UNITED NATIONS

EP

United Nations Environment Programme

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/65/39/Rev.1*
12 November 2011

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Sixty-fifth Meeting
Bali, Indonesia, 13-17 November 2011

PROJECT PROPOSAL: JORDAN

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 and the World Bank

*This revision has been issued to reflect a number of changes made to the original document UNEP/OzL.Pro/ExCom/65/39 caused by the receipt of the country programme data for 2010, submitted by Jordan to the Secretariat on 25 October, which impacted the approval of the HPMP as per decision 52/5. The country programme data informed about the use of HCFC-141b contained in imported pre-blended polyols, which led to subsequent changes in the Article 7 data accepted by the Ozone Secretariat, and to the starting point. The related changes are reflected in this revision.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Jordan

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

(II) LATEST ARTICLE 7 DATA	Year: 2010	95.0 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2010
Chemical	Aero-sol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
				Manufacturing	Servicing				
HCFC141b		22.77		12.02					34.79
HCFC-141b in imported pre-blended polyol		16.85							16.85
HCFC-22			0.11	33.00	27.14				60.25

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline (estimate):	83	Starting point for sustained aggregate reductions:	94.3
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	8.1	Remaining:	70.16

(V) BUSINESS PLAN		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
UNIDO	ODS phase-out (ODP tonnes)	0.5	0.5	6.5	0.5							8.0
	Funding (US $)	43,000	43,000	550,204	43,000	0	0	0	0	0	0	679,204
IBRD	ODS phase-out (ODP tonnes)	16.6	0.0	4.2	4.2							25.0
	Funding (US $)	3,637,015	0	941,192	941,192	0	0	0	0	0	0	5,519,400

(VI) PROJECT DATA		2011	2012	2013	2014	2015	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	n/a	n/a	83.0	83.0	74.7	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	n/a	n/a	83.0	83.0	74.7	n/a
2.1	Lead IA UNIDO agreed funding (US $)	390,450	0	109,384	0	0	499,834
2.2	Support costs for Lead IA (US $)	29,284	0	8,204	0	0	37,488
2.3	Cooperating IA World Bank agreed funding (US $)	1,034,000	0	429,401	0	904,500	2,367,901
2.4	Support costs for Cooperating IA (US $)	77,550	0	32,205	0	67,838	177,593
3.1	Total agreed funding (US $)	1,424,450	0	538,785	0	904,500	2,867,735
3.2	Total support cost (US $)	106,834	0	40,409	0	67,838	215,080
3.3	Total agreed costs (US$)	1,531,284	0	579,194	0	972,338	3,082,815

(VII) Request for funding for the first tranche (2011)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNIDO	390,450	29,284
World Bank	1,034,000	77,550

Funding request:	Approval of funding for the first tranche (2011) as indicated above
Secretariat's recommendation:	For individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of Jordan UNIDO, as the lead implementing agency, has submitted to the 65th meeting of the Executive Committee a HCFC phase-out management plan (HPMP) at a total cost, as originally submitted, of US $3,084,250 consisting of US $499,833 plus support costs of US $37,487 for UNIDO and US $2,369,237 plus support costs of US $177,693 for the World Bank, for the implementation of stage I of the HPMP. The HPMP covers strategies and activities to achieve a 10 per cent reduction in HCFC consumption by 2015.

2. The first tranche for stage I being requested at this meeting amounts to US $50,000 plus agency support costs of US $3,750 for UNIDO and US $1,148,936 plus agency support costs of US $86,170 for the World Bank, as originally submitted.

Background

3. On behalf of the Government of Jordan UNIDO, as the lead implementing agency, had submitted to the 64th meeting of the Executive Committee stage I of the HPMP at a total cost, as originally proposed, of US $9,654,116 plus agency support costs for UNIDO and the World Bank, for achieving a 97.1 per cent reduction in HCFC consumption by 2019. The Secretariat and UNIDO had discussed the submission and agreed on a reduced number of activities for stage I, with the revised objective to reach the 2015 compliance target. These activities were centred on the air conditioning sector, were intended to phase out 15.40 ODP tonnes (281.0 metric tonnes) (mt) of HCFC-22 for replacement with HFC-410A, and had agreed costs of US $2,297,785 plus agency support cost.

4. During the meeting of the Executive Committee, some concerns were raised about the fact that stage I of the HPMP focused on converting the refrigeration and air conditioning manufacturing sector from HCFC-22 to HFC-410A. Furthermore, contrary to policy, HCFC-141b was not being addressed as a priority, and the foam sector was hardly featured in stage I. After discussions it was agreed under decision 64/43 that UNIDO and the World Bank resubmit stage I of the HPMP for Jordan to the 65th meeting of the Executive Committee. This document refers to the second version of the HPMP submitted to the 65th meeting.

ODS regulations

5. The Ministry of Environment is the national body responsible for the implementation of the Montreal Protocol, and organizes a committee developing the regulations, licensing systems and quota systems, control of import and re-export of HCFCs and equipment containing HCFCs. The National Ozone Unit (NOU) within the Ministry of Environment is in the process to prepare a quota system for HCFC imports, to be finalized in 2012 for implementation starting on 1 January 2013. The Government is also planning to ban air conditioning equipment containing HCFCs from 1 January 2013, both for local manufacturing as well as for imports in order to achieve the compliance targets of the Montreal Protocol.

HCFC consumption

6. All HCFCs used in Jordan are imported as the country does not produce these substances. The survey showed that imports of HCFC-22, HCFC-141b and HCFC-142b take place in bulk, and HCFC-141b is also imported in pre-blended polyol systems. Under Article 7, only the imports in bulk have been recognised as consumption by the Ozone Secretariat. For 2009, Article 7 data shows that 68 per cent of the consumption in ODP tonnes is HCFC-22. Table 1 gives the consumption of HCFCs between 2006 and 2010.

Table 1: HCFC consumption between 2007 and 2010 according to Article 7 data and data on import of pre-blended polyol

	2007		2008		2009		2010		Average 2009/2010	
	mt	ODP t	mt	ODP t	mt	ODP t	mt	ODP t	mt	ODP t
HCFC-22 (bulk)	657.0	36.14	685.0	37.68	875.0	48.13	1,095.5	60.25	985.3	54.19
HCFC-141b (bulk)	175.0	19.25	190.0	20.90	207.0	22.77	316.3	34.79	261.7	28.78
HCFC-142b (bulk)	5.0	0.33	7.0	0.46	0.0	0.00	0.0	0.00	0.0	0.00
Total bulk	837.0	55.72	882.0	59.04	1,082.0	70.90	1,411.8	95.04	1,246.9	82.97
Change (as compared to previous year)	n/a	n/a	5.4%	6.0%	22.7%	20.1%	30.5%	34.1%	n/a	n/a
HCFC-141b imported in pre-blended polyol	48	5.3	58.6	6.5	120	13.2	153.20	16.85	136.6	15.03

Sectoral distribution of HCFC

7. HCFC-22 and blends containing HCFC-142b have been used in the air conditioning and refrigeration sectors, and HCFC-141b in the same sectors as a solvent. HCFC-141b has also been used as a foam blowing agent, both as a bulk chemical for mixing in situ as well as a component of imported pre-blended polyol. The highest sectoral consumption is in the refrigeration servicing sector with 432 mt of HCFC-22 plus 9 mt of HCFC-142b in refrigerant mixtures used as a drop-in for CFC-12. Another 30 per cent of the consumption in metric tonnes (22 per cent in ODP tonnes) is related to the use of HCFC-22 in the manufacturing of air conditioning equipment. Only about 13 per cent of the HCFC in metric tonnes is used in the rigid foam sector; however, due to the high ODP of HCFC-141b, this represents 31 per cent of the consumption in ODP tonnes. Table 2 provides an overview of the use of HCFCs in the different relevant sectors, as determined through the survey.

Table 2: HCFC consumption in different sectors in 2009

Sector	**HCFC-22**	**HCFC-141b**	**HCFC-142b**	**Total**	**HCFC-22**	**HCFC-141b**	**HCFC-142b**	**Total**	**Share**
	(mt)				(ODP tonnes)				
Air conditioning	326.5	16.0	0.0	342.5	17.96	1.76	0.00	**19.72**	23.3%
Domestic refrigeration	0.0	4.5	0.0	4.5	0.00	0.50	0.00	**0.50**	0.6%
Commercial refrigeration	114.6	70.0	0.0	184.6	6.30	7.70	0.00	**14.00**	16.5%
Fire fighting	2.0	0.0	0.0	2.0	0.11	0.00	0.00	**0.11**	0.1%
Refrigeration service	432.0	0.0	9.0*	441.0	23.76	0.00	0.59	**24.35**	28.7%
Foam	0.0	236.5	0.0	236.5	0.00	26.02	0.00	**26.02**	30.7%
Total	**875.1**	**327.0**	**9.0**	**1211.1**	**48.13**	**35.98**	**0.59**	**84.70**	100.0%
Share	72.3%	27.0%	0.7%	100.0%	56.8%	42.5%	0.7%	100.0%	

*Result of survey shows use of HCFC-containing refrigerant blend not included in Article 7 data reporting

Preliminary baseline for HCFC consumption

8. The preliminary baseline for the HCFC consumption was calculated as 83.0 ODP tonnes by the Ozone Secretariat, using the average of the 2009 consumption of 70.9 ODP tonnes (1,082.0 mt) and the 2010 consumption of the 95.0 ODP tonnes (1,411.8 mt).

Forecast of future HCFC consumption

9. Jordan estimated future demand for HCFCs in a business-as-usual scenario based on the need for servicing of existing refrigeration equipment, charging of new installations and continued foam production. This demand is estimated to grow at a level of 5 per cent per year for the service sector consumption of HCFC-22 and 15 per cent in the other sectors. The business-as-usual case already takes into account the effect of the conversion at Petra Engineering Industries Co. through a project approved at the 60th meeting of the Executive Committee, to be completed in 2012 and reducing the 2013 consumption. The unconstrained HCFC consumption is projected compared with the Montreal Protocol limits in Table 3 below.

Table 3: Forecasted consumption of HCFC

	2009*	**2010***	**2011**	**2012**	**2013**	**2014**	**2015**
Montreal Protocol limits (ODP tonnes)	None				82.85	82.85	74.57
Consumption forecast for unconstrained growth (ODP tonnes) (without pre-blended polyol)	70.9	95.04	106.8	120.9	116.1	130.5	147

* Data reported under Article 7

HCFC phase-out strategy

10. Jordan proposes a phase out in four stages, each with a duration of five years. The first phase, relating to the air conditioning sector, will phase out completely HCFC-22 consumption in the manufacturing of equipment for that sector. The air conditioning sector plan also includes a service demonstration activity. Stage I also covers phase I of a foam sector plan with conversion of one spray foam manufacturer and enabling activities to allow the only system house to develop the alternatives needed for future phases of the foam sector plan. In stage II until 2020, work in the commercial refrigeration and servicing sectors is scheduled to commence, and that in the foam sector will continue by addressing the larger foam enterprises. In stage III, the activities in the foam and commercial refrigeration sectors will be completed by 2025. In stage IV, the fire-fighting sector will be addressed, and activities under the service sector completed by 2030.

Air conditioning sector

11. The air conditioning sector plan is targeting the sector with the highest level of growth in the country. It consists of investment activities centered on the residential air conditioning enterprises in Jordan and complements the demonstration project for Petra Engineering Industries Co. mentioned in paragraph 9. The activities under this sector plan include conversions of six enterprises, the already approved UNIDO Petra Engineering Industries Co. project, three enterprises with support from the World Bank, and two enterprises that will convert on their own in compliance with future government regulatory activities to ban HCFC-based manufacturing. Assistance will be provided to the servicing sector related to the manufacture of air conditioning, and HCFC-141b use will be phased out in those companies where a conversion from HCFC-22 would take place. Further, it is foreseen to carry out technical assistance activities to increase the technical capacities of local authorities in monitoring and enforcing HCFC-related policies, to support the companies in equipment specifications and to provide the necessary technical support for the conversions. At the same time, capacity building of customs officers will also be carried out. Finally, the import quota system to curb the supply of HCFCs will be established and operational before the first control measure is applied. A ban on the use of HCFC-22 in air conditioning manufacturing and import of HCFC-22 based air conditioning equipment will be put in place by 1 January 2015, ensuring the sustained phase-out of all manufacturing of HCFC air conditioning equipment in Jordan. The HPMP described these activities as belonging to one integrated set.

12. Beyond those activities, already proposed in the submission to the 64th meeting of the Executive Committee, a non-investment demonstration activity was amended to cover the conversion activities foreseen in the air conditioning sector. This activity targets partly the servicing sector network of the AC manufacturers as well as a pilot group of separate AC service shops. It is to provide training to service technicians to employ good practice in servicing HCFC-22 air-conditioning units to avoid excess leakage over time, to retrofit AC units to alternative refrigerants and, to be prepared for handling alternative refrigerants ranging from HFCs to natural refrigerants, in anticipation of changing technologies worldwide. The activity, which has been submitted for a cost of US $162,300, includes the training of trainers; development of guidance material for making systems leak proof and retrofitting systems; development of curricula for good practice in servicing R-22-based equipment (AC) and retrofitting; 75 toolsets/composite charging station for pilot retrofit of AC units, 7 portable toolsets R&R for R-22 servicing/repairing leaks, half day trainings for 100 technicians on good practice in handling HCFCs and tightening systems, and a one-day training for 100 service shops on retrofitting AC units to alternative gases.

Commercial refrigeration sector

13. In the commercial refrigeration sector, there are two medium-sized companies that are using HCFC-141b foam blowing technology and are to be converted to cyclopentane. The majority of the other 55 enterprises are small and use only 1 mt or less per year, for which the conversion to either water/CO_2 blown foam or methal formate technology is foreseen. For the companies with a consumption above 2 mt, assistance will be provided to make the modification needed to adopt an alternative technology. The use of the refrigerant HCFC-22 will be replaced by either HFC-404A or HFC-410A depending on the enterprises' product portfolio. Assistance will also be provided to the two medium-sized enterprises, and some support of a smaller nature will be given to the remaining enterprises.

Foam sector

14. There is one systems house in Jordan, Fathi Abu Arja and Partner Ind. Co. (FAA). The company has been in the polyurethane (PU) foam business for more than 25 years and imports HCFC-141b, iso-cyanate and polyol separately, but also pre-blended polyols containing HCFC-141b. FAA supplies pre-blended polyol manufactured locally or imported to almost all enterprises in the foam sector as well as for insulation foam manufacturing in the refrigeration sector, and also gives technical support. Most of the enterprises manufacturing foam in Jordan rely on FAA not only for supply of either pre-blended polyol or the separate components, but also for technical support such as machine maintenance, formulation adjustment and so on. In addition to operating as a systems house, FAA is also the sole provider of PU spray foaming services for the insulation of buildings. UNIDO advised that the company would phase out its full consumption (bulk) of HCFC-141b of 42 mt, of which 35.7 mt (85 per cent) are related to the manufacture of pre-blended polyols and 6.3 mt (15 per cent) to the manufacture of spray foam.

15. In Jordan there are ten enterprises that used more than 10 mt of HCFC141b in 2010 including FAA followed by 19 enterprises that use HCFC-141b over 2 mt in 2010 and another 82 small workshops. Most of the enterprises with an annual consumption of over 2 mt have high-pressure or low-pressure foaming machines, whereas small workshops operate with hand mixing. Jordan plans to implement HCFC phase-out activities for the PU foam sector during stages I to III, with FAA, the highest HCFC-141b consumer in the sector and the country's PU system house, undergoing conversion in stage I, the nine enterprises in the country with HCFC-141b consumption higher than 10 mt in 2010 in stage II, and the remainder in stage III.

16. The activity related to FAA in stage I is meant to pave the way for the foam sector conversion in stages II and III. Although the FAA activity is phasing out the use of 42 mt of HCFC-141b, it is at the same time a pilot project for the relevant industry as a demonstration activity that will test local applicability of several alternative technologies for each application. The activity includes funding for the

upgrade of systems house facilities to accommodate alternatives in their blending and testing facility, such as polyol formulation for super-critical CO_2 spray technology, all-water technology, and emerging alternatives such as methyl formate and low-global warming potential (GWP) HFCs . By this arrangement, the system house will be ready to supply polyol formulation with any of the alternative foam blowing agent to be used by enterprises during stages II and III.

17. The incremental capital cost for the systems house update is for the retrofit of the existing mixer/blender, the provision of essential laboratory equipment and technical assistance components. In addition, FAA will receive assistance for the conversion of its application of spray foam to supercritical CO_2 assisted water technology. It includes, *inter alia*, the modification of one existing spray foam dispenser for adoption of the CO_2 technology for one foaming unit and, for using higher-viscosity formulation, the modification of a second foaming unit for the use of all-water technology.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

18. The Secretariat reviewed the HPMP for Jordan 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 made at the 62nd and 63rd meetings and the 2011-2014 business plan of the Multilateral Fund.

19. At the 64th meeting, when stage I of the HPMP for Jordan had not been approved; UNIDO and the World Bank had entered into discussion with a number of delegates to understand how to amend the project proposal to allow an agreement for funding to be reached within the Executive Committee.

Priority of the air conditioning sector

20. The sector plan for the air conditioning sector, forming the predominant part of the stage I HPMP submission, had been prepared and will be implemented by the World Bank as the cooperating agency. The Secretariat noted that Jordan has a HCFC consumption baseline of 83.0 ODP tonnes, and that the 2015 reduction step would require the country to reduce its consumption by 8.3 ODP tonnes by the end of 2014; further, the phase-out already funded through a "Demonstration project for the phase-out of HCFC-22 and HCFC-141b from the manufacture of unitary air-conditioning equipment at Petra Engineering Industries Co." (decision 60/41) is 8.1 ODP tonnes, and the remaining reduction to be achieved by the end of 2014 is 0.2 ODP tonnes (3.6 mt of HCFC-22) plus possibly the growth that the country might experience between 2010 and 2012. The proposed plan for the air conditioning sector is replacing an additional 15.5 ODP tonnes of HCFC-22 and 0.7 ODP tonnes of HCFC-141b leading, in total, to a reduction of 16.1 ODP tonnes. With the already approved project, that amounts to a phase-out of 29.2 per cent of the baseline.

21. The Secretariat and the implementing agencies had discussed at length in the preparation for the 64th meeting whether it would be possible to undertake activities in the foam sector instead of prioritising the air conditioning sector. A description of these discussions can be found in paragraphs 18 to 20 of document UNEP/OzL.Pro/ExCom/64/36/Add.1. The submission to the 65th meeting included more detailed information regarding the foam sector, and the proposal to phase out 42 mt (4.62 ODP t) of HCFC-141b imports. A combination of this project with the phase-out of a minor quantity of HCFC-141b at Abu Haltam Group and the already approved demonstration project at Petra Engineering Industries Co. would aggregate to a phase-out of 13.1 ODP tonnes, or 15.8 per cent of the baseline. The HPMP argues that this is insufficient in light of the significant increase in consumption that Jordan experiences, and that it addresses the wrong problem, since it focuses on a sector with moderately high growth and does not at all work on the sector with very high growth.

22. In the submission to the 64th meeting, the implementing agencies had already pointed out that the air conditioning sector plan was developed in close consultation with the industry and involved more than a year of consultations and securing agreement to phase-out use of HCFC in the sector by 2015, despite the fact that HCFCs continue to be the technology of choice for air conditioning in developing countries. The high growth in the sector, and the fact that some non- eligible enterprises have made fairly recent investments into HCFC technology was also pointed out. The agencies also pointed to the difficulties of regulating the foam sector and thus achieving sustainability in the reduction in consumption, which would be achieved in the air conditioning sector. Finally, the agencies pointed to the significant growth in the use of HCFC-22 in air conditioning manufacturing sector, which might be addressed through an approach that would force also the non-eligible manufacturers to convert. The agencies pointed in particular to one enterprise, the ineligible third largest user of HCFC-22 in the country, which has already announced plans for significant growth in HCFC-22 air conditioner production. The agencies point out that without a sector plan the country does not have the legal means to impose restrictions on the sector's use of HCFC-22.

23. In their submission to the 65th meeting, UNIDO and the World Bank elaborated further on the importance to prioritize the air conditioning sector. Since members of the Executive Committee explicitly expressed interest in this information, the Secretariat provides it below in some detail:

(a) Being a middle-income country with 7 per cent average economic growth, Jordan's consumer market has been developing rapidly, coupled with increased urbanization and improvement of living standards. The demand for residential AC in Jordan and in neighbouring countries is consequently soaring. This is the reason why two new plants established operations in 2008 and 2009 respectively, one of them with a capacity of 300,000 air conditioners per year. This enlarges the sector to six HCFC-based manufacturers (three large and three smaller in size). Imports are also increasing, with the majority of imports being low-cost, R-22 models from China;

(b) The growth of HCFC consumption averaged at 15 per cent, and modelling of growth across sectors shows that it will not be possible for Jordan to meet the 2013 freeze, and in particular comply with 2015 reductions if conversions in the air conditioning sector are not actively pursued;

(c) The approval of the conversion project at Petra Engineering Industries Co., Jordan's largest manufacturer of cooling/air-conditioning equipment, to convert from HCFC-22 to HFC-410A set the stage for the development of the sector. The Government of Jordan had made than a commitment to Petra Engineering Industries Co. to work on converting the sector and banning R-22 equipment to facilitate its conversion; the Secretariat notes here that such a commitment had not been communicated when the project at Petra Engineering Industries Co. had been submitted. Since approval this enterprise has already nearly doubled its HCFC-22 consumption, a tendency characteristic for the sector. The current growth in HCFC-22 based AC manufacturing is 28 per cent per year. The use of R-22 for AC manufacturing is according to the implementing agencies posed to rise extremely rapidly with the new, ineligible manufacturer National Integrated Industrial Complex (NIIC) starting to fully utilize its manufacturing capacity, which was utilized only to 28 per cent in 2010. Any small benefit achieved by the proposed piecemeal approach in the foam sector would be quickly offset by the further expansion of the AC sector in Jordan, primarily because of NIIC. The servicing sector is growing more slowly, but UNIDO and the World Bank estimate that it will start to take off within two-three years with the number of low quality AC units entering the market;

(d) HCFC-141b consumption is also growing, however, in the last years high growth is related predominantly to the import of HCFC-141b contained in imported pre-blended polyol. The implementing agencies had considered individual foam conversions, but

considered this to be a challenging approach with little promise of success. The sector consists of one importer/system house/manufacturer consuming HCFC-141b, four enterprises consuming 20-40 mt HCFC-141b each, and 100 small to very small workshops, all using pre-blended polyol. According to the systems house it will take a year to two years to introduce alternatives. The agencies estimate that it would take at least one year to obtain buy-in from the foam enterprises and to prepare a project proposal. As an alternative, the agencies developed an alternative where one foam enterprise (the systems house) will be targeted in stage I as a first step towards addressing the sector;

(e) UNIDO and the World Bank informed that they had modelled several scenarios of growth, showing that the greatest reductions for meeting the freeze and 2015 reductions will come from the AC sector;

(f) The strategy of the air-conditioning plan is to eliminate HCFC-22 use in the manufacturing of residential AC in Jordan in eligible enterprises in 2014 and for the entire sector, including imports, by law in 2015. It is only by addressing this sector that the Government can regulate the two non-eligible enterprises which are the most problematic – they market the most energy inefficient appliances and are growing very fast. The approach of addressing the whole sector allows the inclusion of two non-eligible enterprises and their related consumption in the sector plan, without providing funding for their conversion;

(g) The sector plan will enable a ban on all imported HCFC-based domestic AC to be put into place by 2015 and will therefore significantly curb the growth in servicing demand that the units require. The strategy depends on the energy efficiency framework to be put into place in Jordan (see also paragraph 46) as an incentive mechanism for enterprises interested in improving competitiveness and quality of their products; and

(h) The agencies reported further that the conversion of AC enterprises would fit into an overall rapidly developing Jordan Energy Efficiency programme for appliances. More details are provided under “co-financing” in paragraph 43 of this document.

Air conditioning sector plan

24. The Secretariat noted the substantive increase in HCFCs used for the manufacturing of air conditioning units, from 172 mt (2006) to 461 mt (2010), while the capacities seem to have increased only to a limited degree. UNIDO and the World Bank replied that capacities provided for the three eligible enterprises are based on one eight-hour shift of labour per workday. The manufacturers would have the choice to include an additional shift or expand their production lines. The already high and growing demand for air conditioning in Jordan is seen not only by a substantive increase in the manufacturing sector but in light of the fact that these manufacturers are not at full production capacity and export some of their products in the region. Jordan also continues to import a large number of air conditioning units from the major international brands which makes up the balance of the demand in the market. Even the national market can therefore absorb significant national production increases; in addition, the export markets in the region experienced significant growth in the previous years.

25. The Secretariat noted as one of the main characteristics of the sector plan that Jordan will include a ban on the use of HCFC-22 in manufacturing of air conditioners starting no later than 1 January 2015, and informed UNIDO that this would form part of any recommended decision regarding funding of the air conditioning sector plan. The agencies agreed, provided the air conditioning sector plan remains intact in its scope and proposed an implementation timeframe, that funding for the eligible enterprises is sufficient. The Government of Jordan has reiterated its related commitment based on this understanding.

26. The Secretariat had raised the question whether the intended elimination of import quotas for HCFC-22 for the air conditioning producers would suffice to support the production ban, since it would be conceivable that manufacturers might purchase already imported HCFC-22 for the purpose of manufacturing units through traders in Jordan. UNIDO informed that manufacturers would only be able to purchase HCFC-22 on the market for servicing purposes to the extent that these enterprises have servicing workshops. Enforcement of any manufacturing ban might be carried out not only through import restrictions, but also through the issuance of business permits conditional on compliance with environmental, health and safety rules, monitoring the market for consumer products, and site visits that will be an important part of the functions of a project management unit. This is facilitated by the fact that there are only six manufacturers and that the three biggest are all in the same area.

Choice of alternative technology for the air conditioning sector plan

27. Jordan had selected HFC-410A as a replacement for HCFC-22 in air conditioners. The submission pointed out that HFC-410A is an internationally well-accepted HCFC-22 alternative in the air conditioning sector, and that basically all air conditioning units sold in the United States of America, throughout the European Union and Japan have been HFC-410A based since 1 January 2010. For the air conditioning and refrigeration sectors, unfortunately only HFC based technologies are readily available and used globally. New low-carbon technologies such as CO_2, hydrocarbons (HC) and low and very low GWP HFCs are emerging, but the timeframe for their global penetration seems more likely to be in the order of ten years or more, according to the prediction in the submission. Moreover, in the case of HC technology for air conditioning, its safety and efficiency is yet to be proven in the market. A critical element in the phase-out of HCFC-22 is the availability of compressors for substitute technologies. HFC-410A compressors are currently produced and supplied by all major compressor manufacturers globally, and systems and associated parts are now also available in Article 5 countries. The agencies considered the applicability of HC technology in the country, particularly at the smaller enterprises. They advise that the baseline practices at the manufacturing, installation and servicing stages must be significantly upgraded to ensure the safe use of this technology. Another constraint is the availability of HC compressors. Based on investigations conducted by the manufacturers, they may be available, but not as readily made off-the-shelf products. Moreover, manufacturers do not see a market for HC-based air conditioning equipment in Jordan nor in the region as they would be competing with international suppliers of HFC-410A air conditioners which employ proven technology and are commercially accepted.

Foam and related sectors

28. The submission included the phase-out of 42 mt of bulk HCFC-141b at FAA, a company mentioned in paragraph 14, as the sole activity in the foam sector to be undertaken under stage I of the HPMP, and the phase-out of 3.7 mt of HCFC-141b in pre-blended polyol used for the insulation of refrigerators at Abu Haltam Group; while the second activity was already foreseen in the submission to the 64th meeting, the phase-out at FAA has been newly added to the submission to the 65th meeting.

29. The Secretariat discussed with the UNIDO the proposed activities. The conversion of the systems house will enable the most important know-how provider in the country, which is at the same time the provider of material and equipment, to offer to their customers during future stages alternative technologies and the associated know-how, which will be developed during stage I of the HPMP. The activity includes the conversion of the companies' own foaming business and will lead to the phase-out of 42 mt of HCFC-141b. The activity includes the conversion of the spray foaming equipment used by the company to CO_2/water and water based technology (US $153,450), the development of formulations for pre-blended polyol with flammable low-GWP blowing agents such as methyl formate, hydrocarbons and newly developed, low-GWP HFC ("HFO"), the necessary changes in production equipment to produce those formulations (US $154,000), and provide technology exchange and transfer to enterprises engaged in foam blowing operations (US $33,000). The incremental operating costs are reimbursed at a level of US $67,200. The total of the related costs of US $407,650 are with a cost effectiveness of US $9.71/kg within the cost effectiveness threshold for foam conversion projects, taking into account the possible

25 per cent increase of that threshold when introducing low-GWP alternatives (paragraph (f) (iv) of decision 60/44).

30. The phase-out of the use of 3.7 mt HCFC-141b in pre-blended polyol at Abu Haltam Group foresees to replace the consumption by pre-blended polyol with HFC-245fa as foam blowing agent. The enterprise is the only one in the domestic refrigeration sector in Jordan using HFC-141b, and the same enterprise, with its air conditioning manufacturing operations, is also participating in the air conditioning sector plan. Including this enterprise in the sector plan ensures that it will phase out all uses of HCFCs in one conversion. This will also simplify implementation of the planned ban on manufacturing with HCFCs in the air conditioning sector. The Abu Haltam Group had previously received support from the Multilateral Fund for the conversion from CFC-11 to HCFC-141b, and the activity constitutes therefore a case of second conversion. The pre-blended polyol containing HCFC-141b is imported from the Syrian Arab Republic. The Secretariat advised the World Bank of decision 60/44(b)(i) of the Executive Committee, specifying that full funding of eligible incremental costs of second-stage conversion projects will be considered in those cases where such projects are necessary to comply with early Montreal Protocol HCFC compliance targets and/or are the most cost effective activities that Jordan can undertake to comply with these targets. The Secretariat noted that the calculated costs for this activity had been US $78,340, but had been capped by the cost-effectiveness threshold at US $26,751. The Secretariat pointed to the fact that activities at the cost-effectiveness threshold are by definition not particularly cost effective, and the conversion is not necessary for compliance. However, given the limited funding need and in view of the other characteristics of the case, the agencies and the Secretariat agreed to retain this enterprise in the plan.

Activities related to service enterprises

31. The proposal foresees a number of activities related to refrigeration service providers linked to the different manufacturers. Activities include a workshop for service technicians as well as a number of servicing kits for the service stations operated by the different manufacturers. The proposal also advises on the relatively small use of HCFC-22 by these service providers. The Secretariat accepted as such the concept to support the service enterprises at this time, but requested the costs and impact of the activities to be separated from those of the conversion, so treating them as belonging to the service sector, funding them completely and applying the cost effectiveness of US $4.50 per kg. The World Bank pointed out that the activities are not related to the service of existing equipment, but to enable the sustainable introduction of new technology into the market, in particular the installation of the equipment; thus, the related costs should be accounted for as part of the conversion costs.

Pre-blended polyol

32. Jordan is importing pre-blended polyol containing HCFC-141b as a foam blowing agent. There is one systems house producing pre-blended polyols in the country. UNIDO provided a list of enterprises manufacturing foam with 155 entries in the foam, domestic refrigeration, air conditioning and commercial refrigeration sectors; of these entries, 122 enterprises with very little consumption are subsumed in two groups with a consumption of 33.97 mt (82 enterprises) and 35.82 mt (40 enterprises) (based on the average 2007-2009 consumption). The list includes, for the entries in most sectors, the consumption since 2006 and estimated figures for 2010, so allowing a good understanding whether capacity had been established before the cut-off date. As far as it is currently known, all of these enterprises are consuming pre-blended polyols, which are partially imported and partially produced domestically by the system house. Since the exact distribution of the imported pre-blended polyol and polyol blended in Jordan to the different companies is difficult to assess, UNIDO and the Secretariat have agreed to use an approximation. According to information provided in the 2010 country programme, the 2010 use of HCFC-141b in imported pre-blended polyols in the country had been 153.2 mt (16.9 ODP tonnes); distributing the use of imported pre-blended polyols between the companies and based on their use in the previous years, the average 2007-2009 consumption of HCFC-141b in pre-blended polyols in these enterprises is 102.9 mt (11.31 ODP tonnes).

Budget

33. UNIDO, the World Bank and the Secretariat agreed on the costs for the overall HPMP stage I. The funding is largely related to the complete phase-out of the air conditioning sector, relating to both eligible and ineligible consumption; in addition, the demonstration project for service in the air conditioning sector and the phase-out at one foam enterprise and systems house is to be funded. At the 60th meeting, the Executive Committee had already approved the phase-out of HCFC-22 and HCFC-141b from the manufacture of unitary air conditioning equipment at Petra Engineering Industries Co., referenced in paragraph 20, at the amount of US $2,167,033 plus agency support costs for UNIDO of US $162,527; this amount does not include funding for the conversion of heat exchanger manufacturing. This project at Petra Engineering Industries Co. replaces HCFC-22 by HFC-410A and HCFC-141b by cyclopentane. The details are provided in the Table 4.

Table 4: Agreed costs for stage I of the HPMP

Item	**Costs (US $)**			**HCFC**	**Phase-out**	
	ICC	IOC	Total		mt	ODP t
Conversions in the air conditioning sector						
Middle East Complex for Engineering, Electronics and heavy Industries PLC. (MEC)	636,350	724,500	1,360,850	HCFC-22	115	6.33
National Refrigeration Company (NRC)	230,890	37,800	268,690	HCFC-22	6	0.33
Abu Haltam Group	233,310	126,000	359,310	HCFC-22	20	1.1
Non-eligible enterprises	0	0	0	HCFC-22	140	7.7
Other activities in the air conditioning sector						
Technical assistance and manufacture-related training in the air conditioning sector			90,000	n/a	0	0
Demonstration project in the service sector			162,300	HCFC-22	36.07	1.98
Activities in the foam sector						
Conversion of Fathi Abu Arja	340,450	67,200	407,650	HCFC-141b	42	4.62
Other activities						
Abu Haltam Group (domestic refrigeration)	26,751	-	26,751	HCFC-141b	3.7	0.41
Policy and regulation			58,440	n/a	0	0
Awareness			33,744	n/a	0	0
Project management			100,000	n/a	0	0
Total			2,867,735	n/a	362.77	22.47

Preliminary baseline consumption

34. The preliminary baseline was calculated as shown in Table 5, based on the reported Article 7 data submitted by the Government of Jordan to the Ozone Secretariat for 2009 and 2010. The preliminary baseline is 83.0 ODP tonnes.

Table 5: Calculation of the preliminary baseline

	2009		2010		Average 2009/2010	
	mt	ODP t	mt	ODP t	mt	ODP t
HCFC-22 (bulk)	875.0	48.13	1,095.5	60.25	985.3	54.19
HCFC-141b	207.0	22.77	316.3	34.79	261.7	28.78
Total	1,082.0	70.90	1,411.8	95.04	1,246.9	82.97

Starting point for aggregate reduction in HCFC consumption

35. The Government of Jordan agreed to establish as its starting point for sustained aggregate reduction in HCFC consumption the preliminary baseline consumption, based on the 2009 and 2010 data reported under Article 7. The 2011-2014 business plan indicated a baseline of 73.7 ODP tonnes (1,125.3 mt), based on a more conservative growth forecast between 2009 and 2010 than actually experienced by the country as shown in the submitted Article 7 data. In addition, the starting point needs to include the 2007-2009 average use of HCFC-141b in imported pre-blended polyols in eligible companies, identified in a list of such companies provided by UNIDO as part of their submission, with a value of 102.9 mt (11.31 ODP tonnes). On this basis, the Secretariat has calculated the possible starting point of 94.30 ODP tonnes. The related data is provided in Table 6 below.

Table 6: Calculation of the starting point

Substance	Consumption (mt)		Contribution to starting point	
	2009	2010	(mt)	(ODP t)
HCFC-22 according to Article 7 data reporting	875	1,095.5	985.3	54.19
HCFC-141b according to Article 7 data reporting	207	316.30	261.7	28.79
HCFC-141b (in imported pre-blended polyol, , average 2007-2009 of eligible companies)*			102.9	11.32
HCFC-141b (total)			364.6	40.11
Starting point			1,349.90	94.30

*Based on data submitted as part of the HPMP

Phase-out under stage I of the HPMP

36. The starting point calculated by the Secretariat on the basis of the data available would be 94.30 ODP tonnes. The total phase-out under stage I of the HPMP is 22.47 ODP tonnes, or 27.1 per cent of the baseline, and 23.8 per cent of the calculated starting point. Within that total, the phase-out in the air conditioning manufacturing sector amounts to 15.46 ODP tonnes (18.6 per cent of the baseline, 16.4 per cent of the calculated starting point). Of the consumption in the air conditioning sector, about half (7.7 ODP tonnes) is related to ineligible enterprises, which will be forced to convert through a legal act provided all of the eligible enterprises in the sector receive support from the Multilateral Fund. However, the Executive Committee has already approved funding for HCFC reductions in Jordan through a demonstration project at Petra Engineering Industries Co. Taking the related phase-out of 8.1 ODP tonnes into account, the combination of the demonstration project and the new activities proposed for stage I of the HPMP would relate to a total phase-out of 36.8 per cent of the baseline (32.4 per cent of the starting point).

Impact on the climate

37. A calculation of the impact on the climate of HCFC consumption through the investment components of stage I of the HPMP in Jordan based on the GWP values of the HCFCs and alternative substances introduced and the same level of consumption before and after conversion has been carried out. Table 7 presents the Multilateral Fund climate impact indicator (MCII) in the air conditioning sector.

Table 7: Climate impact in the air conditioning sector, calculated using the MCII

Input	**Generic**			
	Country	[-]	**Jordan**	
	Company data (name, location)	[-]	Middle East Complex for Engineering, Electronics and heavy Industries; National Refrigeration Company; Abu Haltam Group for Investments	
	Select system type	[list]	Air conditioning / on-site assembly	Air conditioning / factory assembly
	General refrigeration information			
	HCFC to be replaced	[-]	HCFC-22	HCFC-22
	Amount of refrigerant per unit	[kg]	between 1.05 and 3.42, weight av. 1.69	between 0.62 and 1.9, weight av. 1.08
	No. of units	[-]	50,540	49,785
	Refrigeration capacity	[kW]	between 3.52 and 9.10, weight av. 5.60	between 3.52 and 7.63, weight av. 5.33
	Selection of alternative with minimum environmental impact			
	Share of exports (all countries)	[%]	56.6%	
	Calculation of the climate impact			
	Alternative refrigerant (more than one possible)	[list]	HC-290	HC-290

NOTE
All data displayed is specific to the case investigated and is not generic information about the performance of one alternative; performance can differ significantly depending on the case.

Output	*Note: The output is calculated as the climate impact of the refrigerant systems in their lifetime as compared to HCFC-22, on the basis of the amount produced within one year. Additional/different outputs are possible*			
	Country		**Jordan**	
	Identification of the alternative technology with minimum climate impact			
	List of alternatives for identification of the one with minimum climate impact	[Sorted list, best = top (% deviation from HCFC)]	HC-600a (-25.1%)	HC-600a (-27.0%)
			HC-290 (-21.2%)	HC-290 (-23.9%)
			HFC-134a (-6.4%)	HFC-134a (-6.0%)
			HFC-407C (-0.4%)	HFC-407C (-1.3%)
			HCFC-22	**HCFC-22**
			HFC-410A (5.3%)	HFC-410A (5.2%)
			HFC-404A (21.8%)	HFC-404A (26.7%)
	Calculation of the climate impact			
	Per unit, over lifetime (for information only):		HCFC-22	HCFC-22
	Energy consumption	[kWh]	8951	8439
	Direct climate impact (substance)	[kg CO_2 equiv]	4497	1994
	Indirect climate impact (energy): In country	[kg CO_2 equiv]	7898	7446
	Indirect climate impact (energy): Global average	[kg CO_2 equiv]	9576	9030
	Calculation of the climate impact of the conversion			
	Alternative refrigerant 1		**HFC-410A**	**HFC-410A**
	*Total direct impact (post conversion – baseline)**	*[t CO_2 equiv]*	*6,146*	*2,684*
	*Indirect impact (country)***	*[t CO_2 equiv]*	*23,163*	*21,734*
	*Indirect impact (outside country)***	*[t CO_2 equiv]*	*29,734*	*28,024*
	Total indirect impact	*[t CO_2 equiv]*	*52,897*	*49,758*
	Total impact	**[t CO_2 equiv]**	**59,043**	**52,442**
	Alternative refrigerant 2		**HC-290**	**HC-290**
	*Total direct impact (post conversion – baseline)**	*[t CO_2 equiv]*	*-226,220*	*-98,813*
	*Total indirect impact (country)***	*[t CO_2 equiv]*	*-4,309*	*1,786*
	*Total indirect impact (outside country)***	*[t CO_2 equiv]*	*-5,383*	*2,057*
	*Total indirect impact***	*[t CO_2 equiv]*	*-9,692*	*3,843*
	Total impact	**[t CO_2 equiv]**	**-235,912**	**-94,970**

*Direct impact: Different impact between alternative technology and HCFC technology for the substance-related emissions.
**Indirect impact: Difference in impact between alternative technology and HCFC technology for the energy-consumption-related emissions of CO_2 when generating electricity.

38. The value for the MCII for the conversion in three enterprises, on the basis of the 2010 production figures, resulting in an increase of climate relevant emissions by 111,485 tonnes of CO_2 equivalent for the choice of HFC-410A as a refrigerant, on the assumption of similar component quality, and for the lifetime of the amount of air conditioning equipment produced in one year in these three factories. As an alternative, a conversion towards HC-290 was calculated, resulting in reductions in climate relevant emissions of 330,882 tonnes of CO_2 equivalent.

39. The climate impact of the foam sector relates to the conversion at FAA to CO_2 and CO_2-water technology for their spray foam operations, and hydrocarbon or methyl formate for their system houses operation; in addition, there is the phase-out of HCFC-141b in pre-blended polyol related to refrigerator insulation at Abu Haltam Group:

(a) The conversion at FAA, not included in the submission to the 64th meeting, will phase out 42 mt of HCFC-141b and will not phase in substances with a more than negligible GWP. Consequently, the conversion activities will lead to a reduction in climate impact of 30,450 tonnes of CO_2 equivalent;

(b) The calculated impact of the conversion of Abu Haltam Group is based on the average consumption in 2007-2009 of 3.7 mt of HCFC-141b, leading to a climate impact of 2,683 tonnes of CO_2 equivalent (note: the latest use data for the enterprise, 2010, shows

6 mt use, with a resulting impact of 4,350 tonnes of CO_2 equivalent). It is intended to use pre-blended polyol with HFC-245fa as the foam blowing agent, although this is currently not yet available in the country; consequently, the mixing ratio between HFC-245fa and water as co-blowing agent remains also unknown. On the assumption that, as customary for refrigerator insulation, 5 per cent of water are used in the mix, the replacement technology has a climate impact of 3,620 tonnes of CO_2 equivalent for 3.7 mt phase-out; consequently, the climate impact of the conversion represents an increase of 937 tonnes of CO_2 equivalent.

40. The demonstration project related to the service of air conditioners had not been part of the original submission to the 64th meeting. The climate impact of these efforts is accounted for as a reduction in consumption by 36.07 mt of HCFC-22, based on the associated costs. In the submission, however, the implementing agencies had calculated the effect of this activity to be higher, at a level of 107 mt of HCFC-22. Since in both cases the reduction in consumption is from actually reduced emissions and not from replacement with another technology, the climate impact of the HCFC-22 saved is not offset by the phase-in of an alternative technology with some climate impact of its own. According to the accounting under the Multilateral Fund, on a basis of a fixed cost effectiveness of US $4.50/kg, the savings would amount to 65,287 tonnes of CO_2 equivalent; according to the World Bank, they would reach 193,670 tonnes of CO_2 equivalent.

41. Other than the demonstration project, the HPMP included only a limited amount of technical assistance activities, targeted to sustain the conversion in the air conditioning sector by making available the necessary technology to service this equipment. The related climate impact has already been calculated in the climate impact of the air conditioning equipment from the manufacturing lines to be converted.

42. The overall climate impact consists therefore of the factors provided in Table 8 below. The calculation shows that there is an overall impact of the HPMP on the climate, i.e. the emission of climate relevant gases are calculated to increase. However, should the higher gains estimate provided by the World Bank from the demonstration project on servicing be taken into account, the result would be reversed. In relation to the climate impact of the overall emissions of HCFCs in Jordan, which is, using the starting point figures, of about 2 million tonnes of CO_2 equivalent, the magnitude of increase or decrease is 2 per cent of that figure.

Table 8: Factors contributing to climate impact

Source of emission increase (+) / reduction (-)		**t CO_2 equivalent**
Air conditioning	Substance related	8,830
	Energy related	132,655
Demonstration activity for servicing	Nominal savings - MLF accounting	-65,287
	Reductions calculated by the World Bank*	*-193,670*
Foam	FAA	-30,450
	Abu Haltam Group	2,683
Total		48,431

* Not taken into account in summary

Co-financing

43. 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, the World Bank, in carrying out the preparation of the sector plan, explained that it is working with Jordan through a GEF project to create an energy efficiency investment support framework. The main element of this work is the Jordan Renewable Energy and Efficiency Fund (JREEF). The GEF proposal originally envisioned US $40 million in co-financing that would come in the form of a "clean energy" credit line dedicated to energy efficiency projects. Agence Française de Développement (AFD) is one of the primary partners for this support. JREEF would permit energy efficiency measures to be scaled up in the residential, commercial and industrial sectors. There is also a GEF/UNDP Energy Efficiency Standards and Labeling project of US $2 million to reduce the emission of greenhouse gases from energy consumption in appliances by transforming the market through energy labels and minimum energy performance standards. Energy labelling for AC is in effect in Jordan as of July 2011. Finally, a USAID Energy Efficiency Programme (Energy Efficiency Regulatory Incentive Mechanism for Jordan) consists of funding of US $29 million until 2012 and up to total US $77 million over ten years to encourage fast deployment of energy efficiency measures through the electricity transmission and distribution companies. A testing laboratory for AC benchmarking, testing and enforcement is currently being procured as part of the activities of USAid. Together with a Jordan law on renewable energy and energy efficiency (February 2010) and the energy efficiency roadmap (October 2010), it appears certain that the enabling and regulatory environment can be created within two-three years to ensure that converted enterprises improve the energy efficiency of their products.

2011-2014 business plan of the Multilateral Fund

44. UNIDO and the World Bank are requesting US $2,867,735 plus support costs for implementation of stage I of the HPMP. The total value requested for the period 2011-2014 of US $2,110,478 including support costs is below the total amount in the business plan, indicated as US $6.166 million. The difference in the figures is related to the high phase-out assumed in the business plan of 33.0 ODP tonnes following an estimated baseline level of 73.7 ODP tonnes. This high figure in the business plan referred to the intention of Jordan to substantially accelerate the phase-out until 2019, which would have led to an according high phase-out in the years until and including 2014. The aggregated HCFC phase-out submitted represents 68.1 per cent of the business plan value, the cost agreed for the different activities represent 47 per cent of the funding foreseen in the business plan.

Draft Agreement

45. A draft Agreement between the Government of Jordan and the Executive Committee for HCFCs phase-out is contained in Annex I to the present document.

Exchange of the agencies and Secretariat in relation to informal discussions in the Executive Committee

46. The Secretariat provided some comments to UNIDO and the World Bank regarding the discussion between members of the Executive Committee and the agencies. These comments were related to the sufficiency of information on whether HFC-410A was the sole technically possible solution; the degree to which better practices in terms of leak control, better containment and recycling are being introduced in general (i.e. also outside the air conditioning sector), and how they are enforced; the balance between activities reducing the climate impact as compared to those increasing it in the submission to the 65th meeting; the level of commitment necessary to ensure that positive impacts on the climate would be generated by improving energy efficiency in the air conditioning sector; the depth of the explanation regarding the growth trend of HCFC-141b in the foam sector and why it cannot be curbed; the level to which the servicing sector related to the air conditioning manufacturers would be prepared for the

introduction and acceptance of alternatives with low global warming impact because of the activities planned; and the level of explanation regarding the additionality of the proposed co-funding.

47. The agencies replied to some of the comments by providing additional information. They advised that enforcement of best practices in the servicing sector is a measure that would have to be covered in the servicing sector component of the HPMP when the entire sector is addressed, as it is a substantial element, and one of the most challenging for all of the countries. Presumably enforcement capacity was a part of previous servicing sector projects in Jordan and moving to HCFCs would consist of the same mechanisms. The agencies also felt that, based on experience under the Multilateral Fund enforcement is not necessarily the key to ensuring better refrigerant management – the price of refrigerant seems to have more impact in this regard. They reiterated that the Government of Jordan has agreed to tighten controls on HCFC-22 imports under stage I of the HPMP beyond the level of direct phase-out activities, and pointed out that this will likely lead to an increase in the cost of HCFC-22 and therefore a disincentive to the wasteful use of HCFCs.

48. In relation to the demonstration activity, the agencies advised that it can only directly target 75 to 100 technicians for better practices in terms of funding. However, the objective was, according to the agencies, to develop guidance material and curricula to build on the existing technician training programme under Ministry of Education and Jordan's Vocational Training Centre which would allow some scale-up with more technicians targeted. An evaluation at the end of the activity would determine the level of uptake of new practices, what worked well in the programme and identify areas that require strengthening and improvement in the future servicing sector/refrigerant management plan in subsequent HPMP stages. Finally, the agencies understood from the discussion with members of the Executive Committee that the best practices and training on retrofitting was to be done in the air-conditioning sector. However, the agencies had advised that there was a need to re-visit the issue with the Government of Jordan. As of writing of this document, the Secretariat has not received any more related information.

RECOMMENDATION

49. In light of the above comments by the Secretariat, in particular paragraph 36 (phase-out beyond, the 10 per cent of the baseline), the Executive Committee might wish to consider whether to:

(a) Approve, in principle, stage I of the HCFC phase-out management plan (HPMP) for Jordan for the period 2011 to 2015, at the amount of US $3,082,815, consisting of US $499,834 and agency support costs of US $37,488 for UNIDO, and US $2,367,901 and agency support costs of US $177,593 for the World Bank, on the understanding that consumption in the air conditioning manufacturing sector would be completely phased out and that Jordan will introduce a ban on the use of HCFC-22 in manufacturing of air conditioners and import of air conditioners containing HCFC-22 effective no later than 1 January 2015;

(b) Note that the Government of Jordan had agreed at the 65th meeting to establish as its starting point for sustained aggregate reduction in HCFC consumption the estimated baseline of 83 ODP tonnes, calculated using actual consumption for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol, amended by 11.31 ODP tonnes of HCFC-141b contained in pre-blended polyol systems, representing the average between 2007 and 2009 of such imports for eligible enterprises, resulting in 94.30 ODP tonnes;

(c) Note the deduction of 8.06 ODP tonnes of HCFCs (125 mt of HCFC-22 and 10.8 mt of HCFC-141b) from the starting point for sustained aggregate reduction in HCFC consumption for a project at Petra Engineering Co. approved at the 60th meeting of the Executive Committee, and to deduct a further 22.47 ODP tonnes of HCFCs (317.1 mt of HCFC-22 and 45.7 mt of HCFC-141b) for the implementation of stage I of the HPMP;

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

(e) Request the Fund Secretariat, once the baseline data were known, to update Appendix 2-A to the draft Agreement to include the figures for maximum allowable consumption, and to notify the Executive Committee of the resulting levels of maximum allowable consumption; and

(f) Approve the first tranche of stage I of the HPMP for Jordan, and the corresponding implementation plan, at the amount of US $1,531,284, consisting of US $390,450 and agency support costs of US $29,284 for UNIDO, and US $1,034,000 and agency support costs of US $77,550 for the World Bank.

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Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF THE HASHEMITE KINGDOM OF JORDAN 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 Hashemite Kingdom of Jordan (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 74.7 ODP tonnes by 1 January 2015 in compliance with Montreal Protocol schedules with the understanding that this figure is to be revised one single time, once the baseline consumption for compliance has been established based on Article 7 data.

2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 ("Maximum allowable total consumption of Annex C, Group I substances") 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 ("Maximum allowable total consumption of Annex C, Group I Substances") 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 ("The Targets, and Funding") 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 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 for each of the Substances as set out in row 1.2 of Appendix 2-A ("The Targets, and Funding") 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 has met the Targets for all relevant years. Relevant years are all years since the year in which the hydrochlorofluorocarbons phase-out management plan (HPMP) was approved. Years for which no obligation for reporting of country programme data exists at the date of the Executive Committee meeting at which the funding request is being presented are exempted; ;

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

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

(d) That the Country has submitted and received approval from the Executive Committee for an annual implementation plan in the form of Appendix 4-A ("Format of Implementation Reports and Plans") covering each calendar year until and including the year for which the funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen; and

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

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

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

(a) Reallocations categorized as major changes must be documented in advance in an annual implementation plan and approved by the Executive Committee as described in sub-paragraph 5(d) above. The documentation can also be provided as part of a revision to an existing annual implementation plan, to be submitted eight weeks prior to any meeting of the Executive Committee. Major changes would relate to:

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

(ii) Modifications to any clause in this Agreement;

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

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

(c) Removal of activities in the annual implementation plan with a cost greater than 30 per cent of the total cost of the last approved tranche;

(d) 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

(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 the World Bank 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 carrying out the activities of the overall plan with the changes approved as part of the subsequent submissions, 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 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 reductions in consumption (ODP tonnes)
HCFC-22	C	I	54.19
HCFC-141b	C	I	40.11
Total			94.30

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2011	2012	2013	2014	2015	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	n/a	n/a	83.0	83.0	74.7	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	n/a	n/a	83.0	83.0	74.7	n/a
2.1	Lead IA UNIDO agreed funding (US $)	390,450	0	109,384	0	0	499,834
2.2	Support costs for Lead IA (US $)	29,284	0	8,204	0	0	37,488
2.3	Cooperating IA World Bank agreed funding (US $)	1,034,000	0	429,401	0	904,500	2,367,901
2.4	Support costs for Cooperating IA (US $)	77,550	0	32,205	0	67,838	177,593
3.1	Total agreed funding (US $)	1,424,450	0	538,785	0	904,500	2,867,735
3.2	Total support cost (US $)	106,834	0	40,409	0	67,838	215,080
3.3	Total agreed costs (US $)	1,531,284	0	579,194	0	972,338	3,082,815
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)						17.44
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)						6.88*
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)						29.87
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)						5.03
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)						1.19*
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)						33.89

*US $2,167,033 and agency support costs of US $162,527 for UNIDO for a project at Petra Engineering Industries Co. was approved at the 60th meeting

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the third 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 regarding the progress since the approval of the previous tranche, reflecting on 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 implementation and monitoring of this HPMP will be co-ordinated by the National Ozone Unit in cooperation with respective governmental bodies and also national experts recruited for particular tasks which would arose in the course of the project implementation. An independent chartered national auditing organization will be recruited by the Lead IA to verify consumption.

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;

   (f) Ensuring that appropriate independent technical experts carry out the technical reviews undertaken by the Lead IA;

   (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) 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;

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

   (k) 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 further, but include at least the following:

(a) Providing policy development assistance 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 $255 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met.

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