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EXECUTIVE COMMITTEE OF
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PROJECT PROPOSAL: DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

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

Phase-out

- HCFC phase-out management plan (stage I, first tranche)

UNIDO/UNEP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS**Democratic People's Republic of Korea**

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

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2011	90.04 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2011		
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22				11.06	60.49				71.55
HCFC-141b		18.48							18.48

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	78.0	Starting point for sustained aggregate reductions:	78.0
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	0.0	Remaining:	58.33

(V) BUSINESS PLAN		2012	2013	2014	2015	Total
UNIDO	ODS phase-out (ODP tonnes)	7.0	7.0	0.0	0.5	14.5
	Funding (US \$)	400,098	400,098	108,401	43,977	952,574
UNEP	ODS phase-out (ODP tonnes)	2.7	3.0		3.0	8.7
	Funding (US \$)	26,890	40,335		60,000	127,225

(VI) PROJECT DATA			2012	2013	2014	2015	2016	2017	Total
Montreal Protocol consumption limits			n/a	78.0	78.0	70.16	70.16	70.16	n/a
Maximum allowable consumption (ODP tonnes)			n/a	78.0	78.0	70.16	70.16	66.26	n/a
Project Costs requested in principle(US\$)	UNIDO	Project costs	542,380	-	120,000	-	40,000	20,000	722,380
		Support costs	37,967	-	8,400	-	2,800	1,400	50,567
	UNEP	Project costs	96,000	-	50,000	-	34,000	20,000	200,000
		Support costs	12,480	-	6,500	-	4,420	2,600	26,000
Total project costs requested in principle (US \$)			638,380	-	170,000	-	74,000	40,000	922,380
Total support costs requested in principle (US \$)			50,447	-	14,900	-	7,220	4,000	76,567
Total funds requested in principle (US \$)			688,827	-	184,900	-	81,220	44,000	998,947

(VII) Request for funding for the first tranche (2012)		
Agency	Funds requested (US \$)	Support costs (US \$)
UNIDO	542,380	37,967
UNEP	96,000	12,480

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

PROJECT DESCRIPTION

1. On behalf of the Government of the Democratic People's Republic of Korea UNIDO, as the lead implementing agency, has submitted to the 68th meeting of the Executive Committee stage I of the HCFC phase-out management plan (HPMP) at a total cost of US \$2,316,527, consisting of US \$1,528,016, plus agency support costs of US \$106,961 for UNIDO, and US \$605,000, plus agency support costs of US \$76,550 for UNEP as originally submitted. The implementation of stage I of the HPMP will assist the Democratic People's Republic of Korea in meeting the Montreal Protocol's compliance target of 10 per cent reduction by 2015.

2. The first tranche for stage I of the HPMP being requested at this meeting amounts to US \$907,792, consisting of US \$661,000, plus agency support costs of US \$46,270 for UNIDO, and US \$178,000, plus agency support costs of US \$22,522 for UNEP.

Background

3. The Democratic People's Republic of Korea, with a total population of about 24.4 million inhabitants, has ratified all the amendments to the Montreal Protocol.

ODS regulations

4. The Government of the Democratic People's Republic of Korea set up in 1996 the National Coordinating Committee for Environment (NCCE) chaired by the Vice Minister of Foreign Affairs, to coordinate the implementation of the Montreal Protocol. The National Ozone Unit (NOU), under the authority of the NCCE and the Ministry of Land and Environment Protection (MLEP), prepares and supervises the implementation of ODS phase-out projects and activities, collects ODS consumption and production data, fulfils reporting requirements to the Ozone Secretariat and the Fund Secretariat, and controls the use of ODS, including HCFCs, in collaboration with the environmental inspectors.

5. Several ozone protection laws and regulations have been introduced, including a ban on the manufacturing of ODS-based refrigeration equipment and a ban on the import or manufacturing of ODS based industrial refrigerating equipment. An ODS import and export license system is operational and the HCFC quota system is in place since 2011 (the quota for 2013 will be determined in December 2012).

HCFC production and consumption

6. Since 2004, HCFC-22 is the only HCFC produced in the Democratic People's Republic of Korea, only for the local market, by Hamhung Refrigeration Factory, established in 1994, the only producer of ODS. All the HCFC-141b consumed in the country is imported mostly from China and a small portion from the Russia Federation. The level of production of HCFC-22 and imports of HCFCs is shown in Table 1. Due to a fire, the production of HCFC-22 was zero in 2007. The HCFC production baseline for compliance has been calculated at 27.6 ODP tonnes.

Table 1. HCFC-22 production in the Democratic People's Republic of Korea

HCFC-22	2007	2008	2009	2010	2011
Metric tonnes					
Production	0.0	394.3	504.0	498.0	480.0
Import	1,550.0	419.0	361.0	889.4	821.0
Total mt	1,550.0	813.3	865.0	1,387.4	1,301.0
ODP tonnes					

HCFC-22	2007	2008	2009	2010	2011
Production	0.0	21.7	27.7	27.4	26.4
Import	85.3	23.0	19.9	48.9	45.2
Total ODP tonnes	85.3	44.7	47.6	76.3	71.6

7. The levels of consumption reported under Article 7 of the Montreal Protocol are shown in Table 2. The HCFC consumption baseline for compliance has been calculated at 78.0 ODP tonnes.

Table 2. HCFC consumption in the Democratic People's Republic of Korea

HCFC	2007	2008	2009	2010	2011	Baseline
Metric tonnes						
HCFC-22	1,550.0	813.3	865.1	1,387.5	1,301.0	1,126.2
HCFC-141b	111.6	117.6	129.0	162.0	168.0	145.5
Total (mt)	1,661.6	930.9	994.1	1,549.5	1,469.0	1,271.7
ODP tonnes						
HCFC-22	85.3	44.7	47.6	76.3	71.6	62.0
HCFC-141b	12.3	12.9	14.2	17.8	18.5	16.0
Total (ODP tonnes)	97.6	57.6	61.8	94.1	90.1	78.0

8. HCFC-22 consumption dropped from 85.3 ODP tonnes in 2007 to 44.7 and 47.6 ODP tonnes in 2008 and 2009 respectively. The decrease is explained by the fire accident at the HCFC production plant and by some initial reactions of consumers to the application of HCFC control which led to lower reporting.

9. The 2012-2020 forecast HCFC consumption in the Democratic People's Republic of Korea based on a five per cent annual growth is presented in Table 3.

Table 3. 2012-2020 forecast of HCFC consumption

Year		2012	2013	2014	2015	2016	2017	2018	2019	2020
Unconstrained scenario	mt	1,544.66	1,621.89	1,702.98	1,788.14	1,877.54	1,971.42	2,069.98	2,173.48	2,282.16
	ODP	94.66	99.39	104.36	109.58	115.06	120.81	126.85	133.19	139.85
Montreal Protocol measures	mt	1,544.66	1,271.70	1,271.70	1,144.53	1,144.53	1,144.53	1,144.53	1,144.53	826.61
	ODP	94.66	77.95	77.95	70.16	70.16	70.16	70.16	70.16	50.66

HCFC consumption by sector

10. The refrigeration and air-conditioning servicing sector and the foam manufacturing sector consumption represent respectively 64 and 21 per cent of the baseline of 78.0 ODP tonnes, as shown in Table 4. The remaining consumption is in the manufacturing of HCFC-based refrigeration equipment and compressors.

Table 4. HCFC consumption distributed by sector

Sectors	Substance	2007	2008	2009	2010	2011	Baseline	Share (%)
Hamhung: Commercial: refrigeration and compressors manufacturing	HCFC-22	215.4	150.0	149.0	139.2	111.9	144.1	11
Pyongyang Automation: Compressors manufacturing		-	76.3	69.9	81.2	89.2	75.6	6
Refrigeration servicing sector		1,334.6	587.0	646.1	1,167.0	1,099.9	906.6	71
Sub Total		1,550.0	813.3	865.0	1,387.4	1,301.1	1,126.2	89
Foam manufacturing sector	HCFC-141b	111.6	117.6	129.0	162.0	168.0	145.5	11
GRAND TOTAL mt		1,661.6	930.9	994.0	1,549.4	1,469.1	1,271.7	100
Commercial refrigeration manufacturing (Hamhung)	HCFC-22	11.8	8.3	8.2	7.7	6.2	7.9	10
Compressors manufacturing (Pyongyang Automation)		-	4.2	3.8	4.5	4.9	4.2	5
Refrigeration servicing sector		73.4	32.3	35.5	64.2	60.5	49.9	64
Sub Total		85.3	44.7	47.6	76.3	71.6	62	79
Foam manufacturing sector	HCFC-141b	12.3	12.9	14.2	17.8	18.5	16.0	21
GRAND TOTAL ODP tonnes		97.5	57.7	61.8	94.2	90.0	77.9	100

Refrigeration and air-conditioning servicing sector

11. The annual consumption of HCFC-22 in the refrigeration service sector was above 1,000 mt (55 ODP tonnes) during the last two years. Servicing of domestic and small commercial refrigeration systems is provided by several small service workshops, while for large installations is provided by their in-house technicians. There are 210 registered refrigeration service workshops throughout the country.

12. During the implementation of the national phase-out plan (NPP) a recovery and recycling network consisting of 25 regional centres was established to ensure the continuous operation of refrigeration equipment and preventing its early retirement. However, during the implementation of the scheme major difficulties were encountered, including low recovery levels, lack of an economic incentive to recover refrigerant, frequent damage of equipment due to electricity fluctuations and lack of a legislative support to the recovery and recycling practice.

Foam manufacturing sector

13. There are only three polyurethane (PU) foam manufacturing enterprises in the country using HCFC-141b imported in pre-blended polyols and reported under Article 7 of the Montreal Protocol, as shown in Table 5.

Table 5: Consumption of HCFC-141b by foam enterprises

Enterprise	2007	2008	2009	2010	2011
Metric tonnes					
Pyongyang Sonbong PU Foam	42.3	44.3	52.6	64.3	73.0
Puhung Building Material	36.2	38.6	36.9	35.6	60.0
Chongjin Sonbong PU Foam	33.1	34.7	39.5	62.1	35.0
Total (mt)	111.6	117.6	129.0	162.0	168.0
ODP tonnes					
Pyongyang Sonbong PU Foam	4.7	4.9	5.8	7.1	8.0
Puhung Building Material	4.0	4.2	4.1	3.9	6.6
Chongjin Sonbong PU Foam	3.6	3.8	4.3	6.8	3.9
Total (ODP tonnes)	12.3	12.9	14.2	17.8	18.5

Refrigeration manufacturing sector

14. There are two compressor manufacturers in the country: Hamhung Commercial Machinery Factory that also manufactures commercial refrigeration equipment, and Pyongyang Automation Equipment Factory.

HCFC phase-out strategy

15. The Government of the Democratic People's Republic of Korea has developed a staged approach to comply with the adjusted HCFC targets agreed by the Parties. During stage I, the Government plans to freeze the consumption of HCFCs by 1 January 2013 and meet the 10 per cent reduction in 2015. In line with the overarching strategy, the Government proposes to implement the following specific activities:

- (a) Development of enforcement measures of laws and regulations to control HCFCs. It will establish a team to review enforcement measures in imports control of HCFCs and HCFC-based equipment, organize workshops and distribute education materials for enforcement;
- (b) Enforcement capacity building for HCFC imports control. It includes training of 600 customs officers so that import/export of HCFCs and HCFC-based equipment are monitored on a regular basis;
- (c) Training in good practices of refrigeration service. It includes training of 50 trainers, 650 technicians and 200 skilled workers on good service practice of refrigeration servicing; and procurement of basic equipment for training purposes;
- (d) Improvement of the existing recovery and recycling network established under the NPP and distribution of an additional 100 recovery machines and ancillary equipment;
- (e) Awareness and public outreach activities, including a media campaign, on the acceleration of the HCFC phase-out schedule, relevant policies and regulations to be promulgated, and the available and emerging alternative technologies;
- (f) Feasibility study to develop a project for the conversion of HCFC-based refrigeration equipment manufacturing to hydrocarbon-based technology in Hamhung Commercial Machinery Factory; and
- (g) Feasibility study to determine a plan for the HCFC-22 production facility of Hamhung Chemical Factory.

16. The Government is also proposing the conversion of the two foam enterprises, as described below:

- (a) Pyongyang Sonbong Foam Factory, manufacturing rigid PU foam, will be converted to cyclopentane technology. The conversion includes cyclopentane storage and handling system, a pre-mixing station, two foam machines, safety systems for operation with hydrocarbons, civil engineering, technical assistance, trials, training, certification and contingencies, and incremental operating cost for two years. The cost of the project is estimated at US \$752,748; and
- (b) Puhung Building Materials Factory, specialized in building spray insulation, will be converted to HFC-245fa. The conversion includes a pre-mixing tank, a cooling system, a foam spray dispenser, technical transfer, testing, training and contingencies, and incremental operating cost for two years. The cost of the project is estimated at US \$231,868.

17. Chongjin Sonbong PU Foam Factory will convert at a future stage with its own resources.

18. The HPMP also includes a project monitoring and evaluation unit, responsible for the overall coordination and implementation of the activities included in stage I of the HPMP. It will prepare annual implementation programmes; coordinate the annual audit; prepare annual progress reports; and support the implementing agencies for the verification of the HCFC consumption.

Cost of the HPMP

19. The total cost of stage I of the HPMP to meet up to and including the 10 per cent reduction by 2015 has been estimated at US \$2,133,016, plus Government's contribution estimated at US \$180,000 as shown in Table 6. Implementation of stage I will result in the reduction of consumption of 19.68 ODP tonnes of HCFCs, representing over 25.2 per cent of the HCFC consumption baseline.

Table 6. Estimated cost of stage I of the HPMP for the Democratic People's Republic of Korea

Activity	Agency	Substance	Reductions (ODP tonnes)	Cost (US \$)	In-kind contribution (US \$)
Conversion Pyongyang Sonbong PU Foam Factory	UNIDO	HCFC-141b	6.43	752,748	
Conversion Puhung Building Materials Factory	UNIDO	HCFC-141b	3.99	231,868	
Feasibility study commercial refrigeration	UNIDO	HCFC-22	n.a.	65,000	30,000
Feasibility study HCFC-22 production	UNIDO	HCFC-22	n.a.	100,000	30,000
Development of enforcement measures of laws and regulations to control HCFCs	UNEP	HCFC-22	9.26	30,000	15,000
Training of customs officers	UNEP			80,000	20,000
Improvement of recovery and recycling scheme (R&R)	UNIDO			378,400	0
Technician training for good practice of refrigeration service	UNEP			148,000	17,000
Awareness raising and public education	UNEP			122,000	18,000
Monitoring and evaluation	UNEP			225,000	50,000
GRAND TOTAL					19.68

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

20. The Secretariat reviewed the HPMP for the Democratic People's Republic of Korea 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), subsequent decisions on HPMPs and the 2012-2014 business plan of the Multilateral Fund. The Secretariat discussed technical and cost related issues with UNIDO as summarized below.

Methods of disbursement, organizational structures and monitoring procedures and compliance with UN resolutions

21. In the review of the HPMP, the Secretariat also took into consideration decision 66/15(k) on alternative methods of disbursement, organizational structures and monitoring procedures for allowing the transfer of funding associated with the institutional strengthening (IS) project; the UN Security Council Resolutions 1695 (2006), 1718 (2006) and 1874 (2009); and procedures established by UN agencies to provide assistance to the Democratic People's Republic of Korea.

22. Accordingly, UNIDO was requested to clearly demonstrate that the HPMP complied with the guidelines of the Executive Committee as well as with relevant UN resolutions/sanctions. The Secretariat also suggested that UNIDO should consult with the relevant UN Sanction Committee as well as other UN agencies working with the country on the ground to ensure that the procedures to procure and transfer the equipment, as well as the vendors/suppliers and intended beneficiaries are in compliance with these resolutions.

23. In response UNIDO reiterated that its accounting rules and regulations preclude them from transferring funds directly to a beneficiary country without contractual agreements. It has alternative methods of disbursement and confirmed that it will use the established procedures of the agencies working on the ground, in particular the modified UNDP procurement procedures for the supply of equipment and services for the implementation of the HPMP. UNIDO also confirmed that it will communicate with the UN Sanctions Committee to seek confirmation that the list of equipment included in the HPMP does not violate any Security Council resolutions regarding the Democratic People's Republic of Korea.

24. In response to the specific methods of disbursement, organizational structure and procedural arrangements to be applied in the HPMP, UNIDO provided the following information:

- (a) Procurement of equipment and services is arranged through competitive bidding. The respective purchase order/contract on the goods/services supply is concluded between UNIDO and the selected supplier. The HPMP for the Democratic People's Republic of Korea does not envisage local procurement of equipment and goods; therefore, the funds obligated under UNIDO's contract will be disbursed directly to the selected international supplier;
- (b) The terms of reference on the equipment supply always include the provision of services such as equipment delivery, installation, testing, trial runs, operator's training and commissioning. The costs of these services are included into the respective contract and are also disbursed to the selected international supplier upon submission of the respective commissioning report countersigned by the project beneficiary. To avoid any non-compliance with the respective UN resolutions, UNIDO will also apply the modified procurement procedures introduced by the UNDP country office; and

- (c) The required local staffs (national experts/consultants) are recruited in close consultations with the NOU, which submits résumés of the recommended candidates to UNIDO. The selection of a candidate is done on the basis of matching his/her education and working experience with the duties to be performed. Each selected national expert/consultant signs an Individual Service Agreement with UNIDO and disbursement of the service fee is done through the UNDP country office in local currency. The same applies to the recruitment of local institutions, for instance, to arrange and carry out training workshops, where the NOU collects at least three offers from the local suppliers and UNIDO's contract is awarded to the lowest offer that complies with the requirements. Since UNIDO does not have a country office in the Democratic People's Republic of Korea, such contracts are issued by the local UNDP office on UNIDO's behalf. In addition the UNDP country office will arrange customs clearance and tax exemption of imported equipment delivered to the country under UNIDO contracts and/or purchase orders.

25. In response to the specific methods of disbursement, organizational structure and procedural arrangements to be applied in the HPMP, UNEP as cooperating agency indicated that all non-investment activities would be undertaken locally. UNEP and NCCE will sign a Small Scale Funding Agreement (SSFA) clearly defining all activities and their respective costs. UNEP, as per the SSFA, would make advance payments in the local currency through the local UNDP office after a detailed work plan for each component has been submitted listing the activities that will be conducted. However, the advance payment would not be spent for any of these activities unless the NOU submits a separate further detailed terms of reference for each of the planned activities at least one month before the activity, for endorsement by UNEP. Within two weeks following the completion of the activity, the NOU would submit to UNEP a detailed report of the activity undertaken against the endorsed terms of reference with expenditure reports as well as original receipts for UNEP's review and monitoring. For any activities that are organized without UNEP's pre-endorsement, UNEP would not agree to cover the cost under the non-investment component of the HPMP. UNEP also confirmed that these methods of disbursement would be applied only upon approval of the Executive Committee in line with decision 66/15(k).

Operational license system

26. In line with decision 63/17, confirmation has been received from the Government of the Democratic People's Republic of Korea that an enforceable national system of licensing and quotas for production, imports and exports of all ODS including HCFC is in place and that the system has been strictly enforced in the country ensuring compliance with the Montreal Protocol.

Starting point for aggregate reduction in HCFC consumption

27. The Government of the Democratic People's Republic of Korea had agreed to establish as its starting point for sustained aggregate reduction in HCFC consumption the baseline of 78.0 ODP tonnes, calculated using actual consumption of 61.8 ODP tonnes and 94.1 ODP tonnes reported for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol.

Issues related with the foam sector

28. With regard to the foam enterprises Chongjin Sonbong, which will convert at a future stage with its own funds, the Secretariat noted that there are no technical impediments for its conversion. Moreover, by converting the enterprise during stage I, the consumption of HCFC-141b will be completely phased out in line with relevant decisions on prioritization of substances adopted by the Parties to the Montreal Protocol and the Executive Committee. Upon consultation with the Government, UNIDO confirmed that all the three foam enterprises will be included in stage I, with a completion date of December 2016.

On January 2017, the Government has committed to promulgate a ban on imports of HCFC-141b pure or contained in pre-blended polyols.

29. Cost issues related to Pyongyang Sonbong were discussed and satisfactorily addressed. Incremental capital costs associated with the foam dispenser, the pre-mixer, the alarm control system and civil engineering works were rationalized, and the request for incremental operating costs was removed. The total cost of the project was adjusted from US \$752,748 to US \$416,680 with a cost effectiveness of US \$7.13/kg.

30. With regard to the HFC-245fa technology selected by the spray foam enterprise Puhung Building Materials, the Secretariat expressed a strong reservation on the introduction of HFCs and noted that new low-global warming potential (GWP) alternatives have been recently introduced in the market. In view of this, it was agreed with UNIDO that the enterprise undertakes tests with other low-GWP alternatives before committing to the HFC-245fa technology. If by the end of 2014 a non-HFC alternative is technically feasible and commercially available, the proposed HFC-245fa technology would be introduced based on reduced formulations (i.e., co-blown with water). The Secretariat and UNIDO also agreed to remove the cost of a new foam dispenser as the alternative technology only requires a small investment for retrofitting the dispenser in the baseline. The incremental operating costs were also removed. The total cost of the project was adjusted from US \$231,868 to US \$105,700, with a cost effectiveness of US \$2.92/kg.

Issues related with the servicing sector

31. In view of the large request of funding above the business plan allocation (around twice) and with the large HCFC reduction associated with stage I (25.2 per cent of the baseline with no reduction commitment beyond 10 per cent), the Secretariat and UNIDO agreed on the following alternative proposal focused on assisting the Democratic People's Republic of Korea to address the growing consumption of HCFC-22 at a total cost of US \$400,000:

- (a) In view of the issues faced with the implementation of the recovery and recycling scheme established during the NPP, it was agreed that stage I of the HPMP would undertake recovery and recycling on a pilot scale at a total cost of US \$100,000 focusing on addressing these issues and developing a strategy to promote and support recovery and recycling. In this context, the country will have the opportunity to reassess the implementation of the recovery and recycling activities, identify constraints and adjust the programme accordingly for future stages;
- (b) The level of funding requested for activities on legislation, customs training, technicians training and awareness was adjusted in line with the business plan allocation, without changing their objectives and scope: i.e, legislation (US \$30,000), customs training from US \$80,000 to US \$60,000; technicians training from US \$148,000 to US \$100,000; and the awareness component from US \$122,000 to US \$10,000 as funding for the media campaign was removed; and
- (c) The monitoring component and the verification will be under UNIDO's responsibility at a total cost of US \$100,000.

Feasibility studies

32. The Secretariat noted that the feasibility study to determine the plan for HCFC-22 production facility (US \$100,000) and the feasibility study for the conversion of refrigeration equipment manufacturing to hydrocarbon based technology (US \$65,000) had the characteristics of preparatory

funding as one of their final outputs. On this basis, it was agreed to remove them from stage I of the HPMP for future submission when the guidelines for preparatory funds for stage II are approved.

Agreed commitments and cost of stage I of the HPMP

33. As result of the discussions, the activities included in stage I of the HPMP and funded by the Multilateral Fund will reduce 14.09 ODP tonnes of HCFC consumption, representing 18 per cent of the consumption baseline. By receiving this assistance, the Government of the Democratic People's Republic of Korea commits to reduce 15 per cent of the baseline and to introduce the ban on imports of HCFC-141b pure or contained in pre-blended polyols by 2017. In addition to the funded reductions, stage I will also include one self-funded activity (conversion of foam enterprise Chongjing) with an additional reduction of 5.59 ODP tonnes of HCFC-141b, which corresponds to 7.2 per cent of the consumption baseline.

34. The total cost of stage I of the HPMP for the Democratic People's Republic of Korea is US \$922,380 at a cost effectiveness level of US \$5.72/kg as presented in Table 7.

Table 7. Agreed cost of stage I of the HPMP for the Democratic People's Republic of Korea

Activity	Agency	Substance	Reductions (ODP tonnes)	Cost (US \$)	Cost-effectiveness (US \$/kg)
Conversion Pyongyang Sonbong PU Foam Factory	UNIDO	HCFC-141b	6.43	416,680	7.13
Conversion Puhung Building Materials Factory	UNIDO	HCFC-141b	3.99	105,700	2.92
Development of enforcement measures of laws and regulations to control HCFCs	UNEP	HCFC-22	3.67	30,000	4.50
Training of customs officers	UNEP			60,000	
Improvement of recovery and recycling scheme (R&R)	UNIDO			100,000	
Technician training for good practice of refrigeration service	UNEP			100,000	
Awareness raising and public education	UNEP			10,000	
Monitoring and evaluation	UNIDO			All	
TOTAL FUNDED ACTIVITIES			14.09	922,380	5.72
Self-funded conversion Chongjin PU Factory		HCFC-141b	5.59		
GRAND TOTAL			19.68	922,380	4.34

Impact on the climate

35. The implementation of the conversion of HCFC-141b to cyclopentane and HFC-245fa in the PU foam sector would avoid the emission into the atmosphere of, as a minimum, 82,686 tonnes of CO₂ equivalent per year as shown in Table 9. However, if by 2015 a low GWP technology is introduced in spray foam instead of HFC-245fa, the estimated avoided emission to the atmosphere would be 103,652 CO₂ equivalent per year.

Table 9. Climate impact of the projects in the foam sector in stage I of the HPMP

Conversion of enterprises funded by the Multilateral Fund			
Substance	GWP	Tonnes/year	CO₂-eq (tonnes/year)
Before conversion			
HCFC-141b	725	94.70	68,658
After conversion			
Cyclopentane	20	37.99	760
HFC-245fa (*)	1030	20.76	21,381
Net impact			46,516
Conversion of enterprise not funded by the Multilateral Fund			
Before conversion	GWP	Tonnes/year	CO₂-eq (tonnes/year)
HCFC-141b	725	50.80	36,830
After conversion			
Cyclopentane	20	33.02	660
Net impact			36,170
Grand Total			82,686

(*) If by 2015 a low GWP technology is introduced instead of HFC-245fa, the emissions to the atmosphere from spray foam manufacturing would be reduced to 415 CO₂ equivalent tonnes per year and the overall avoided emissions would be 103,652 CO₂ equivalent tonnes per year.

36. The proposed technical assistance activities in the HPMP, which include the introduction of better servicing practices and 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 the savings of approximately 1.8 CO₂-equivalent tonnes saved. Although a calculation of the impact on the climate was included in the HPMP, it would be difficult to provide reliable data on climate impact since HCFC alternatives that will be used are not clearly identified at this stage. 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 implementation of the HPMP, the reported amounts of refrigerants being recovered and recycled, the number of technicians trained and the HCFC-22-based equipment being retrofitted.

Co-financing

37. 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, UNIDO indicated as sources of co-financing the in-kind contribution proposed by the Government of the Democratic People's Republic of Korea reflected in Table 6 (US \$180,000) and the self-funded conversion of Chongjin Songbong PU Factory (estimated at US \$500,000) for stage I. No additional potential co-financing was identified at this stage due to financial constraints of the Government.

2012-2014 business plan of the Multilateral Fund

38. UNIDO and UNEP are requesting US \$998,947 (including agency support costs) for implementation of stage I of the HPMP. The total value requested for the period 2012-2014 of US \$873,727 including support cost is within that in the business plan.

Draft Agreement

39. A draft Agreement between the Government of Democratic People's Republic of Korea and the Executive Committee for HCFC phase-out is contained in Annex I of the present document.

RECOMMENDATION

40. In light of the information provided above and the Secretariat's comments, in particular those related to methods of disbursement, organizational structures, monitoring procedures and compliance with UN resolutions, the Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the HCFC phase-out management plan (HPMP) for the Democratic People's Republic of Korea for the period 2012 to 2017 to reduce HCFC consumption by 15 per cent of the baseline, at the amount of US \$922,380, consisting of US \$722,380, plus agency support costs of US \$50,567 for UNIDO, and US \$200,000, plus agency support costs of US \$26,000 for UNEP;
- (b) Noting that the Government of the Democratic People's Republic of Korea had agreed to establish as its starting point for sustained aggregate reduction in HCFC consumption the baseline of 78.0 ODP tonnes, calculated using actual consumption of 61.8 ODP tonnes and 94.1 ODP tonnes reported for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol;
- (c) Noting the commitment of the Government of the Democratic People's Republic of Korea to ban imports of HCFC-141b, both pure and contained in pre-blended polyols, no later than 1 January 2017;
- (d) Deducting 19.68 ODP tonnes of HCFCs from the starting point for sustained aggregate reduction in HCFC consumption;
- (e) Noting that approval of stage I of the HPMP did not preclude the Democratic People's Republic of Korea from submitting, prior to 2015, a proposal to achieve a reduction in HCFCs beyond that addressed in stage I of the HPMP;
- (f) Approving the draft Agreement between the Government of the Democratic People's Republic of Korea and the Executive Committee for the reduction in consumption of HCFCs, as contained in Annex I to the present document; and
- (g) Approving the first tranche of stage I of the HPMP for the Democratic People's Republic of Korea, and the corresponding implementation plan, at the amount of US \$688,827, consisting of US \$542,380, plus agency support costs of US \$37,967 for UNIDO, and US \$96,000, plus agency support costs of US \$12,480 for UNEP.

Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA (DPRK) 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 the Democratic People's Republic of Korea (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 66.26 ODP tonnes by 1 January 2017 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 and 4.2.3 (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; and

- (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.

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; and
- (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) 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. UNIDO has agreed to be the lead implementing agency (the “Lead IA”) and UNEP has agreed to be the cooperating implementing agency (the “Cooperating IA”) 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 IA to ensure appropriate timing and sequence of activities in the implementation. The Cooperating IA 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 IA 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 co-ordination meetings. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IA with the fees set out in rows 2.2 and 2.4 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 IA to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the Cooperating IA 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 reduction in consumption (ODP tonnes)
HCFC-22	C	I	62.0
HCFC-141b	C	I	16.0
TOTAL			78.0

APPENDIX 2-A: THE TARGETS, AND FUNDING

		2012	2013	2014	2015	2016	2017	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	n/a	78.0	78.0	70.16	70.16	70.16	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	n/a	78.0	78.0	70.16	70.16	66.26	n/a
2.1	Lead IA [UNIDO] agreed funding (US \$)	542,380	-	120,000	-	40,000	20,000	722,380
2.2	Support cost for Lead IA (US \$)	37,967	-	8,400	-	2,800	1,400	50,567
2.3	Cooperating IA [UNEP] agreed funding (US \$)	96,000	-	50,000	-	34,000	20,000	200,000
2.4	Support cost for Cooperating IA (US \$)	12,480	-	6,500	-	4,420	2,600	26,000
3.1	Total agreed funding (US \$)	638,380	-	170,000	-	74,000	40,000	922,380
3.2	Total support cost (US \$)	50,447	-	14,900	-	7,220	4,000	76,567
3.2	Total agreed costs (US \$)	688,827	-	184,900	-	81,220	44,000	998,947
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this agreement (ODP tonnes)							3.67
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)							n/a
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)							58.33
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this agreement (ODP tonnes)							16.0
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)							n/a
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)							-

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 HPMP implementation will be performed with the assistance from the Lead IA and the Cooperating IA. The Project Management Unit (PMU) will be responsible for the coordination and the implementation of the HPMP activities. The PMU role will include: the preparation of the annual implementation program; the implementation of the HPMP activities; the monitoring and coordination of the activities related to the refrigeration equipment production factory, refrigerant factory and foam factories; the implementation of the annual audit; the preparation of the annual progress report; and the support to be provided to Lead IA and the Cooperating IA for the verification of the HCFC consumption.
2. The HPMP will be implemented in line with UN Security Council Resolutions 1695, 1718 and 1874. The recommendations by the UN review panel on procedural changes will be taken into account for the transfer of equipment and technology to the country. The established procedures of the UN agencies in the country, in particular the modified UNDP procurement procedures for the supply of equipment and services, will be used to implement the HPMP activities under the responsibility of the Lead IA. The HPMP activities under the responsibility of the Cooperating IA, also in charge of the institutional strengthening (IS) project will be implemented using the methods of disbursement, organizational structures and procedural arrangements applied to the IS project.

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 IA;
 - (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 IA, 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 IA, 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 AGENCY

1. The Cooperating IA 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 IA, 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 \$131 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.