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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Seventy-seventh Meeting
Montreal, 28 November - 2 December 2016

PROJECT PROPOSAL: IRAN (Islamic Republic of)

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

Phase-out

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

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
Iran (Islamic Republic of)

(I) PROJECT TITLE	AGENCY
HCFC phase-out plan (Stage II)	UNDP (lead)/UNEP/UNIDO/Germany

(II) LATEST ARTICLE 7 DATA (Annex C Group l)	Year: 2015	309.28 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2015
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
				Manufacturing	Servicing				
HCFC-141b		85.94		70.26					156.20
HCFC-22		1.35		72.10	79.67				153.12

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	380.50	Starting point for sustained aggregate reductions:	380.50
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	164.40	Remaining:	216.10

(V) BUSINESS PLAN		2016	2017	2018	2019	2020	After 2020	Total
UNDP	ODS phase-out (ODP tonnes)	19.5	0	14.6	0	14.6	0	48.7
	Funding (US $)	2,058,000	0.0	1,543,000	0.0	1,543,000	0.0	5,144,000
UNEP	ODS phase-out (ODP tonnes)	0	0	0	0	0	0	0
	Funding (US $)	178,000	87,000	156,000	0.0	119,000	0.0	540,000
UNIDO	ODS phase-out (ODP tonnes)	10.4	0	10.4	0	0	0	20.8
	Funding (US $)	710,000	0.0	710,000	0.0	0.0	0.0	1,420,000
Germany	ODS phase-out (ODP tonnes)	7.5	0	26.0	0	17.6	17.6	68.7
	Funding (US $)	585,000	0.0	1,959,000	0.0	0.0	1,257,000	5,058,000

(VI) PROJECT DATA			2016	2017	2018	2019	2020	2021	2022	2023	Total
Montreal Protocol consumption limits			342.45	342.45	342.45	342.45	247.33	247.33	247.33	247.33	n.a.
Maximum allowable consumption (ODP tonnes)			342.45	342.45	266.35	266.35	247.33	247.33	247.33	95.13	n.a.
Project costs requested in principle (US$)	UNDP	Project costs	1,298,170	0	2,047,980	0	1,559,211	0	0	0	4,905,361
		Support costs	90,872	0	143,359	0	109,145	0	0	0	343,375
	UNEP	Project costs	245,000	0	200,000	0	185,000	0	70,000	0	700,000
		Support costs	30,450	0	24,857	0	22,993	0	8,700	0	87,000
	UNIDO	Project costs	876,770	0	1,369,130	0	740,512	0	24,000	0	3,010,412
		Support costs	61,374	0	95,840	0	51,836	0	1,680	0	210,729
	Germany	Project costs	645,500	0	1,048,130	0	883,326	0	95,448	0	2,672,404
		Support costs	73,420	0	119,216	0	100,471	0	10,856	0	303,964
Total project costs requested in principle (US $)			3,065,440	0	4,665,240	0	3,368,049	0	189,448	0	11,288,177
Total support costs requested in principle (US $)			256,116	0	383,271	0	284,445	0	21,236	0	945,069
Total funds requested in principle (US $)			3,321,556	0	5,048,511	0	3,652,494	0	210,684	0	12,233,246

(VII) Request for funding for the first tranche (2015)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNDP	1,298,170	90,872
UNEP	245,000	30,450
UNIDO	876,770	61,374
Germany	645,500	73,420

Funding request:	Approval of funding for the first tranche (2016) as indicated above
Secretariat's recommendation:	For individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of the Islamic Republic of Iran, UNDP as the lead implementing agency has submitted to the 77th meeting stage II of the HCFC phase-out management plan (HPMP) at the total cost of US $16,395,760 consisting of US $7,167,170, plus agency support costs of US $501,702 for UNDP, US $3,833,902, plus agency support costs of US $268,373 for UNIDO, US $889,000, plus agency support costs of US $107,790 for UNEP, and US $3,259,300, plus agency support costs of US $368,523 for the Government of Germany, as originally submitted. The implementation of stage II of the HPMP will phase out 144.36 ODP tonnes of HCFCs to meet the 66.0 per cent reduction in HCFC consumption by 2023, as originally submitted.

2. The first tranche for stage II of the HPMP being requested at this meeting amounts to US $3,326,109, consisting of US $758,890, plus agency support costs of US $53,122 for UNDP, US $1,295,552, plus agency support costs of US $90,689 for UNIDO, US $311,000, plus agency support costs of 37,708 for UNEP, and US $700,000, plus agency supports costs of US $79,148 for the Government of Germany, as originally submitted.

Status of implementation of stage I of the HPMP

3. Stage I of the HPMP for the Islamic Republic of Iran was approved at the 63rd meeting to meet the 10 per cent reduction from the baseline by 2015 and phase out 38.6 ODP tonnes of HCFC-22 and 62.7 ODP tonnes of HCFC-141b at the amount of US $10,393,388 plus agency support costs of US $904,918.

4. The Agreement between the Government and the Executive Committee was updated at the 68th, 72nd and 74th meetings to reflect the revised starting point for sustained aggregate reduction based on the actual consumption in 2009 and 2010, the return of funds associated with enterprises identified as non-eligible, the postponement of conversion of enterprises not ready to introduce the alternatives that were originally proposed and the inclusion of other eligible enterprises identified. As a consequence of these changes, stage I of the HPMP will phase out 38.6 ODP tonnes of HCFC-22 and 125.8 ODP tonnes of HCFC-141b in the amount of US $9,994,338, plus agency support costs of US $874,989, and the Government committed to reducing HCFC consumption by 30 per cent of the baseline by 1 January 2018.

ODS policy and regulatory framework

5. The HCFC import and export licensing and quota system has been operational since 2012. The National Ozone Committee establishes the annual import quotas, the National Ozone Unit (NOU) approves importers and quantities, and the Ministry of Industry, Mine and Trade (MIMT) issues the import licenses to registered importers. The established regulatory framework for HCFC phase-out also includes a certification scheme, the provision of fiscal incentives, a harmonized code system and labelling requirements.

Progress in implementation of stage I activities

Activities in the manufacturing sectors (UNDP, UNIDO and Government of Germany)

6. Out of 20 enterprises consuming 147.74 ODP tonnes of HCFCs, 14 have completed their conversions, phasing out 101.00 ODP tonnes. The remaining six enterprises (46.74 ODP tonnes) will complete conversions by the end of 2016, as summarized in Table 1.

Table 1. Status of progress in the implementation of the investment projects

Sector	Number of enterprises	HCFC-141b (ODP tonnes)	HCFC-22 (ODP tonnes)	Status of implementation	Alternative
Refrigeration and air-conditioning (RAC) manufacturing					
AC manufacturing	1	-	29.30	Completed	HFC-410A
Polyurethane (PU) foam					
Continuous panels	3	17.70	-	Completed	HC
Discontinuous panels	4	8.40	-	Completed	HC
Domestic refrigeration	6	45.60	-	Completed	HC
Continuous panels	3	6.84	-	To be completed in 2016	HC
Domestic refrigeration	1	34.10	-	To be completed in 2016	HC
Other rigid foam	2	5.80	-	To be completed in 2016	HC
Total	**20**	**118.44**	**29.30**		

Activities in the RAC servicing sector and non-investment activities (Government of Germany and UNEP)

7. Activities implemented in the refrigeration servicing sector include: the demonstration of "leakage-free' systems in several supermarkets through the use of new condensing units; the publication and distribution of a manual on servicing refrigeration systems, sealed systems design and leakage control; the training of 195 custom officers on HCFC control measures; the training of 34 trainers and 292 technicians in good practices; a workshop on energy efficiency and HCFC phase-out for 79 participants; and an awareness programme.

Status of funds disbursement

8. As of July 2016, of the US $9,994,338 approved, US $9,689,765 (97 per cent) had been disbursed. The remaining US $304,573 will be disbursed by 2017.

Stage II of the HPMP

Remaining eligible consumption in the Islamic Republic of Iran

9. After deducting 164.40 ODP tonnes of HCFCs associated with stage I of the HPMP and the 144.36 ODP tonnes proposed for stage II, the remaining consumption of HCFCs eligible for funding amounts to 71.74 ODP tonnes, as shown in Table 2.

Table 2: Overview of the remaining HCFC consumption eligible for funding (ODP tonnes)

HCFC	Starting point	Reduction in stage-I	Remaining consumption	Reduction in stage II	Remaining Consumption
HCFC-22	2,974.55	701.82	2,272.73	1,026.00	1,246.73
HCFC-141b	1,971.82	1,143.64	828.18	799.36	28.82
Total (mt)	**4,946.36**	**1,845.45**	**3,100.91**	**1,825.40**	**1,275.51**
HCFC-22	163.60	38.60	125.00	56.43	68.57
HCFC-141b	216.90	125.80	91.10	87.93	3.17
Total (ODP tonnes)	**380.50**	**164.40**	**216.10**	**144.36**	**71.74**

HCFC consumption and sector distribution

10. The Government of the Islamic Republic of Iran reported a consumption of 309.28 ODP tonnes of HCFC in 2015 under Article 7 of the Montreal Protocol. The 2011-2015 HCFC consumption is shown in Table 3.

Table 3. HCFC consumption in the Islamic Republic of Iran (2011-2015 Article 7 data)

HCFC	2011	2012	2013	2014	2015	Baseline
Metric tonnes (mt)						
HCFC-22	3,024.98	3,029.06	2,886.94	2,666.78	2,783.22	2,974.6
HCFC-141b	1,913.72	1,906.46	1,805.97	1,777.00	1,420.00	1,971.8
Total (mt)	**4,938.70**	**4,935.52**	**4,692.91**	**4,443.78**	**4,203.22**	**4,946.4**
ODP tonnes						
HCFC-22	166.37	166.60	158.78	146.67	153.08	163.6
HCFC-141b	210.51	209.71	198.66	195.47	156.20	216.9
Total (ODP tonnes)	**376.88**	**376.31**	**357.44**	**342.14**	**309.28**	**380.5**

11. The total HCFC consumption in 2015 (309.28 ODP tonnes) was 9.7 per cent below the limits established in the Agreement between the Government and the Executive Committee (342.45 ODP tonnes). The decrease in HCFC-141b consumption is due to restrictions on HCFC imports and the conversion of enterprises in the PU foam sector. The verification report confirmed that 309.28 ODP tonnes of HCFCs were imported in 2015 and the Government continued to implement its licensing and quota system for HCFC imports and exports.

12. Table 4 presents the distribution of HCFC use among sectors according to the survey undertaken in preparation of stage II. The survey provided a different distribution of HCFC use in the RAC sector than the country programme (CP) implementation report, where a portion of the consumption in servicing had been attributed to manufacturing. As the results of the survey provide the best up-to-date estimate of HCFC use by sector, the Government of the Islamic Republic of Iran will submit a revised 2015 CP implementation report.

Table 4. Estimation of HCFC use by sector according to the stage II survey

Sector	Substance	HCFC use			
		Mt	mt (%)	ODP tonnes	ODP t (%)
Room AC	HCFC-22	200.00	5	11.00	4
Commercial and industrial RAC		800.00	19	44.00	14
Transport refrigeration		15.70	0	0.86	0
XPS foam		40.00	1	2.20	1
PU foam	HCFC-141b	1,420.00	34	156.20	51
Subtotal manufacturing		**2,475.70**	**59**	**214.26**	**69**
RAC servicing	HCFC-22	1,728.30	41	95.06	31
Total		**4,204.00**	**100**	**309.32**	**100**

13. The manufacturing sectors still represent 69 per cent of the HCFC consumption in 2015 (in ODP tonnes). The PU foam sector is the largest HCFC consumer (51 per cent), followed by the refrigeration servicing sector (31 per cent) and the RAC manufacturing sector (18 per cent). Consumption of HCFC-22 in the XPS foam sector is by non-eligible enterprises and represents less than one per cent of the total consumption. No HCFCs are used in solvents, aerosols and fire-fighting applications.

HCFC consumption in manufacturing sectors

PU foam manufacturing sector

14. Stage I of the HPMP addressed the use of HCFC-141b in enterprises manufacturing continuous and discontinuous panels, domestic refrigeration and other rigid PU foam applications. During the implementation of stage I, market considerations led the conversion of the integral skin enterprises to be postponed to stage II, and three additional domestic refrigeration enterprises were added.

15. HCFC-141b continues to be used in the manufacturing of the rigid PU foam applications above, as well as in commercial refrigeration and spray foam. The survey completed during the preparation of stage II identified 94 additional enterprises consuming HCFC-141b that are eligible for funding[1], including over 80 small and medium-sized enterprises (SMEs).

16. The PU foam manufacturers procure HCFC-141b either in pre-blended form from local systems houses, or pure from importers. Seven systems houses supply raw material and HCFC-141b based polyols, of which four were operational during stage I (Kaboodan Chemie, Iran Polyurethane, BASF Elastogran and Urethane System Company-USC), and three were established after the cut-off date of 21 September 2007 (Arian Polyurethane, Jazbe Setareh and Mokarrar).

17. Table 5 presents an estimate of the distribution of enterprises (both eligible and non-eligible) and the consumption of HCFC-141b in the foam sector for rigid PU foam applications for 2015.

Table 5. Estimated distribution of HCFC-141b use in rigid PU foam applications (2015)

Application	Number of enterprises	Consumption	
		mt	Percentage
Domestic refrigeration	32	334.4	23.5
Commercial refrigeration	43	315.7	22.2
Sandwich panels	8	76.4	5.4
Integral skin	6	57.7	4.1
Rigid foam (others)	3	11.2	0.8
Spray foam	2	4.0	0.3
Total eligible enterprises	**94**	**799.4**	**56.3**
Ineligible enterprises	~72	620.6	43.7
Total		**1,420.0**	**100.0**

RAC manufacturing sector

18. The RAC manufacturing sector in the country is made up of small enterprises that generally assemble a wide range of RAC systems and equipment (e.g., display cabinets, island cases, stand-alone commercial refrigerators, freezers, commercial and industrial AC systems, chillers, condensing units, package units and laboratory freezers).

19. *Room AC:* Unitary air-conditioners constitute a significant portion of national HCFC-22 consumption both in manufacturing and servicing. Between 800,000 and 1 million units are sold per year. In addition to the enterprise Mehr Asl converted in stage I, there are over 30 enterprises assembling and importing HCFC-based unitary air-conditioners, selling them locally with small quantities exported to other Article 5 countries. The total use of HCFC-22 is estimated at 200 mt (11 ODP tonnes), for initial charging of AC equipment.

20. *Commercial and industrial AC (including chillers):* Commercial AC includes systems locally manufactured or imported for business centers, supermarkets, restaurants and other buildings. Industrial AC equipment includes locally produced central AC systems and chillers using HCFC-22 or HFCs. Compressors for commercial and industrial AC equipment are imported while components are locally procured and installed at the customer's premises. HCFC-22 consumption is low compared to room AC, and for the purpose of the HPMP is accounted for together with the commercial refrigeration sector.

21. *Commercial refrigeration:* There are about 51 enterprises that manufacture refrigeration equipment for food and beverages using HCFC-22 (43 of them also consuming HCFC-141b for their PU

[1] Additional 72 identified enterprises were found non-eligible for funding since their HCFC-141b based equipment was installed after the cut-off date of 21 September 2007.

foam insulation). HCFC-22 is consumed to test equipment manufactured (the refrigerant is not recovered during this operation) and during installation of the system in the final location. In some cases equipment is only semi-assembled in the factory and then completely assembled and charged in its final location. The conversions of these enterprises will therefore phase out twice the amount of HCFC used in these applications in the manufacturing plant.

22. *Industrial refrigeration:* It includes cold storage and refrigeration equipment used in facilities needing low-temperature cooling applications (e.g., food products, seafood industry and ice machines). Equipment operates using different refrigerants (e.g., ammonia, HFCs and HCFCs) charged on-site by third parties, with an increased use of ammonia in large installations in industrial areas outside main cities. Compressors for industrial refrigeration equipment are imported and components are locally procured and installed at the customer's premises. As the commercial sector manufacturers are also providing equipment for the industrial sector, the consumption in this subsector is accounted for together with the commercial refrigeration sector.

23. The total consumption of HCFC-22 in commercial refrigeration, commercial and industrial AC, and industrial refrigeration applications is estimated to be 400 mt (22 ODP tonnes).

24. *Transport refrigeration:* There are three local and other non-eligible enterprises manufacturing transport refrigeration with HCFC-22, most of them importing refrigeration units from China and the Republic of Korea. In addition, several enterprises install and service HCFC-22-based transport AC applications. Enterprises in this subsector consider that there is no available low-global warming potential (GWP) technology that can be adopted in these applications. The total use of HCFC-22 is estimated at 15.7 mt (0.86 ODP tonnes).

HCFC consumption in the refrigeration servicing sector

25. According to the survey conducted during the preparation of stage II, over 50 per cent of HCFC-22 consumption in the country is in the refrigeration servicing sector (1,728.30 mt or 95.06 ODP tonnes) for window and split AC units, small and medium sized equipment in commercial refrigeration, and large cold rooms and refrigeration systems in industrial refrigeration. With the phase-out of HCFC-22 in the manufacturing sector, the use for servicing is expected to decrease in future years.

26. All 31 provinces in the country have local refrigeration unions which register and certify refrigeration technicians and servicing companies. There are over 10,000 operating servicing workshops in the country, of which around 4,000 are registered. In addition, there are 400 government-controlled vocational training institutes located in different cities that provide training to technicians in different subjects.

Proposed activities in stage II of the HPMP

27. The activities to be implemented during stage II include the total phase-out of HCFC-141b in the PU foam manufacturing sector, conversion of RAC manufacturing enterprises, assistance to the refrigeration servicing sector, including an enabling component, and a project management unit.

Activities in the manufacturing sector

PU foam manufacturing sector

28. A total of 799.4 mt (87.93 ODP tonnes) of HCFC-141b will be phased out by the end of 2022 through:

(a) Conversion of 14 PU foam enterprises to pentane and water-blown technology, with the phase-out of 307.80 mt (33.86 ODP tonnes) of HCFC-141b;

(b) Introduction of water-blown technology in 88 SMEs including two spray foam enterprises, with the phase-out of 491.60 mt (54.08 ODP tonnes) of HCFC-141b;

(c) Technical assistance and equipment to one systems house to develop and introduce pre-blended pentane technology;

(d) Technical assistance and training to foam enterprises for the adoption of low-GWP alternatives selected;

(e) Technical assistance to develop water-blown technology; and

(f) Reporting and monitoring structure to inform enterprises on the HPMP, and support the NOU to communicate with enterprises.

Technology selection and incremental cost

29. Pentane and water-blown were the technologies selected for the remaining enterprises in the PU foam sector: i.e., 12 enterprises with larger consumption in the domestic, commercial discontinuous panels and other rigid applications are converting to pentane, and two enterprises producing integral skin, and the remaining SMEs in domestic and commercial refrigeration, other rigid applications and spray foam will convert to water-blown technology. During the implementation of stage II other low-GWP alternatives may be considered depending on new developments and applications that could become available in the local market.

30. The incremental capital cost (ICC) for the conversion of individual enterprises to pentane was based on the approved costs for stage I, including retrofit of foam dispensers, pre-mixers and buffer tanks, nitrogen supply and modification of fixtures (US $140,000); plant safety for ventilation, electrical heating modification, gas sensors, fire protection system, lightning protection and grounding, antistatic floor and safety audit (US $60,000 to US $68,500); and trials and commissioning (US $5,000). The ICC for the conversion of integral skin enterprises to water-blown technology included retrofit of foam dispenser, heating elements, nozzles, mixing head, nitrogen charging polyol and modification fixtures (US $76,000); and trials and commissioning (US $20,000). Contingencies were calculated at 10 per cent of the capital cost for individual conversions.

31. The ICC for the SMEs was based on the provision of conversion kits for water-blown technology (US $40,000/kit and US $50,000/kit for two spray foam SMEs) including mixing head adaptation, cooling/heating system for foam equipment, heating system for moulds, raw material storage heating/cooling, two tonnes of raw material for testing, installation and modification, and trials and testing.

32. Incremental operating cost was calculated only for the 14 individual enterprises based on the difference between the baseline formulation and alternative formulation (i.e., saving for US $1.06/kg for the 12 enterprises converting to pentane, and cost of US $0.65/kg for the two integral skin enterprises converting to water-blown technology). No IOCs are being requested for SMEs converting to water-blown technology. The total incremental cost of the conversion of the PU foam sector amounted to US $7,471,572, at a cost-effectiveness of US $9.35/kg as shown in Table 6.

Table 6. Total cost for the conversion of the PU foam sector

Activity	Enter-prises	Agency	mt	ODP tonnes	ICC (US $)	IOC (US $)	Total cost (US $)	CE (US $/kg)
Enterprises conversions to pentane (except integral skin)								
Domestic refrigeration	7	UNIDO	173.00	19.03	1,663,200	(183,380)	1,479,820	8.55
Discontinuous panels	2	UNIDO	40.30	4.43	451,000	(42,718)	408,282	10.13
Commercial refrigeration (panel)*	3	UNDP	55.50	6.11	676,500	(58,830)	617,670	11.13
Integral skin (water-blown)	2	Germany	39.00	4.29	211,200	**(3,900)	207,300	5.32
Total enterprises conversions	**14**		**307.80**	**33.86**	**3,001,900**	**(288,828)**	**2,713,072**	**8.81**
Group conversions to water-blown technology								
Commercial refrigeration (panel)*	48	UNDP	260.20	28.62	1,920,000	-	1,920,000	7.38
Other PU foam applications***	40	UNIDO	231.40	25.45	1,700,000	-	1,700,000	7.35
Total group conversions	**88**		**491.60**	**54.08**	**3,620,000**	**-**	**3,620,000**	**7.36**
Technical assistance (TA)								
TA to systems house	1	UNDP	-	-	401,500	-	401,500	
TA development water-blown systems		Germany	-	-		-	75,000	
TA enterprises conversions	102	Germany	-	-		-	612,000	
Reporting and monitoring structure		UNEP	-	-		-	50,000	
Total PU foam			**799.40**	**87.93**	**7,023,400**	**(288,828)**	**7,471,572**	**9.35**

*Commercial refrigeration enterprises included also have consumption of HCFC-22, which will be addressed through the RAC manufacturing plan. During review it was determined that only 43 of them are using HCFC-141b (including 40 SMEs).
**During review it was noted that the actual value of IOC for integral skin was US $25,350 calculated at US $0.65/kg.
***Including two spray foam SMEs.

RAC manufacturing sector

33. Stage II includes assistance to convert all 51 eligible RAC manufacturing enterprises to low-GWP alternative technologies, phasing out 800 mt (44 ODP tonnes) of HCFC-22, including 400 mt (22 ODP tonnes) used during manufacturing and testing, and another estimated 400 mt (22 ODP tonnes) used in installation and first charge.

Approach, technologies selected and incremental cost

34. The following elements are included in the RAC manufacturing sector plan:

(a) Complete phase-out of HCFC-22 and HCFC-141b in all the 43 enterprises that consume both substances (cost to phase out HCFC-141b is already accounted for in the PU foam sector plan) and eight enterprises that only consume HCFC-22;

(b) Provision of technology conversion kits (US$50,000/kit) tailored to the needs of the beneficiary enterprise, including compressors, filter dryers, electrical parts, evaporators, condensers and expansion valves to help with the introduction of low-GWP alternatives. When required for conversion to hydrocarbon (HC)-based technology refrigerant charging, vacuum pumps and safety equipment will also be included;

(c) Local development of refrigeration and AC systems operating with alternative technologies that can be used as technology demonstration for all the enterprises. This would include development of HC-based bottle coolers at three manufacturers; development of 10 to 20 kW HC-290/glycol-brine and HC-290/CO_2 cascade chillers at two manufacturers; development of HC-based compact cooling units for cold rooms at three manufactures; development of HC-based stand-alone cooling units and ice-cream chest freezers at three manufacturers. The HCFC-free systems developed will be demonstrated to all beneficiary enterprises through the training institutes so that they can

be replicated by all enterprises given their limited capacity to invest in research and development;

(d) Distribution of mobile testing equipment (i.e., temperature, humidity, pressure) to training centers and institute of standards, for manufacturers to share on a loan basis;

(e) Specialized training component through research institutes for technicians of specific manufacturers on equipment design, development of standards, product stewardship, troubleshooting and the use and servicing of equipment using low-GWP refrigerants. This programme will link to vocational training centers where facilities will be updated to encourage the use of low-GWP refrigerants at the level of engineers, product designers and service technicians (starting at the Enghelab University and extending it to other centers);

(f) Review and application of manufacturing and testing standards for good design, application of good practices and uniform construction methods, set up of an energy labelling scheme for commercial refrigeration equipment, and adoption of standard EN-378[2] on safety and charge amounts;

(g) Introduction of reusable refrigerant cylinders to enhance monitoring of HCFC consumption and control on counterfeit refrigerants; and

(h) Refrigerant distribution systems (four) including industrial recovery and recycling equipment, multiuse refrigerant bottles, storage cylinders, laboratory equipment, cylinder charging equipment, cylinder cleaning, dryer, pressure testing, capping and sealing and labelling equipment.

35. The technologies proposed in the conversions are all low-GWP (i.e. HC-290, HC-600a, and ammonia) and the selection will be dependent on the specific product, application, temperature requirement, and cooling power expected.

36. The cost for the conversion of the RAC manufacturing sector is presented in Table 7 below.

Table 7. Total cost for the conversion of the RAC manufacturing sector

Activity	Agency	Phase-out		Total Cost	Cost-effectiveness (US $/kg)
		mt	ODP tonnes		
Conversion packages (US $50,000 each for 48 enterprises	UNDP	400	22	2,400,000	6.00
Setup of a refrigerant distribution system (four at US $300,000 each)	UNDP			1,200,000	
Technical assistance	Germany	400	22		5.91
- Training tools: development of HCFC-free sample demonstration equipment				600,000	
- Refrigeration technology transfer/trials and testing				200,000	
- Training curricula				100,000	
- University training				400,000	
- Qualification and certification				200,000	
- Training enterprises				240,000	
- Standards				75,000	
- Introduction of reusable cylinders				350,000	
- Coordination and management				200,000	
Sub-total				2,365,000	
Total		**800**	**44**	**5,965,000**	**7.46**

[2] EN-378 Refrigerating systems and heat pumps – Safety and Environmental Requirements.

Activities in the refrigeration servicing sector

37. Stage II of the HPMP proposes to phase out 226 mt (12.4 ODP tonnes) of HCFC-22 used in the refrigeration servicing sector, with a total cost of US$1,084,800 (calculated at US $4.8/kg) through:

(a) Policy enforcement, capacity building strengthening of the HCFC license and quota system, and training of 100 customs officers (UNEP) (US $110,000);

(b) Updating of the national standards for RAC and foam products, and development of standard operating procedures for the industry and servicing workshops for handling flammable refrigerants (UNEP) (US $20,000);

(c) Training of 1,000 RAC technicians and 20 trainers, updating of training curriculum to include natural refrigerants, and a pilot certification programme for 200 technicians (UNEP) (US$ 339,000);

(d) Procurement of equipment for technician training and multi-refrigerant identifiers (UNIDO) (US $245,800);

(e) Promotion of alternative technologies, including establishment of a technology promotion center, organization of technology roadshows and industry roundtables, awareness workshops and production and distribution of printed materials (UNEP) (US $220,000); and

(f) Monitoring, coordination and management (UNEP) (US $150,000).

Project monitoring and implementation unit (PMU)

38. The PMU established under the NOU during stage I will continue to assist in the implementation and monitoring of stage II. Activities by the PMU include the planning of activities under each component of stage II (excluding servicing), development of the database of HCFC suppliers and users by sector and subsector, consultation with enterprises, implementation of activities in coordination with the industry, technical institutions and other bodies, participation in Government and interagency coordination meetings, and reporting on progress. The total amount requested for the PMU is US $628,000 to cover the equivalent of four staff, national stakeholder meetings, site visits and performance verification, and operational costs.

Total cost of stage II of the HPMP

39. The total cost of stage II of the HPMP for the Islamic Republic of Iran has been estimated at US $15,149,372, as originally submitted (excluding support costs). The proposed activities will result in the phase-out of 144.36 ODP tonnes of HCFCs with an overall cost effectiveness of US $8.3/kg as summarized in Table 8.

Table 8. Total cost of stage II of the HPMP for the Islamic Republic of Iran

Activity	Agency	Eligible consumption and funds requested			
		mt	ODP	US $	CE US $/kg
PU foam integral skin, TA	Germany	39.00	4.29	894,300	
PU foam commercial refrigeration	UNDP	315.70	34.73	2,939,170	
PU foam other rigid	UNIDO	444.70	48.92	3,588,102	
PU foam reporting	UNEP	-	-	50,000	
Sub-total PU foam		**799.40**	**87.93**	**7,471,572**	**9.35**
RAC manufacturing TA	Germany	400.00	22.00	2,365,000	
RAC manufacturing kits	UNDP	400.00	22.00	2,400,000	
Refrigerant distribution system	UNDP	-	-	1,200,000	
Sub-total RAC manufacturing		**800**	**44.00**	**5,965,000**	**7.46**
Servicing non-investment	UNEP	174.79	9.61	839,000	
Servicing investment	UNIDO	51.21	2.82	245,800	
Sub-total servicing		**226.00**	**12.43**	**1,084,800**	**4.80**
PMU	UNDP	-	-	628,000	
Grand total		**1,825.40**	**144.36**	**15,149,372**	**8.30**
Total Germany					3,259,300
Total UNDP					7,167,170
Total UNIDO					3,833,902
Total UNEP					889,000

Activities planned for the first tranche

40. The first funding tranche of stage II of the HPMP at the total amount of US $3,065,440 will be implemented until December 2018, and will include: launching workshops to the PU foam and RAC sectors; conversion of insulation foam used in three domestic refrigeration enterprises to pentane and 10 foam enterprises in various applications to water-blown technology; start conversion of the first 15 RAC manufacturing enterprises; establishment of one refrigeration distribution system; initiation of the demonstrations for the RAC manufacturing enterprises; strengthening of the HCFC license and quota system; initiation of the updating of the national standards for RAC and foam products and development of standard operating procedures for the RAC manufacturing sector; servicing workshops for handling flammables; initiation of the pilot certification programme and training and certification of RAC technicians; and promotion of alternative technologies.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

41. The Secretariat reviewed stage II of the HPMP for of the Islamic Republic of Iran in light of stage I, the policies and guidelines of the Multilateral Fund, including the criteria for funding HCFC phase-out in the consumption sector for stage II of HPMPs (decision 74/50), and the 2016-2018 business plan of the Multilateral Fund.

Verification

42. The verification report confirmed that the Islamic Republic of Iran is implementing a licensing and quota system for imports and exports of HCFCs and that consumption of HCFCs in 2015 was in compliance with the Montreal Protocol and the consumption targets established under stage I of the HPMP.

Overarching strategy for stage II

43. Stage II of the HPMP proposes to phase out 144.36 ODP tonnes of HCFCs in the PU foam and RAC manufacturing and servicing sectors with a Government commitment to reduce HCFC consumption by 66 per cent of the baseline in 2023. However, taking into consideration HCFC reductions under stage I, stage II would only need to phase out 86.68 ODP tonnes to reach an overall HCFC reduction of 66 per cent from the baseline. On this basis, the Secretariat questioned the need to include the phase-out of HCFCs in all the sectors during stage II.

44. UNDP indicated that activities in the PU foam sector are needed to ensure the complete phase-out of HCFC-141b in the country by 1 July 2023. By addressing all eligible enterprises in stage II, the Government will be able to establish a ban on imports of HCFC-141b pure or in polyols, as well as a ban on manufacturing of PU foam with HCFC-141b pure or in polyols, thus ensuring the phase-out of the non-eligible consumption with a total consumption of 68.27 ODP tonnes. However, addressing only this sector would not be sufficient to ensure sustained reductions on overall HCFC consumption.

45. UNDP explained that economic sanctions imposed to the country had been removed in 2015 and long-standing infrastructure work needed in the country is starting to take place; increased access to raw material, improvement in business infrastructure, and access to the global banking system contribute to a projected 8 per cent economic growth in the country, which will cause a potential increase in future consumption of HCFC-22 and/or high-GWP alternatives. For this reason, activities in the RAC manufacturing sector are considered a priority, so that it can introduce low-GWP alternatives, prevent an increase in the installed base of HCFC-22, and avoid future demand of HCFC-22 for servicing. With the activities proposed in stage II of the HPMP, the Government will impose and enforce regulations banning the use of HCFCs in the RAC and PU foam manufacturing sectors by 2023. Based on the explanation provided by UNDP, the Secretariat suggested a more cost-effective approach to implement the proposed strategy for stage II, as presented below.

Technical and cost issues related to the PU foam sector

Second-stage conversions

46. In accordance with decision 74/50(b)(i), all eligible enterprises included in stage II are eligible for full funding of eligible incremental costs, as it has been clearly demonstrated that all of them are converting to low-GWP technologies.

Availability of technology selected in the local market

47. In line with decision 74/20(a)(iii), UNDP provided detailed information on the availability of HC-based systems as follows: Tabriz Petrochemical Industry is providing the pentane as of end of 2015; larger consumers can obtain HCs directly from this provider. For smaller enterprises that will use HC, the Kaboodan systems house will provide pentane premixed polyols, thus reducing investment costs (e.g., premixers and pentane tank storage).

Incremental cost

48. Cost issues related to 12 individual projects converting to pentane were discussed in light of the incremental cost approved for stage I. Upon adjustments applied to equipment (i.e., premixers, nitrogen supply and modification of fixtures were reduced from US $140,000/US $142,500 to US $117,000/US $135,000 depending on the case) and safety items (i.e., ventilation, gas sensors, alarms, fire and lightning protection and safety audit were reduced from US $60,000/US $68,500 to US $58,500/US $60,000 depending on the case), the Secretariat and UNDP agreed on incremental costs

comparable to those approved in stage I. The incremental cost of two integral skin enterprises converting to water-blown technology was slightly adjusted (from US $5.32 to US $4.32/kg).

49. For the SMEs, the cost of the kit for water-blown technology was adjusted to US $25,200 due to a reduction on elements that were not incremental (e.g., raw material heating/cooling), while the two tonnes of raw material for testing were replaced by one-year IOCs. The IOC value was calculated based on the water-blown technology in integral skin (US $0.65 /kg). The number of commercial refrigeration SMEs was also adjusted to 40 (instead of 48) to cover only enterprises consuming HCFC-141b that are not being assisted individually.

50. The Secretariat and UNDP agreed that the equipment to the systems house should have the same value as that approved for the systems house project in stage I (US $225,500), that the technical assistance to develop water-blown technology should be US $50,000, and that the technical assistance to enterprises for conversions should be US $545,094 based on the level of technical assistance approved in the past. No funds were recommended for the reporting and monitoring activities for the foam sector as proposed by UNEP, as these tasks are already covered under technical assistance and the PMU. The agreed costs for the PU foam sector are presented in Table 9.

Table 9. Agreed costs for the PU foam sector

Activity	Enterprises	Agency	mt	ODP tonnes	ICC (US $)	IOC (US $)	Total cost (US $)	CE (US $/kg)
Enterprises conversions to pentane (except integral skin)								
Domestic refrigeration	7	UNIDO	173.00	19.03	1,401,400	(183,380)	1,218,020	7.04
Discontinuous panels	2	UNIDO	40.30	4.43	436,700	(42,718)	393,982	9.78
Commercial refrigeration (panel)*	3	UNDP	55.50	6.11	600,600	(58,829)	541,771	9.76
Integral skin (water-blown)	2	Germany	39.00	4.29	143,000	25,350	168,350	4.32
Total enterprises conversions	**14**		**307.80**	**33.86**	**2,581,700**	**(259,577)**	**2,322,123**	**7.54**
Group conversions to water-blown technology								
Commercial refrigeration (panel)*	40	UNDP	260.20	28.62	960,000	169,130	1,129,130	4.34
Other PU foam applications	40	UNIDO	231.40	25.45	1,008,000	150,410	1,158,410	5.01
Total group conversions	**80**		**491.60**	**54.08**	**1,968,000**	**319,540**	**2,287,540**	**4.65**
Technical assistance (TA)								
TA to systems house	1	UNDP	-	-	225,500	-	225,500	
TA development water-blown systems		Germany	-	-		-	50,000	
TA enterprises conversions	94	Germany	-	-		-	545,094	
Total PU foam			**799.40**	**87.93**	**4,775,200**	**59,963**	**5,430,257**	**6.79**

*Commercial refrigeration enterprises included also have consumption of HCFC-22, which will be addressed through the RAC manufacturing plan

**Including two spray foam SMEs.

RAC manufacturing sector

51. The Secretariat noted that the phase-out in the RAC manufacturing sector relies heavily on technical assistance which appears to be similar to some of the activities implemented in the refrigeration servicing sector. UNDP clarified that the proposed activities are for redesign and testing of the refrigerant circuitry and associated system adaptation (e.g., changed pipe sizes and conducts through the cabinets, change of compressors, change of evaporator and condenser size for which the cabinets need to be adapted; and selection and choice of components according to the refrigeration capacity required), and for safety aspects. For these reasons, the training and technical assistance requested differ substantially from that in the refrigeration servicing sector.

52. While the training included in this component is more specialized and directed to technicians associated with manufacturers, there are overlapping activities (e.g., training curricula update, training to technicians and enterprises, adoption of standards, introduction of reusable cylinders) with the

refrigeration servicing sector. On this basis, it was agreed to consider funding of these activities at the same cost-effectiveness threshold of the refrigeration servicing sector (US $4.80/kg). Some rationalisation was also made to ensure that the provision of conversion kits was calculated at the same cost-effectiveness level.

53. In providing more details on the refrigerant distribution system, originally submitted with no tonnage associated under the RAC manufacturing sector, UNDP explained that most of the funding for this activity will be used in infrastructure equipment for the handling of reusable cylinders. As this activity has an impact in the entire RAC sector, the Secretariat recommended its approval at reduced cost (US$480,000) as part of the refrigeration servicing sector activities at US $4.80/kg.

54. The Secretariat expressed concern that the approach followed, while innovative and adapted to the specific circumstances of the sector and the country, differs from the conversions done in other sectors. While it provides the know-how, access to components and tools to enterprises to manufacture a large number of applications and products, the monitoring and sustainability of the phase-out would be more challenging as not all the refrigerant is used at the manufacturing plant and by the manufacturer (third parties can do the first charge during installation). Accordingly, it was agreed to start with a sample of 15 enterprises during the first two years and report the results of these conversions highlighting lessons learned and challenges faced, as a requirement for the submission of the second tranche request. The corresponding provision is included in Appendix 8-A of the Agreement between the Government and the Executive Committee.

55. As the 200 mt (11 ODP tonnes) of HCFC-22 still used in room AC units do not correspond to manufacturing but rather to first charge of imported equipment designed for HCFC-22, it was agreed that this consumption will be phased out through regulations, with no funding as there are no manufacturing enterprises to be addressed.

Refrigeration servicing sector

56. The Secretariat noted a number of potential overlaps (on standards development, development of training material, training to be provided for technicians, technician certification, and strengthening vocational institutes and training centres) in the activities included in the servicing sector proposal for implementation by UNEP, and the technical assistance activities included in the RAC conversion for implementation by the Government of Germany. In addition, the equipment to be provided for the training institutes and technicians as part of this component also have some similarity with that under the Germany component (i.e. provision of reusable cylinders).

57. In clarifying these observations, UNDP explained that while there were similar activities, the UNEP component will target service technicians from the unskilled sector, while that under the RAC component (Germany) is aimed for the manufacturers of equipment.

58. Noting the Secretariat's concerns, funding for activities in the servicing sector component was adjusted to US $940,000, out of which US $240,000 is for the equipment component.

PMU

59. Based on the complexity of stage II, its duration and the costs incurred for the PMU, the Secretariat and UNDP agreed on a cost level of US $620,000 for the PMU.

Agreed cost for stage II of the HPMP

60. The agreed cost of the activities proposed in stage II of the HPMP amounts to US $11,288,177 (excluding agency support costs), with a CE of US $5.97/kg as summarized in Table 11.

Table 11. Agreed cost for stage II of the HPMP for the Islamic Republic of Iran

Activity	Agency	Eligible consumption and funds requested				Additional HCFC reductions	
		mt	ODP	US $	CE US $/kg	mt	ODP
PU foam integral skin, TA	Germany	39.00	4.29	763,444			
PU foam commercial refr., TA	UNDP	315.70	34.73	1,896,401			
PU foam other rigid	UNIDO	444.70	48.92	2,770,412			
Sub-total PU foam		**799.40**	**87.93**	**5,430,257**	**6.79**	***28.82**	**3.17**
RAC manufacturing TA	Germany	397.70	21.87	1,908,960		**2.30	0.13
RAC manufacturing kits	UNDP	397.70	21.87	1,908,960		**2.30	0.13
AC manufacturing						***200.00	11.00
Sub-total RAC manufacturing		**795.40**	**43.75**	**3,817,920**	**4.80**	**204.60**	**11.26**
Refrig. distribution system	UNDP	100.00	5.50	480,000			
Servicing non-investment	UNEP	145.83	8.02	700,000			
Servicing investment	UNIDO	50.00	2.75	240,000			
Sub-total servicing		**295.83**	**16.27**	**1,420,000**	**4.80**		
PMU	UNDP			620,000			
Grand total		**1,890.63**	**147.95**	**11,288,177**	**5.97**	**233.42**	**14.42**
Total Germany							2,672,404
Total UNDP							4,905,361
Total UNIDO							3,010,412
Total UNEP							700,000

*Remaining consumption of HCFC-141b eligible for funding, which will be deducted from the starting point although the phase-out of HCFC-141b non-eligible for funding is larger (68.26 ODP tonnes).
**Consumption corresponds to one RAC manufacturing enterprise found non-eligible and will be deducted from the starting point.
***Consumption in the AC manufacturing sector will be phased out through regulations and will be deducted from the starting point.

61. With the approval of stage II of the HPMP, the Islamic Republic of Iran will phase out HCFC consumption in all manufacturing sectors except for XPS foam and a small consumption in transport refrigeration; completely phase out HCFC-141b pure or contained in imported pre-blended polyols; and phase out an additional 200 mt of HCFC-22 used in the AC sector (described as mainly splits imported by assemblers) through appropriate regulations. Accordingly, the Government commits to:

(a) Reduce HCFC consumption by 75 per cent of the baseline by 1 January 2023;

(b) Ban the import and use of HCFC-141b pure or contained in pre-blended polyol upon completion of the conversion of all the eligible enterprises and no later than 1 July 2023;

(c) Ban new manufacturing capacity using HCFC-22 by 1 January 2020; and

(d) Ban the use of HCFC-22 in manufacturing of RAC equipment upon completion of the conversions of all the eligible enterprises and no later than 1 January 2023.

Impact on the climate

62. The conversion of the remaining PU foam manufacturing enterprises in the Islamic Republic of Iran would avoid the emission into the atmosphere of some 570 thousand tonnes of CO_2 equivalent per

year, as shown in Table 12.

Table 12. Impact on the climate of PU foam projects

Substance	GWP	Tonnes/year	CO_2-eq (tonnes/year)
Before conversion			
HCFC-141b	725	799.4	579,565
After conversion			
Pentane, water-blown technology	~20	479.64	9,593
Impact			**(569,972)**

63. In light of the range of equipment manufactured in the refrigeration manufacturing sector, and that the selection of low-GWP technology may vary by enterprise, the climate benefits of the conversions in the refrigeration manufacturing sector are estimated based on the emission reductions of HCFC-22 used in testing and installation. It is assumed that each kilogram of HCFC-22 not emitted results in a savings of approximately 1.8 CO_2-equivalent tonnes; therefore, conversions in the RAC sector with a consumption of 800 mt will result in an additional avoidance of some 14,400 tonnes of CO_2 equivalent per year.

64. The proposed activities in the servicing sector, which include better containment of refrigerants through training and provision of equipment, will further reduce the amount of HCFC-22 used for refrigeration servicing. Although a calculation of the impact on the climate was not included in the HPMP, the activities planned by the Islamic Republic of Iran, in particular its efforts to promote low-GWP alternatives, refrigerant recovery and reuse, indicate that the implementation of the HPMP will reduce the emission of refrigerants into the atmosphere therefore resulting in benefits on the climate.

Co-financing

65. A total of 620.6 tonnes (68.26 ODP tonnes) of HCFC-141b consumed in the PU foam sector by non-eligible enterprises, 4.6 mt (0.26 ODP tonnes) of HCFC-22 consumed by one non-eligible RAC manufacturing enterprise and 200.0 mt (11.00 ODP tonnes) of HCFC-22 consumed by assemblers importing room AC units will be phased out through regulations, with the actual cost of conversions, where applicable, assumed by the enterprises.

2016-2018 draft business plan of the Multilateral Fund

66. UNDP, UNEP, UNIDO and the Government of Germany are requesting US $11,288,177 plus agency support costs for the implementation of stage II of the HPMP. The total value requested of US $8,370,067 for the period 2016 to 2018, is US $384,872 above the amount in the business plan between 2016 and 2018.

Draft Agreement

67. A draft Agreement between the Government of the Islamic Republic of Iran and the Executive Committee for the phase-out of HCFCs in stage II of the HPMP is contained in Annex I to the present document.

RECOMMENDATION

68. The Executive Committee may wish to consider:

(a) Approving, in principle, stage II of the HCFC phase-out management plan (HPMP) for the Islamic Republic of Iran for the period 2016 to 2023 to reduce HCFC consumption by 75 per cent of the baseline, in the amount of US $12,233,246, consisting of

US $4,905,361, plus agency support costs of US $343,375 for UNDP; US $700,000, plus agency support costs of US $87,000 for UNEP; US $3,010,412, plus agency support costs of US $210,729 for UNIDO; and US $2,672,404, plus agency support costs of US $303,964 for the Government of Germany;

(b) Noting the commitment of the Government of the Islamic Republic of Iran to:

(i) Reduce HCFC consumption by 75 per cent by 2023;

(ii) Issue a ban on import and use of HCFC-141b pure or contained in pre-blended polyol upon completion of the conversion of all the eligible enterprises and no later than 1 July 2023;

(iii) Issue a ban on new manufacturing capacity using HCFC-22 by 1 January 2020;

(iv) Issue a ban on the use of HCFC-22 in manufacturing of refrigeration and air-conditioning equipment upon completion of the conversions of all the eligible enterprises and no later than 1 January 2023;

(c) Deducting 162.37 ODP tonnes of HCFCs from the remaining HCFC consumption eligible for funding;

(d) Requesting UNDP to include in the submission of the second tranche a report on the results of the conversion of the first 15 enterprises in the refrigeration and air-conditioning manufacturing sector to low-global warming potential alternatives highlighting lessons learned and challenges faced;

(e) Approving the draft Agreement between the Government of the Islamic Republic of Iran and the Executive Committee for the reduction in consumption of HCFCs, in accordance with stage II of the HPMP, contained in Annex I to the present document; and

(f) Approving the first tranche of stage II of the HPMP for the Islamic Republic of Iran, and the corresponding tranche implementation plans, in the amount of US $3,321,556, consisting of US $1,298,170, plus agency support costs of US $90,872 for UNDP, US $245,000, plus agency support costs of US $30,450 for UNEP, US $876,770, plus agency support costs of US $61,374 for UNIDO, and US $645,500, plus agency support costs of US $73,420 for Germany.

Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF THE ISLAMIC REPUBLIC OF IRAN AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

Purpose

1. This Agreement represents the understanding of the Government of the Islamic Republic of Iran (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 95.13 ODP tonnes by 1 January 2023 in compliance with Montreal Protocol schedule.

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 and 4.2.3 (remaining consumption eligible for funding).

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 stage II of the HCFC phase-out management plan (HPMP) approved ("the Plan"). 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.

Conditions for funding release

5. The Executive Committee will only provide the Funding in accordance with the Funding Approval Schedule when 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 has 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 there are no due country programme implementation reports 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 for all relevant years, unless the Executive Committee decided that such verification would not be required;

(c) That the Country had submitted a Tranche Implementation Report in the form of Appendix 4-A ("Format of Tranche 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; and

(d) That the Country has submitted a Tranche 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.

Monitoring

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 Tranche Implementation Plans in accordance with their roles and responsibilities set out in the same appendix.

Flexibility in the reallocation of funds

7. The Executive Committee agrees that the Country may have the flexibility to reallocate part or all of the approved 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 a Tranche Implementation Plan as foreseen in sub-paragraph 5(d) above, or as a revision to an existing Tranche 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;

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

(v) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;

(c) Any enterprise to be converted to non-HCFC technology included in the Plan and that would be found to be ineligible under the policies of the Multilateral Fund (i.e., due to foreign ownership or establishment post the 21 September 2007 cut-off date), would not receive financial assistance. This information would be reported as part of the Tranche Implementation Plan;

(d) The Country commits to examining the possibility of using pre-blended systems with low-global warming potential blowing agents instead of blending them in-house, for those foam enterprises covered under the Plan, should this be technically viable, economically feasible and acceptable to the enterprises;

(e) The Country agrees, in cases where HFC technologies have been chosen as an alternative to HCFCs, and taking into account national circumstances related to health and safety: to monitor the availability of substitutes and alternatives that further minimize impacts on the climate; to consider, in the review of regulations standards and incentives adequate provisions that encourage introduction of such alternatives; and to consider the potential for adoption of cost-effective alternatives that minimize the climate impact in the implementation of the HPMP, as appropriate, and inform the Executive Committee on the progress accordingly in tranche implementation reports; and

(f) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

Considerations for the refrigeration servicing sector

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sector included in the Plan, 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 relevant bilateral and/or implementing agencies would take into consideration relevant decisions on the refrigeration servicing sector during the implementation of the Plan.

Bilateral and implementing agencies

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, UNIDO and the 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 the Lead IA and/or Cooperating IAs 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). The Cooperating IAs will support the Lead IA by implementing the Plan under the overall co-ordination of the Lead IA. The roles of the Lead IA and Cooperating IAs are contained in

Appendix 6-A and Appendix 6-B, respectively. 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, 2.6 and 2.8 of Appendix 2-A.

Non-compliance with the Agreement

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 decisions are taken, the specific case of non-compliance with this Agreement will not be an impediment for the provision of funding 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 decisions 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.

Date of completion

14. The completion of the Plan 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 at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per sub-paragraph 5(d) and paragraph 7, the completion of the Plan 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 of the Plan unless otherwise specified by the Executive Committee.

Validity

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.

16. This Agreement may be modified or terminated only by mutual written agreement of the Country and the Executive Committee of the Multilateral Fund.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-22	C	I	163.6
HCFC-141b	C	I	216.9
Total			380.5

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particular	2016	2017	2018	2019	2020	2021	2022	2023	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	342.45	342.45	342.45	342.45	247.33	247.33	247.33	247.33	n.a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	342.45	342.45	266.35	266.35	247.33	247.33	247.33	95.13	n.a.
2.1	Lead IA (UNDP) (US $)	1,298,170	0	2,047,980	0	1,559,211	0	0	0	4,905,361
2.2	Support costs for Lead IA (US $)	90,872	0	143,359	0	109,145	0	0	0	343,375
2.3	Cooperating IA (UNIDO) (US $)	876,770	0	1,369,130	0	740,512	0	24,000	0	3,010,412
2.4	Support costs for Cooperating IA (US $)	61,374	0	95,839	0	51,836	0	1,680	0	210,729
2.5	Cooperating IA (UNEP) (US $)	245,000	0	200,000	0	185,000	0	70,000	0	700,000
2.6	Support costs for Cooperating IA ((US $)	30,450	0	24,857	0	22,993	0	8,700	0	87,000
2.7	Cooperating IA (Germany) (US $)	645,500	0	1,048,130	0	883,326	0	95,448	0	2,672,404
2.8	Support costs for Cooperating IA (US $)	73,420	0	119,216	0	100,471	0	10,856	0	303,964
3.1	Total agreed funding (US $)	3,065,440	0	4,665,240	0	3,368,049	0	189,448	0	11,288,177
3.2	Total support costs (US $)	256,116	0	383,271	0	284,445	0	21,236	0	945,069
3.3	Total agreed costs (US $)	3,321,556	0	5,048,511	0	3,652,494	0	210,684	0	12,233,246

4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)	71.27
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)	38.60
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)	53.73
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)	91.10
4.2.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)	125.80
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)	0.00

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 TRANCHE IMPLEMENTATION REPORTS AND PLANS

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

(a) A narrative report, with data provided by tranche, describing the progress achieved since 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 the amount of ODS phased 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 Tranche 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;

(b) An independent verification report of the Plan results and the consumption of the Substances, 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 during the period covered by the requested tranche, highlighting implementation milestones, the time of completion and 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 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 Tranche Implementation Reports and Plans, submitted through an online database; and

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

2. In the event that in a particular year two stages of the HPMP are being implemented in parallel, the following considerations should be taken in preparing the Tranche Implementation Reports and Plans:

(a) The Tranche Implementation Reports and Plans referred to as part of this Agreement, will exclusively refer to activities and funds covered by this Agreement; and

(b) If the stages under implementation have different HCFC consumption targets under Appendix 2-A of each Agreement in a particular year, the lower HCFC consumption target will be used as reference for compliance with these Agreements and will be the basis for the independent verification.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The monitoring process will be managed by the Department of Environment (DOE) through the National Ozone Unit (NOU) 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. The NOU shall compile and report on an annual basis on or before the relevant due dates on consumption of the Substances to be submitted to the Ozone Secretariat and on progress of implementation of HPMP to be submitted to the Executive Committee.

3. The NOU and the Lead IA will engage an independent and qualified entity to carry out a qualitative and quantitative performance evaluation of the HPMP implementation.

4. The evaluating entity shall have full access to relevant technical and financial information related to implementation of the HPMP; it shall prepare and submit to the NOU and the Lead IA, a consolidated draft report at the end of each Tranche Implementation Plan, comprising of the findings of the evaluation and recommendations for improvements or adjustments, if any. The draft report shall include the status of the Country's compliance with the provisions of this Agreement upon incorporating the comments and explanations as may be applicable, from NOU, Lead IA and the Cooperating IAs, the evaluating entity shall finalize the report and submit to the NOU and Lead IA.

5. The NOU shall endorse the final report and the Lead IA shall submit the same to the relevant meeting of the Executive Committee along with the Tranche 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 Tranche Implementation Reports and Plans as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche 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 Tranche Implementation Plans consistent with sub-paragraphs 1(c) and 1(d) of Appendix 4-A;

(e) Fulfilling the reporting requirements for the Tranche Implementation Reports and Plans and the overall plan as specified in Appendix 4-A for submission to the Executive Committee, and should include the activities implemented by the Cooperating IAs;

(f) In the event that the last funding tranche is requested one or more years prior to the last year for which a consumption target had been established, annual tranche implementation reports and, where applicable, verification reports on the current stage of the Plan should be submitted until all activities foreseen had been completed and HCFC consumption targets had been met;

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

(h) Carrying out required supervision missions;

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

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

(k) 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 the Lead IA and each Cooperating IA;

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

(m) Providing assistance with policy, management and technical support when required;

(n) Reaching consensus with the Cooperating IAs on any planning, co-ordination and reporting arrangements required to facilitate the implementation of the Plan; and

(o) Timely releasing funds to the Country/participating enterprises for completing the activities related to the project.

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 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;

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

(d) Reaching consensus with the Lead IA on any planning, co-ordination and reporting arrangements required to facilitate the implementation of the Plan.

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 $139.04 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, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years.

2. In the event that the penalty needs to be applied for a year in which there are two Agreements in force (two stages of the HPMP being implemented in parallel) with different penalty levels, the application of the penalty will be determined on a case-by-case basis taking into consideration the specific sectors that lead to the non-compliance. If it is not possible to determine a sector, or both stages are addressing the same sector, the penalty level to be applied would be the largest.

APPENDIX 8-A: SECTOR SPECIFIC ARRANGEMENTS

1. This section outlines a specific condition required to be met before the portion of funding shown in rows 2.1 to 2.8 and 3.1 to 3.3 of Appendix 2-A could be released:

(a) That the Lead IA, the Cooperating IAs and the Country have included in the submission of the request for the second tranche a report on the results of the conversion of the first 15 enterprises in the refrigeration and air-conditioning manufacturing sector to low-GWP alternatives highlighting lessons learned and challenges faced.