which would modify any clause of this Agreement;

(iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches; and

(iv) Provision of funding for programmes or activities not included in the current endorsed annual implementation plan, or removal of an activity in the annual implementation plan, with a cost greater than 30 per cent of the total cost of the last approved tranche;

(b) Reallocations not categorized as major changes may be incorporated in the approved annual implementation plan, under implementation at the time, and reported to the Executive Committee in the subsequent annual implementation report;

(c) Should the Country decide during implementation of the agreement to introduce an alternative technology other than that proposed in the approved HPMP, this would require approval by the Executive Committee as part of an Annual Implementation Plan or the revision of the approved plan. Any submission of such a request for change in technology would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable. The Country agrees that potential savings in incremental costs related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(d) Any enterprise to be converted to non-HCFC technology included in the approved HPMP and that would be found to be ineligible under the guidelines of the Multilateral Fund (i.e., due to foreign ownership or establishment post the 21 September 2007 cut-off date),

will not receive assistance. This information would be reported to the Executive Committee as part of the Annual Implementation Plan;

(e) The Country commits to examining the possibility of using pre-blended hydrocarbon systems instead of blending them in-house, for those foam enterprises covered under the umbrella project, should this be technically viable, economically feasible and acceptable to the enterprises;

(f) Any remaining funds will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sub-sector, in particular:

(a) The Country would use the flexibility available under this Agreement to address specific needs that might arise during project implementation; and

(b) The Country and the bilateral and implementing agencies involved will take full account of the requirements of decisions 41/100 and 49/6 during the implementation of the plan.

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the "Lead IA") and UNEP and Government of Germany have agreed to be the cooperating implementing agencies (the "Cooperating IAs") under the lead of the Lead IA in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of any of the agencies taking part in this Agreement.

10. The Lead IA will be responsible for ensuring co-ordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification as per sub-paragraph 5(b). This responsibility includes the necessity to co-ordinate with the Cooperating IAs to ensure appropriate timing and sequence of activities in the implementation. The Cooperating IAs will support the Lead IA by implementing the activities listed in Appendix 6-B under the overall co-ordination of the Lead IA. The Lead IA and Cooperating IAs have reached consensus on the arrangements regarding inter-agency planning, reporting and responsibilities under this Agreement to facilitate a co-ordinated implementation of the Plan, including regular coordination meetings. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IAs with the fees set out in rows 2.2, 2.4 and 2.6 of Appendix 2-A.

11. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A ("Reductions in Funding for Failure to Comply") in respect of each ODP kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement, and take related decisions. Once these decisions are taken, this specific case will not be an impediment for future tranches as per paragraph 5 above.

12. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the funding of any other consumption sector projects or any other related activities in the Country.

13. The Country will comply with any reasonable request of the Executive Committee, the Lead IA and the Cooperating IAs to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the Cooperating IAs with access to the information necessary to verify compliance with this Agreement.

14. The completion of stage I of the HPMP and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should there at that time still be activities that are outstanding, and which were foreseen in the Plan and its subsequent revisions as per sub-paragraph 5(d) and paragraph 7, the completion will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per sub-paragraphs 1(a), 1(b), 1(d), and 1(e) of Appendix 4-A will continue until the time of the completion unless otherwise specified by the Executive Committee.

15. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-123	C	I	3.53
HCFC-124	C	I	13.46
HCFC-141b	C	I	865.54
HCFC-142b	C	I	123.70
HCFC-22	C	I	601.98
Sub-total			**1,608.20**
HCFC-141b pre-blended in imported polyols			83.05
Total			**1,691.25**

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2012	2013	2014	2015	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	N/A	1,608.20	1,608.20	1,447.38	N/A
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	N/A	1,608.20	1,608.20	1,447.38	N/A
2.1	Lead IA (UNDP) agreed funding (US$)	10,000,000	7,500,000	0	1,588,490	19,088,490
2.2	Support costs for Lead IA (US$)	750,000	562,500	0	119,137	1,431,637
2.3	Cooperating IA (UNEP) agreed funding (US$)	430,800	344,640	0	86,160	861,600
2.4	Support costs for (UNEP)	52,388	41,910	0	10,478	104,776
2.5	Cooperating IA (Germany) agreed funding US$	925,452	869,508	0	199,440	1,994,400
2.6	Support costs for (Germany) (US$)	106,440	100,006	0	22,938	229,384
3.1	Total agreed funding (US$)	11,356,252	8,714,148	0	1,874,090	21,944,490
3.2	Total support cost (US$)	908,828	704,416	0	152,553	1,765,797
3.3	Total agreed costs (US$)	12,265,080	9,418,564	0	2,026,643	23,710,287
4.1.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)					0
4.1.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)					0
4.1.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)					3.53
4.2.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)					0
4.2.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)					0
4.2.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)					13.46
4.3.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)					277.53
4.3.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)					0
4.3.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)					588.01
4.4.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)					0
4.4.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)					0
4.4.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)					123.70
4.5.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)					31.24
4.5.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)					0
4.5.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)					570.74
4.6.1	Total phase-out of HCFC-141b contained in imported pre-blended polyols agreed to be achieved under this Agreement (ODP tonnes)					0
4.6.2	Phase-out of HCFC-141b contained in imported pre-blended polyols to be achieved in previously approved projects (ODP tonnes)					0
4.6.3	Remaining eligible consumption for HCFC-141b contained in imported pre-blended polyols included in row 4.3.3 above (ODP tonnes)					83.05

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the second meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Implementation Report and Plan for each tranche request will consist of five parts:

(a) A narrative report, with data provided by calendar year, regarding the progress since the year prior to the previous report, reflecting the situation of the Country in regard to phase out of the Substances, how the different activities contribute to it, and how they relate to each other. The report should include ODS phase-out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives, to allow the Secretariat to provide to the Executive Committee information about the resulting change in climate relevant emissions. The report should further highlight successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Annual Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes. The narrative report will cover all relevant years specified in sub-paragraph 5(a) of the Agreement and can in addition also include information on activities in the current year;

(b) A verification report of the HPMP results and the consumption of the Substances mentioned in Appendix 1-A, as per sub-paragraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification has to be provided together with each tranche request and will have to provide verification of the consumption for all relevant years as specified in sub-paragraph 5(a) of the Agreement for which a verification report has not yet been acknowledged by the Committee;

(c) A written description of the activities to be undertaken until and including the year of the planned submission of the next tranche request, highlighting the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall plan and progress achieved, as well as any possible changes to the overall plan that are foreseen. The description should cover the years specified in sub-paragraph 5(d) of the Agreement. The description should also specify and explain in detail such changes to the overall plan. This description of future activities can be submitted as a part of the same document as the narrative report under sub-paragraph (b) above;

(d) A set of quantitative information for all annual implementation reports and annual implementation plans, submitted through an online database. This quantitative information, to be submitted by calendar year with each tranche request, will be amending the narratives and description for the report (see sub-paragraph 1(a) above) and the plan (see sub-paragraph 1(c) above), the annual implementation plan and any changes to the overall plan, and will cover the same time periods and activities; and

(e) An Executive Summary of about five paragraphs, summarizing the information of the above sub-paragraphs 1(a) to 1(d).

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The monitoring process will be managed by Ozone Cell, Ministry of Environment and Forests, with the assistance of the Lead IA.

2. The consumption will be monitored and determined based on official import and export data for the Substances recorded by relevant government departments.

3. The Ozone Cell, Ministry of Environment and Forests, shall compile and report the following data and information on an annual basis on or before the relevant due dates:

(a) Annual reports on consumption of the Substances to be submitted to the Ozone Secretariat; and

(b) Annual reports on progress of implementation of HPMP Stage-I to be submitted to the Executive Committee of the Multilateral Fund.

4. The consumption will be monitored annually throughout the implementation of HPMP Stage-I and accordingly reflected in the progress report on the implementation of the HPMP Stage-I

5. The Ozone Cell, Ministry of Environment and Forests shall endorse the final report and the Lead IA shall submit the same to the relevant meeting of the Executive Committee along with the annual implementation plan and reports.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:

(a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's HPMP;

(b) Assisting the Country in preparation of the Implementation Plans and subsequent reports as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the Targets have been met and associated annual activities have been completed as indicated in the Implementation Plan consistent with Appendix 4-A;

(d) Ensuring that the experiences and progress is reflected in updates of the overall plan and in future annual implementation plans consistent with sub-paragraphs 1(c) and 1(d) of Appendix 4-A;

(e) Fulfilling the reporting requirements for the annual implementation reports, annual implementation plans and the overall plan as specified in Appendix 4-A for submission to the Executive Committee. The reporting requirements include the reporting about activities undertaken by the Cooperating IAs;

(f) Ensuring that appropriate independent technical experts carry out the technical reviews;

(g) Carrying out required supervision missions;

(h) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Implementation Plan and accurate data reporting;

(i) Co-ordinating the activities of the Cooperating IAs, and ensuring appropriate sequence of activities;

(j) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country and the Cooperating IAs, the allocation of the reductions to the different budget items and to the funding of each implementing or bilateral agency involved;

(k) Ensuring that disbursements made to the Country are based on the use of the indicators; and

(l) Providing assistance with policy, management and technical support, when required.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the HPMP results and the consumption of the Substances mentioned in Appendix 1-A, as per sub-paragraph 5(b) of the Agreement and sub-paragraph 1(b) of Appendix 4-A.

APPENDIX 6-B: ROLE OF THE COOPERATING IMPLEMENTING AGENCIES

1. The Cooperating IAs will be responsible for a range of activities. These activities are specified in the overall plan, including at least the following:

(a) Providing assistance for policy development when required;

(b) Assisting the Country in the implementation and assessment of the activities funded by the Cooperating IAs, and refer to the Lead IA to ensure a co-ordinated sequence in the activities; and

(c) Providing reports to the Lead IA on these activities, for inclusion in the consolidated reports as per Appendix 4-A.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US $136.45 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met.

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INDIA

CFC Production Sector (ODS III)

Request for Approval of the 2nd and Final Tranche under the Accelerated CFC Phase Out Plan

Submitted by

The World Bank

March 2012

INDIA

CFC PRODUCTION SECTOR (ODS III)

Request for Approval of the 2nd and Final Tranche under the Accelerated CFC Phase Out Plan

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INDIA

CFC PRODUCTION SECTOR (ODS III)

Request for Approval of the 2nd and Final Tranche under the Accelerated CFC Phase Out Plan

A. INTRODUCTION

1. At its 54th Meeting in April 2008, the Executive Committee of the Multilateral Fund decided to approve, in principle, US $3.17 million for closing down CFC production in India by 1 August 2008, 17 months ahead of the existing phase-out schedule. The Agreement for the Accelerated CFC production phase-out (ACPP) for India was approved by the Executive Committee at its 56th Meeting in November 2008. The phase-out schedule agreed in the ACPP supersedes the schedules provided in the CFC Production Sector Gradual Phaseout Project approved through Decision 29/65 of the Committee.

2. This document is in support of the request, on the behalf of the Government of India, for approval by the ExCom of the second and final tranche under the ACPP, for a total of $1,057,000 plus Agency support costs of $238,000, as all requirements as per the Agreement have been met. This follows the deferral of consideration of this request by the Executive Committee at earlier meetings, including to allow the "the World Bank to work with the Government of India to expedite the signing of the agreements for the accelerated CFC production sector closure project".

3. The funding associated with this second tranche release is wholly comprised of the final payments due to the producers which have successfully met their obligations for Accelerated Phase-out. There is no 2012 work program under the project as all Technical Assistance (TA) activities have been completed, and all TA funds have been disbursed.

4. Since the last Annual Work Program that was submitted by the World Bank included a description of achievements in 2009, this document also provides a brief overview of the completed activities in 2010 and 2011. The document further discusses how some previous relevant Executive Committee decisions and points raised by the Fund Secretariat have been addressed, and the modalities for disbursements to the producers.

B. ANNUAL PROGRAM ACHIEVEMENTS DURING 2010-2011

B.1 CFC Production Phase-out

5. The ACPP required the Government of India (GOI) to revise its CFC production phase-out schedule with the understanding that India will:

(i) produce no more than 690 metric tons of CFCs, primarily for the manufacturing of metered-dose inhalers (MDIs), up until 1 August 2008;

(ii) CFC producers would sell no more than 825 metric tons of CFCs for MDI production in the years 2008 and 2009, comprising 690 metric tons of new production and 135 metric tons reprocessed from existing stock;
(iii) export 1,228 metric tons of CFCs no later than 31 December 2009 and
(iv) not import new/virgin CFCs of any kind.

B.2 2009 Verification Report

6. The CFC production audit of CY2009, related to the original request for approval of 2nd tranche funding, confirmed the compliance with ACPP, as detailed in table below:

Contents of Clause 2 of Annex 1	Compliance
(a) India would produce no more than 690 MT of CFCs, primarily for the manufacturing of metered-dose inhalers (MDIs) up until 1 August 2008.	673.87 MT of CFC was produced in CY2008. There was no production of CFC in CY2009.

(b) India's CFC producers would sell no more than 825 MT of CFCs for MDI production in the years 2008 and 2009, comprising 690 MT of new production and 135 MT reprocessed from existing stock;

Sale to MDI Sector (Qty. (MT)		
	2008	2009
CFC 11	139.930	43.457
CFC 12	355.845	158.725
Total	**495.775**	**202.182**

(c) India would export 1,228 MT of CFCs no later than 31st December 2009;

Export of CFC (Qty. (MT)			
	2008	2009	Total
CFC 11	16.010	49.058	65.068
CFC 12	439.627	610.797	1050.424
Total	**455.637**	**659.855**	**1115.492***

NOTE:
The amount that should have been exported as per the ACCP agreement was 1228 MT at the end of 2009. However the amount actually exported was 1115.492MT. The difference is accounted as given below.

Difference in Actual quantity produced as against the quota:	16.13 MT
Loss declared by the Companies in CY 2008	13.79 MT
Loss declared by the Companies in CY 2009	64.61 MT
Quantity drawn from the stockpile for domestic sale to MDI	6.5 MT
Closing stock of CFC as on 31.12.2009	11.74 MT
	112.57MT

(d) India would not import any new virgin CFCs	None of the CFC producing units has imported any new virgin CFCs in 2008 and 2009

(e) Any by-product non-pharmaceutical grade CFCs generated from the production under (a) are counted	The CFC Producing units sold some CFCs to Service sector in 2008 but none in 2009.

against the limit in row 2 of Table 1 in Appendix 1 and could be released to the market;		
	Sale to Service Sector during 2008	
	Particulars	Qty. (MT)
	CFC 11	22.291
	CFC 12	100.092
	Total	**122.383**

7. As indicated in the Table above, there was a stockpile of 11.74 MT of CFCs remaining at one of the CFC producers. The World Bank clarified at the time that the remaining CFCs were highly contaminated and non-sellable.

B.3 Chemical Characterisation of Contaminated Stock

8. In order to confirm that the remaining highly contaminated stock of 11.74 MT was non-sellable, the CFC producer (Navin Fluorine International) submitted, through the Government of India, results of the chemical analyses conducted by its Quality Assurance Department, appended herewith. A chemical analysis was carried out for CFCs contained in each of the five containers. The results can be summarized as follow:

Chemical	Container	Quantity (MT)	Result
CFC-12	I	1.8624	Moisture, residue and acidity exceed the specification. Purity is lower than 99.85%
CFC-12	II	3.6	Moisture, residue and acidity exceed the specification. Purity is lower than 99.85%
CFC-11	III	1.5142	Moisture, residue and acidity exceed the specification. Purity is lower than 99.80%
CFC-113a	IV	0.128	Moisture, residue and acidity exceed the specification. Purity is lower than 99.5%
CFC-113	V	4.639	Moisture, residue and acidity exceed the specification. Purity is lower than 99.0%
Total		11.7436	

For more detailed results of the analyses, please refer to the documents appended herewith.

B.4 2010 Verification Report

9. An independent technical and financial verification report of CFC production for CY 2010 was submitted to the 65th meeting of the Executive Committee pursuant to Decision 60/47 of the Executive Committee regarding production for essential use. It should be noted that Decision 60/47 relates to the exceptional authorization for production for export of pharmaceutical-grade CFCs for 2010, and is not directly related to the Accelerated CFC production phaseout plan.

10. With regard to this audit of 2010 essential use CFC production campaign, the audit team reported closing stock, amounting to 24.40 MT of non- pharmaceutical-grade CFC. The audit report stated that the two companies involved indicated to the auditors that they were "in the process of identifying suitable parties for sending this material for incineration", in line with Decision 60/47(d)(ii) that "The producing country agreed to limit the production of non-pharmaceutical specification grade CFCs to the extent possible and pay for their destruction".

B.5 Customs Records

11. Customs records were made available to the auditors as per the Independent Verification of CFC Imports for CY2009 which was prepared pursuant to the qualification in the approval for release of the first tranche of funding (Decision 59/18, in Annex V of the meeting report) that "The World Bank and the Government were requested to ensure that Customs records are available to auditors for the next import audit report associated with the final funding tranche of the Accelerated Phase-out Plan to be submitted to the 61st Meeting of the Executive Committee."

12. This condition for verification of customs records was met with the report being submitted for consideration with the initial request for funding of the second tranche of the ACPP that was submitted for the 62nd meeting, and was deferred as noted above. For CY2010, the Ozone Cell indicated that no licenses had been issued and imports had been nil. To verify the customs records which are to be provided by the Ozone Cell, the World Bank has hired an independent audit team and a short report on the same will be shared with the Multilateral Fund Secretariat ahead of the 66th meeting.

B.6 Policy Measures

13. Policy measures which were implemented during the course of the past two years are summarized below:

Activity	Key Actions	Status in 2011
Production Quota licenses	Not Applicable since production has ceased since August 2008.	Nil
Registrations	Applications for registrations from sellers, stockists, dealers and buyers of CFC will be examined and submitted to Ozone Cell, MOEF.	Last date for registrations was 31st Dec 2009. No new registrations were done.
Issuance of Licenses	Applications for import and export of CFCs will be examined after which the Ozone Cell will submit recommendations for issuance of bulk licenses for export by CFC producers and import licenses to DGFT[1]. Ozone Cell will take into account information received on registered importers in importing countries when considering issuance of export licenses.	Licenses for export of CFCs from stockpile were issued to ensure zero stock at the end of 2009.

[1] Directorate General of Foreign Trade

B.7 Technical Assistance Activities[2]:

Activity	Key Actions	Status	Actual Spent
Awareness	India Success Story developed, published and disseminated; and publication of booklet on CFC production phase-out targeting CFC users and consumers	Success Story 2009 and 2010 were published and disseminated on the occasion of Ozone Days of both years; the booklet is under preparation and will be published in 2012	50,000
	Support to Chiller Energy Efficiency project for awareness and technical information workshops to CFC-based Chiller owners	PMU was involved in substantive discussions with project team and with public sector enterprises using CFC based chillers. The Chiller project was approved by Bank Board in June 2009 and since then Ozone Cell has supported the marketing and monitoring efforts	Included in "operations of PMU"
Training/ Capacity building	Workshops in high CFC consuming states on awareness of CFC production closure. Targeted skills training and awareness for Customs and border officials	Activities were completed	49,000
Data Collection	Data Management and compilation of CFC data used for MDIs as procured from CFC producers Strengthening information exchange on CFC exports through iPIC	Data triangulation system is in place with support and regular data flow from DGFT, DRI[3], DGCIS[4] and Department of Customs. The PMU has been clearing export/import requests from other countries after verifying the requisite details.	Included in "operations of PMU"
Operations of PMU	Daily operations and overhead costs of PMU. Support for Article 7 Data reporting including management of CFC imports for EUNs Regular monitoring meetings	On-going activities.	100,000

[2] These Technical Assistance activities correspond to funding previously approved and released by the Executive Committee for Technical Assistance, and are managed by UNEP.

[3] Department of Revenue Intelligence
[4] Directorate General of Commercial Intelligence Statistics

Activity	Key Actions	Status	Actual Spent
	held with relevant stakeholders, including CFC and CTC producers for stringent monitoring Web-accessed database system for data triangulation and centralized MIS system for cohesive data compilation for ODS		
Total disbursed in 2010 and 2011			**199,000**

B.8 Monitoring and Reporting

Reporting was as detailed below:

Report	By	Target Date	Comments
Supervision report	World Bank	Bi-annually	Supervisions undertaken and satisfactory reports prepared and disseminated.
Progress report	UNEP	Bi-annually	Reports received from UNEP in 2010 and 2011.
Financial Audit Report	UNEP	June	Satisfactory extract of UNEP's Annual Audited Accounts received; Regular financial reports received on a timely and satisfactory basis
Disbursement Report	IDBI	Bi-annually	Satisfactory reports received on a timely basis
Financial Audit Report	IDBI	September	Satisfactory reports received
Technical Audit	World Bank	April 2011	Satisfactory audit undertaken by independent auditor and report reviewed in May 2011; CFC import audit undertaken in CY2010 and CY2012

C. DISBURSEMENTS

C.1 CFC Production Gradual Phaseout Project

14. Total disbursement under this project was 100% of the total project allocation of US$ 82 million. This cumulative disbursement includes US$ 80 million disbursed under the CFC producer compensation and US$ 2 million for Technical Assistance activities. The expenditures on TA activities for 2010-2011 are highlighted in section B3 above.

C.2 Accelerated CFC Production Phaseout Plan

15. As CFC production has stopped, the GOI will not be issuing production quotas for 2012. As noted, there are no further activities of any sort envisaged to take place during 2012, beyond the disbursement to the producers of the full funding available under the 2nd tranche of the ACPP, according to performance that has been met.

16. The relevant agreements between the Government of India and the World Bank and between the Government of India and the producers have been signed, and payment for the first tranche, amounting to US$ 2.113 million was made to the producers in January 2012. The second installment, amounting to US$ 1.057 will be released upon approval of the ExCom.

C.3 Modalities for Disbursements

17. The CFC gradual phase out project is implemented through a number of inter-related agreements: (i) a Project Agreement between the World Bank and the Government of India which governs the overall project framework and respective obligations and fiduciary responsibilities of the Government of India and the World Bank as an implementing agency of the Fund; (ii) a Grant Agreement between the World Bank and the Industrial Development Bank of India (IDBI) that is directly charged with disbursing funds to the Producers, on the instruction of the World Bank following the request of the Government of India; (iii) Performance agreements reflecting phase out targets and other conditions between the Government of India and the Producers; and (iv) Sub-grant agreements between each of the Producers and IDBI, to effect payment. The flow of resources is from World Bank to IDBI to the Producers. The World Bank directly contracts independent auditors to conduct verification to the effect that performance agreements have been met by the Producers, as discussed above, and these are submitted for the consideration of the Executive Committee prior to approval and release of Tranche funding. This set-up ensures that while on the one hand there is significant oversight and control over decisions to release funding, on the other hand payments can be made rapidly by the IDBI bank once the request to do so has been cleared.

18. The US$80 million approved for CFC producers under the CFC Gradual Phaseout Project was satisfactorily disbursed to all CFC producers by 2010. Under the Accelerated CFC Phaseout Plan, the first tranche of disbursement was made to the four CFC producers in January 2012. The second payment will be released upon approval for disbursement by the ExCom, upon review of all compliance requirements, including the CFC import audit.

19. The remaining activities to be completed in 2012 are summarized in the following table:

Activity	**Key Actions**	**Target date**	**Budget (US$)**
CFC Accelerated Plan 2nd Tranche Release	IDBI release of funds to Producers, subject to ExCom approval.	Apr-May	1,057,000