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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
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PROJECT PROPOSALS: ISLAMIC REPUBLIC OF IRAN

This document consists of the comments and recommendations of the Fund Secretariat on the following sub-sectoral phase-out plans:

Phase-out

• HCFC phase-out management plan (stage I, first tranche) (HCFC phase-out in rigid and integral skin foam manufacturers and domestic refrigeration equipment manufacturers)	Germany and UNIDO
• HCFC phase-out management plan (stage I, first tranche) (HCFC phase-out in air-conditioning sector and one systems house)	UNDP
• HCFC phase-out management plan (stage I, first tranche) (HCFC phase-out in refrigeration servicing sector)	Germany and UNEP

PROJECT DESCRIPTIONS

1. On behalf of the Government of the Islamic Republic of Iran, UNDP, as the lead implementing agency, has submitted to the 62nd Meeting of the Executive Committee an HCFC phase-out management plan (HPMP) at a total funding of US $20,207,707 plus support costs of US $1,682,107. The HPMP (Stage I) will result in the phase-out of 128 ODP tonnes of HCFCs by 2015.

Scope of the document

2. Together with the HPMP, the Government of the Islamic Republic of Iran submitted the following four sub-sector phase-out plans, for which funding is being requested:

(a) Sector plan for foam (Germany and UNIDO);

(b) Sector plan for HCFC phase-out in air-conditioning sector (UNDP);

(c) Sector plan for HCFC phase-out in refrigeration servicing sector (Germany and UNEP).

3. To facilitate the review of the HPMP for the Islamic Republic of Iran and the associated sub-sector phase-out plans, this document presents an overview of the HPMP itself, followed by an overview of each of the sub-sectors mentioned in the above paragraph. The section on comments and recommendations has also been arranged similarly.

Section 1. HPMP document

4. The HPMP presents the overall phase-out strategy for Stage I and beyond. However, it focuses primarily on Stage I activities.

Background

5. The national ozone unit (NOU) is responsible for the overall management of ODS phase-out projects. In addition, 30 Ozone Cells at the provincial level provide support to enterprises, collect consumption data, and form the Islamic Republic of Iran Ozone Network (ION). A database was developed as a management tool for monitoring and reporting, and links the NOU to the provincial level ozone cells. The Customs Department, plays an important role in enforcement of ODS regulations and facilitating data collection process on ODS.

6. With respect to ozone depleting substances (ODS), the Islamic Republic of Iran has established a comprehensive policy and regulatory framework. The NOU is responsible for implementing the Comprehensive Legislation Plan (CLP), which monitors the progress of ODS phase-out activities against schedules, and the enforcement of approved legislations. ODS consumption is controlled through the import and export licensing system and a quota system.

HCFC consumption and sectoral distribution

7. The Islamic Republic of Iran has no HCFC production or exports. The total HCFC consumption of the two HCFCs consumed in the country, HCFC-22 and HCFC-141b, is shown is Table 1. HCFC-141b is used in the manufacture of foam products, primarily rigid foam and integral skin foam, and insulation foam for refrigeration and air-conditioning applications. HCFC-22 is used in manufacturing unitary air conditioners, commercial and industrial refrigeration equipment and the installation of industrial and transport air-conditioning equipment. It is also used to service existing HCFC-22 refrigeration and air-conditioning systems.

Table 1: HCFC Consumption by type of HCFC (Article 7 data)

HCFC	2006		2007		2008		2009	
	ODP t	mt	ODP t	mt	ODP t	mt	ODP	mt
HCFC-22	68.19	1,239.77	89.7	1,630.82	73.05	1,328.18	175.60	3,192.73
HCFC-141b	98.35	894.09	101.73	924.82	189.84	1,725.82	136.80	1243.64
Total	166.54	2,133.86	191.43	2,555.64	262.89	3,054.00	312.40	4,436.37

8. The sectoral distribution of HCFCs used in 2009 and 2010 in Islamic Republic of Iran is shown in Table 2. About 77 per cent of the total HCFC consumption (in ODP tonne) was used in the manufacturing sector. HCFC-141b accounts for almost 45 per cent of the total HCFC consumption (measured in ODP tonnes).

Table 2: Sectoral distribution by type of HCFC used in 2009 and 2010 (country programme data)*

Sector	2009			2010			Baseline (ODP t)
	HCFC-22 (mt)	HCFC-141b (mt)	Total (mt)	HCFC-22 (mt)	HCFC-141b (mt)	Total (mt)	
Foam							
Rigid PU panels		684.7	684.7		753.2	753.2	79.1
Rigid PU others		211.8	211.8		233	233	24.5
Integral skin		132	132		145.2	145.2	15.2
XPS	40		40	44		44	2.3
Air-conditioning							
Residential	682.4		682.4	784.8		784.8	40.3
Commercial	30.1		30.1	33.1		33.1	1.7
Industrial (chillers)	336.4		336.4	370.1		370.1	19.4
Refrigeration							
Domestic		547.6	547.6		602.3	602.3	63.2
Commercial	62.7	308.4	371.1	69	339.3	408.2	39.2
Industrial	172.2		172.2	189.4		189.4	9.9
Transport	10		10	11		11	0.6
Servicing	1,489.30		1,489.30	1,608.40		1,608.40	85.2
Total	**2,823.20**	**1,884.50**	**4,707.70**	**3,109.80**	**2,073.00**	**5,182.80**	**380.6**

* Discrepancies between country programme data and Article 7 data appear to be based on stockpiles

An overview of the HCFC phase-out strategy

Stage I

9. The baseline level of HCFC consumption is estimated at 380.6 ODP tonnes, based on the average of the 2009 data (Article 7) and the 2010 data (forecasted). The HPMP will address a number of sub-sectors in Stage I (including a phase-out project in one systems house) and include a number of non-investment activities, such as regulatory measures, awareness activities and project management and monitoring activities. Table 3 shows the phase-out to be achieved by sub-sector. Implementation of the phase-out activities in the targeted sectors will lead to the phase-out of 128 ODP tonnes of HCFCs during the 2011-2014 period. The remaining HCFC consumption in eligible manufacturing enterprises would be addressed in Stage II during the period 2015-2020.

Table 3: Proposed Stage I phase-out to be achieved in the Islamic Republic of Iran by sub-sector

Sector	ODP tonnes
Rigid foam manufacturers producing sandwich panels (13 enterprises)	41.77
Other rigid foam manufacturers and systems house (3)	9.26
Integral skin foam (5)	13.29
Domestic refrigerator manufacturers (4)	7.15
Residential air-conditioner manufactures (39 units)	37.53
Servicing sector	19.00
Total	**128.00**

10. The Islamic Republic of Iran proposes to achieve its HCFC phase-out targets through a combination of HCFC supply controls and reduction measures. Priorities include: zero-ODP and low-GWP alternatives for foam and refrigeration/air-conditioning applications; regulatory measures and enforcement for controlling and monitoring HCFC supply and use; awareness and information outreach to promote the adoption of HCFC-free alternatives; and a reduction in HCFC demand by avoiding waste of HCFCs. The Islamic Republic of Iran also proposes to prioritize enterprises that have not previously undergone conversions by the Multilateral Fund over second conversions.

11. Implementation of the HPMP would commence in 2011 with projects achieving actual phase-out from 2012 at the earliest. Given the forecasted growth in HCFC consumption from 2010 to 2014, particularly in those enterprises, sub-sectors and sectors which are not prioritized for phase-out in Stage I of the HPMP, the HCFC growth up to 2015 is considered in the calculation of the phase-out needed to meet 2013 freeze and 2015 ten per cent reduction.

12. Enabling activities, such as awareness, regulations enforcement strengthening, capacity building for service agencies to reduce HCFC service demand, will play an important role in ensuring faster implementation of HCFC phase-out projects by enterprises. The Islamic Republic of Iran will therefore introduce the following sub-sector level regulations:

(a) Residential air-conditioning manufacturers to stop using HCFC-22 from 1 January 2015. Prohibition of imports of residential air-conditioners using HCFC-22 to be implemented in line with stopping manufacturing;

(b) Integral skin foam manufacturers to stop using HCFC-22 from 1 January 2015;

(c) National standards for imported commercial refrigerators, compressors and other equipment; strengthening and implementation of the licensing system for import of HCFCs; licensing of import of HCFC-using products by authorized importers from 1 January 2011; establishment of import quotas for importers of HCFCs from 1 January 2013; ban on import and use of HCFC-141b from 1 January 2020, subject to completion of conversion projects using HCFC-141b in foam applications; ban on import of HCFC blends in refrigeration, air-conditioning and foam applications from 1 January 2015 and some other restrictions on HCFC use.

13. Awareness, retrofit, recovery and recycling, and export-import monitoring activities will also be carried out. Project management activities will be overseen by the Ozone Layer Protection Unit (OLPU), with the support of Sub-regional Ozone Units established in the Islamic Republic of Iran.

Stage 2

14. The remaining HCFC consumption in eligible manufacturing enterprises would be addressed in Stage II during the 2016-2020 period and would include: the remaining RAC equipment manufacturers in commercial, industrial and transport RAC applications; the remaining manufacturers of HCFC-using sandwich panels, rigid foam and residential refrigeration foam; the remaining manufacturers of commercial and industrial refrigeration foam; and the XPS foam sector. Regulations for sector phase-out would be implemented from 2016 and will be aligned with the adoption of HCFC-free technologies in each sector.

Section 2. Sector plan for foam (Government of Germany and UNIDO)

15. On behalf of the Government of the Islamic Republic of Iran, the Government of Germany as the lead implementing agency for the foam sector, and UNDP, UNEP and UNIDO as cooperating agencies, have submitted to the 62nd Meeting of the Executive Committee the HCFC phase-out management plan for the foam sector (Foam Sector Plan) at a total cost of US $7,329,000 plus agency support costs of US $652,195. Implementation of the project will result in the phase-out of 71.47 ODP tonnes (649.7 metric tonnes) of HCFC-141b, at a cost-effectiveness of US $11.28/kg. The distribution of the funding level among the agencies is as follows:

(a) US $2,612,000 plus agency support costs of US $297,320 for the Government of Germany;

(b) US $264,000 plus agency support costs of US $19,800 for UNDP;

(c) US $20,000 plus agency support costs of US $2,600 for UNEP; and

(d) US $4,433,000 plus agency support costs of US 332,475 for UNIDO.

Background

16. The Foam Sector Plan in the Islamic Republic of Iran will contribute to meeting the 2013 and 2015 HCFC control targets of the Montreal Protocol. In 2009, of the 362.1 ODP tonnes (4,712.7 metric tonnes) imported, 205.8 ODP tonnes (1,870.9 metric tonnes) were HCFC-141b (representing 56.8 per cent of the total consumption measured in ODP tonnes) and the remaining 156.3 ODP tonnes (2,841.8 metric tonnes) were HCFC-22. HCFC-141b is mainly used as a foam blowing agent.

17. Demand for foam-based products has been growing over the last few years. It is estimated that future demand for HCFC-141b for the manufacturing of foam will increase by over 8 per cent a year following overall economic growth, expected to reach 269 ODP tonnes (2,445.5 metric tonnes) by 2012. Based on this forecasted consumption, 71 ODP tonnes (645.5 metric tonnes) of HCFC-141b would need to be phased out to reach the 2013 and 2015 compliance levels.

18. The Foam Sector Plan's strategy targets conversion of the largest enterprises during phase 1. After these enterprises are converted, the experience gained and lessons learned will be transferred to the smaller enterprises that will be converted in phase 2.

Overview of the foam industry

19. Based on the survey conducted for the preparation of the HPMP, 134 HCFC-141b-based foam enterprises were identified, as shown in Table 4.

Table 4: Overview of HCFC-141b foam enterprises in the Islamic Republic of Iran

Foam application	No. of enterprises	HCFC-141b consumption	
		ODP tonnes	Tonnes
Sandwich panel (non converted)	6	24.4	222.0
Sandwich panel (converted)	3	19.8	180.0
Sandwich panel (not finished projects)	2	7.4	67.0
Sandwich panel (not eligible)	1	2.2	20.0
Discontinuous sandwich panel (non converted)	9	5.9	53.4
Discontinuous sandwich panel (converted)	5	15.7	142.3
Rigid foam (non converted)	1	3.3	30.0
Rigid foam (converted)	12	16.8	152.6
Integral (non converted)	5	4.8	43.5
Integral (converted)	5	9.7	88.5
Commercial refrigeration (non converted)	2	0.2	2.0
Commercial refrigeration (converted)	47	33.7	306.4
Residential refrigeration (non converted)	9	10.1	92.0
Residential refrigeration (converted)	26	50.1	455.6
Systems house	1	3.2	29.2
Total:	134	207.3	1,884.5

20. In total, 185 foam enterprises received assistance from the Multilateral Fund to convert to non-CFC technology (referred to as "converted" in the table above). During the implementation of the National Phase-out Plan, the discontinuous sandwich panel production line of one enterprise (Mammut Co.) was converted to pentane technology; while HCFC-141b is still used for the manufacturing of continuous sandwich panels. Some of the enterprises that were converted to pentane technology are still consuming considerable amounts of HCFC-141b. The largest manufacturer of integral skin foams (Iran Polyurethane, with a total consumption of 42 metric tonnes) was converted to pentane technology at a total cost of US $796,230. However, a fire destroyed the production line and the company returned to the use of HCFC-141b (this enterprise is included in the Foam Sector Plan). All second-stage conversion projects will be addressed only at the end of 2013. A few enterprises manufacturing extruded polystyrene foam (XPS) were established after the cut-off date of 21 September 2010. These companies have a consumption of 2.6 ODP tonnes (40 metric tonnes) of HCFCs.

21. Raw materials, polyols and isocyanates are imported in bulk from major suppliers (in Germany, Italy, Netherlands, Singapore, South Korea, Spain, Syrian Arab Republic and the United States of America). The imported raw materials are blended with HCFC-141b or pentane at the enterprises.

Technology selection

22. The sector plan and its planned conversion projects are exclusively based on the use of two low-global warming potential (GWP) alternatives, namely hydrocarbon and water-based technologies. From a technical point of view, hydrocarbon-based technologies are mature technologies. However, they can only be introduced in enterprises that have the appropriate organization, space and qualified technical personnel. Requirements include special storage areas, as well as sufficient factory space for proper storage and foaming under controlled temperature conditions. The enterprise's production output must be high enough to amortize the cost of the additional safety measures. The additional foaming equipment (i.e., mould, presses and fixtures) must be sufficiently developed for conversion. It is therefore essential to select enterprises properly, in order to introduce standards for the products and achieve market acceptance of the technology.

Cost of the Foam Sector Plan

23. Phase 1 of the Foam Sector Plan will phase out 71.5 ODP tonnes (649.7 metric tonnes) of HCFC-141b used by 25 enterprises, as shown in Table 5. The total requested funding has been calculated just below the cost-efficiency thresholds for low-GWP alternatives, based on established calculation methods. The overall budget includes the costs of the project management unit, training workshops for foam enterprises, technical consultant services, revision of technical standards and formulation, public awareness activities and further strengthening of the policy and regulatory framework. The overall funding costs for the conversion of the enterprises are based on retrofits. In some cases, new production equipment will be required. Additional co-financing will be sought to bridge funding gaps, especially for the introduction of new equipment (the Government of Germany has initiated discussions with KfW Bankengruppe of Germany (a promotional bank under the ownership of the Federal Republic that offers support to sustainable improvement in economic, social, ecological living and business conditions) on potential co-financing of activities).

Table 5: Total cost of the Foam Sector Plan in the Islamic Republic of Iran

Application	No. plants	HCFC-141b		Funding (US $)	CE (US$/kg)
		Tonnes	ODP tonnes		
Continuous sandwich panel	6	222.0	24.4	2,133,420	9.61
Discontinuous sandwich panel	7	157.7	17.4	1,506,035	9.55
Rigid foam	2	55.0	6.1	526,350	9.57
Residential refrigeration	4	65.0	7.2	640,250	9.85
Integral skin	5	120.8	13.3	1,761,264	14.58
System house	1	29.2	3.2	263,676	9.03
Coordination and management				200,000	
Stakeholder coordination/workshops				50,000	
Preparation of standards				30,000	
Implementing a reporting structure				20,000	
Training, monitoring and equipment				200,000	
Total	**25**	**649.7**	**71.5**	**7,330,995**	**11.28**

Implementation modalities

24. In 2010, the Government of the Islamic Republic of Iran approved a regulation for the control of HCFC-based substances, stipulating the introduction of a licensing and an import quota system.

25. The Foam Sector Plan will be carried out by the implementing agencies in cooperation with the Project Management Group. The bilateral and implementing agencies will provide policy support, technical and management assistance for the implementation of the sector plan. Furthermore, the lead agency will supervise and arrange for verification of major activities carried out under the plan. The Project Management Group and the implementing agencies will convene at least twice a year to plan and review the activities to be carried out under the plan.

Section 3. Sector plan in the air conditioning sector (UNDP)

Background

26. The sector plan for HCFC phase-out in the air-conditioning sector in the Islamic Republic of Iran covers residential air conditioners only. Requested funding for the sector phase-out plan is US $10,029,262 plus agency support costs. Implementation of the project will result in the phase-out of 682 mt (37.53 ODP tonnes), i.e. 29.6 per cent of the phase-out to be achieved in Stage I of the HPMP.

HCFC-22 consumption

27. There are six large companies which sell a total of 1 million air conditioners in Islamic Republic of Iran. All except one have international affiliations, rendering them ineligible for support from the Multilateral Fund. There are a further 24 enterprises which assemble and sell from 3,000 to 20,000 air conditioners per year. The estimated consumption in the manufacturing and assembly of these units is about 682 mt (37.5 ODP tonnes) of HCFC-22.

Technology selection

28. According to the analysis of alternatives in the residential air-conditioning sector, hydrocarbons, including HC-290, were not selected because they have not yet been fully commercialized. The same applies to HFC-32. With HFC-407C and HFC-410A, two alternatives are available which have been used in the refrigeration and air conditioning industry for more than a decade, for which standards exist and components are readily available. With a view to product performance, safety and serviceability, the HPMP proposes to use HFC-410A for the conversion of the residential air-conditioning industry in Islamic Republic of Iran.

Cost of the air-conditioning sector plan

29. The project proposal focuses on the eligible enterprises, i.e. those enterprises which have no international affiliation. Therefore, the proposal contains the conversion cost for one large manufacturer and 24 small manufacturers. The project proposal contains a list of proposed modifications with regard to manufacturing, product certification, prototype manufacturing, redesign, safety training and technical assistance. For the large manufacturer, the amount of US $1 million for the conversion of heat exchanger manufacturing has also been included. The total cost of the project has been calculated based on the incremental capital costs of the large manufacturer at US $2.332 million, plus the incremental operating costs for 532 mt of HCFC-22 at the threshold level of US $6.30. No further information related to the incremental operating costs was provided in the proposal. The cost for the remaining 24 enterprises was generally calculated in the same way, using proposed incremental capital cost and amending it according to the related phase-out. The concept of the proposal for cost calculation was to work with a generic list of necessary changes for all enterprises, resulting in costs of US $122,100 per enterprise, and to multiply this value by the number of enterprises. An overview of costs and associated phase-out is provided in Table 6.

Table 6: Cost of the air-conditioning sector

Enterprises	Total incremental costs (US$)			HCFC-22		CE
	Capital	Operating	Total	(mt)	(ODP t)	(US $/kg)
One large enterprise	2,332,000	3,351,600	5,683,600	532.0	29.3	10.7
24 SMEs	2,930,400	947,646	3,878,046	150.4	8.3	25.8
Total	5,262,400	4,299,246	9,561,646	682.4	37.5	14.0

Section 4. Sector plan in the refrigeration servicing sector (Government of Germany and UNEP)

Background

30. The sector plan for HCFC phase-out in the servicing sector includes a large number of non-investment activities, including: activities related to standards and regulations; awareness-raising; internet-based tools; customs training; certification and standard development; training of technicians; and equipment for servicing workshops. The refrigeration servicing sector plan also includes activities to improve the leak tightness of refrigeration equipment in supermarkets. Overall funding of US $1.56 million in four tranches from 2011 to 2014 is requested.

31. Table 7 below provides an overview over the proposed costs for the activities in the servicing sector from 2011 until 2014 by category.

Table 7: Overview over the costs for service sector activities

Activity	Agency	Cost (US $)
Standards and regulations	UNEP	50,000
Awareness/information campaigning	UNEP	194,545
Development of tools and guidelines for download	Germany	40,000
Stakeholder workshops	Germany	85,000
Training of trainers and Technicians	UNEP	250,000
Training of Custom officers	UNEP	160,000
Certification standards development	Germany	10,000
Technical/management assistance	Germany	160,000
Financial incentives for technology demonstration	Germany	415,000
Monitoring and documentation system, surveys, logbooks	Germany	120,000
National registration inventory	Germany	50,000
Contingencies	UNEP/Germany	20,000
Total		**1,554,545**

Section 5. Overall cost of the HPMP

32. The overall cost of achieving reductions as articulated in Stage I of the HPMP is US $20,207,707, which is fully requested from the Multilateral Fund. Of that amount, US $16,858,162 is foreseen for investment activities and US $3,349,545 for non-investment activities. The summary of the costs is shown in Table 8.

Table 8: Overall cost of the HPMP for the Islamic Republic of Islamic Republic of Iran

Project title	ODP tonnes to phased out		Cost (US $)
	HCFC-22	HCFC-141b	
Phase-out project in rigid foam manufacturers (continuous sandwich panel)		41.77	2,132,000
Phase-out project in rigid foam manufacturers (discontinuous sandwich panel and others)		6.05	2,031,000
Phase-out project in integral skin foam manufacturers		13.29	1,762,000
Phase-out project in domestic refrigeration equipment manufacturer		7.15	640,000
Phase-out project in one systems house		3.21	263,900
Foam sector non-investment			280,000
Foam sector project management			220,000
Phase-out project in residential air-conditioning	37.53		10,029,262
Residential air conditioning non-investment			415,000
Service sector (regulations, information, training)	19.00		1,554,545
Project Management Unit			880,000
Total	**56.53**	**71.47**	**20,207,707**

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

33. The Secretariat reviewed the HPMP for the Islamic Republic of Islamic Republic of Iran and the sector phase-out plans in the context of the guidelines for the preparation of HPMPs (decision 54/39), the criteria for funding HCFC phase-out in the consumption sector agreed at the 60th Meeting (decision 60/44), and the adjusted 2010-2014 consolidated business plan as noted by the Executive Committee at its 61st Meeting.

Section 1. HPMP Document

Strategy

34. UNDP indicated that the Government of the Islamic Republic of Iran would establish import quotas for HCFCs in line with its Montreal Protocol targets and according to its baseline HCFC consumption. Quota allocations would be determined in consultation with HCFC-22 and HCFC-141b importers and relevant national policies. The quota system, combined with the licensing system and other regulatory controls already initiated by the Islamic Republic of Iran, constitute an important regulatory control for achieving Stage I targets.

35. To meet the 2013 and 2015 phase-out targets, the Government of the Islamic Republic of Iran is proposing to phase out 128 ODP tonnes. This amount is equivalent to 33.6 per cent of the HCFC baseline estimated in the HPMP (380.6 ODP tonnes). In addressing this issue, UNDP indicated that the consumption data presented was based on actual bottom-up surveys and likely provided more accurate data and projections than those used for business planning. Furthermore, the phase-out targets in the HPMP took into account the growth in consumption in the sectors/sub-sectors that could not be addressed in Stage I. Controlling HCFC supply without adequate assistance to the industry using it would damage the economy, and could result in illegal trade to cater to the high demand. The Government therefore proposed a "constrained growth" approach to strike a balance between the resources and results.

36. To meet up to the 2015 HCFC control level, the Government is proposing to phase out 71.5 ODP tonnes of HCFC-141b used as a foam blowing agent and 56.5 ODP tonnes of HCFC-22 used in the manufacturing and refrigeration sectors. Iran could meet the 2015 control level by addressing only HCFC-141b, as the consumption of this substance represents 45 per cent of the total HCFC consumption in 2009. UNDP indicated that priority had been given to the foam sector, and that HCFC-141b consumption in rigid foam, integral skin foam and domestic refrigeration insulation foam production had been prioritized for meeting Stage-I targets based on the availability of low-GWP alternative technologies for various applications and the limited timeframe of 2-3 years for achieving the 2013 and 2015 targets. It was noted that additional phase-out requirements would need to be addressed through residential air-conditioner manufacturing applications, since HCFC consumption in the RAC servicing sector is expected to increase as the sector grows and ageing equipment requires servicing. UNDP also highlighted the cost-effectiveness values in the foam sector (rigid foam and integral skin foam) which are below the threshold limits for these sub-sectors according to decision 60/44, with a 25 per cent increase for adoption of low-GWP technologies.

37. The Government of the Islamic Republic of Iran is requesting funding of US $1,554,545 for activities in the refrigeration servicing sector and other non-investment activities, which are not recommended for funding at this time in light of decision 60/44(f)(xv). UNDP indicated that the main reason for the inclusion of the RAC servicing sector, which consumed 1,500 mt of HCFC-22 consumption in 2009, is its unconstrained growth. New enterprises in this growing sector will require awareness-raising about HCFC phase-out issues, as well as support to reduce HCFC consumption. Ongoing engagement of registered servicing sector technicians is essential to avoid any breaks with the

previous certification/training/other activities supported during CFC phase-out. Such activities will lead to greater sector participation in HPMP activities with respect to consumption control, training, registration and certification of workshops.

38. Referring to funds previously approved at the 55th and 57th Meetings for HPMP preparatory activities, UNDP informed the Secretariat that the funds requested in the HPMP are for finalizing regulations through consultations with national stakeholders and for capacity building to enforce the regulations. Therefore, the activities for which funding is requested in this context in the HPMP are not part of preparation funds. UNDP also noted that funds approved under the national phase-out plan were related to support for phase-out of CFC consumption, not HCFC consumption, and focused on MAC sector servicing support, among other activities. The activities defined under HPMP are specifically designed to address HCFC users and additional activities needed for regulations for achieving HCFC phase-out targets

Funding for monitoring and support

39. In reviewing the overall cost of the HPMP, it was noted that costs associated with monitoring, management and technical assistance appeared excessive. In the foam sector plan US $220,000 was requested for management and US $280,000 for stakeholder coordination, workshops, adapting building standards, training and monitoring. In the refrigeration sector plan, US $415,000 was requested for technical assistance, information outreach, awareness and consultative meetings and technical information exchange, in addition to US 714,000 requested for conversion-specific activities related to training and technical assistance. Further, US $880,000 was requested for the project management unit. A number of these expenses appear to constitute double counting.

40. UNDP advised that the Government of the Islamic Republic of Iran has decided to introduce only low-GWP alternatives in the foam sector and has proposed substantial activities in the air-conditioning and servicing sectors. These technologies require that the regulatory processes and bodies be in place for their safe and cost-effective use within the limited time frame for the implementation of Stage I. The proposed non-investment activities would support the achievement of HCFC phase-out targets through: faster adoption of HCFC-free technologies, stronger regulation enforcement, continued engagement of national stakeholders on HCFC phase-out in the RAC equipment manufacturing and servicing sector, and a stronger monitoring system to support HCFC phase-out.

41. UNDP indicated that US $880,000 requested for the project management unit is for overall support for HPMP implementation and that the unit would be working directly under the supervision of the NOU. The technical support projects under the foam sector and RAC sector plans are specifically designed to support implementation of the sector / sub-sector level projects and would directly contribute to phase-out. This is therefore another enabling mechanism rather than double-counting or duplication of efforts.

Co-financing and total cost of the HPMP

42. The Secretariat requested the estimated cost for the complete phase-out of HCFCs in Islamic Republic of Iran. UNDP responded that while the activities required for complete-phase-out have been identified, their exact costs and costs for implementation of these evolving technologies cannot be assessed at this stage.

43. UNDP indicated that a number of co-financing opportunities would be explored for HPMP implementation, including opportunities for integrating HCFC phase-out project initiatives with related initiatives (e.g., energy efficiency in AC applications, building codes and standards) supported through other financial mechanisms; in-kind support from the Government (human resources, infrastructure);

phase-out by non-eligible enterprises; and concessional lending support from international financial institutions (e.g., KfW, Germany, Government of Australia soft loan, etc.).

44. UNDP also indicated other examples which could be considered as "co-financing" for the HPMP. For example: costs incurred by industry and consumers due to non-availability of full support for conversion in the RAC sector; additional investments needed during conversion to HCFC-free alternatives that may not be eligible under MLF guidelines; management support time from other line ministries and authorities; and industry initiatives for training and technical support for HCFC-free alternatives etc.

Section 2. Sector plan for foam (Government of Germany and UNIDO)

Eligibility of second-stage conversion enterprises

45. Some enterprises that had been previously converted to pentane technology through the Multilateral Fund are still using considerable amounts of HCFC-141b. Examples of this include: two enterprises manufacturing sandwich panels consuming 67 metric tonnes of HCFC-141b categorized as "not finished"; four companies consuming both HCFC-141b and cyclopentane with a total consumption of 90 metric tonnes of HCFC-141b; another company (Mammut Co.) was previously converted to pentane technology, and is now manufacturing both continuous and discontinuous panels using both pentane and 180 metric tonnes of HCFC-141b as blowing agents. Considering that the Executive Committee approved funding for the conversion of these enterprises to non-ODS blowing agents, the additional funding being requested would constitute double counting and therefore is not eligible. Furthermore, the funding requested for the integral foam producer (Iran Polyurethane), which was converted to hydrocarbon technology but had its equipment destroyed by fire, is not eligible.

46. The Government of Germany indicated as follows:

(a) The enterprises manufacturing sandwich panels were among the first to be converted to pentane, but the projects were never successfully closed. Although no funding will be requested, HCFC-141b consumption would need to be included as the enterprises have not been converted properly;

(b) One continuous sandwich production line at Mammut Co. was converted to pentane; there are two other production lines using HCFC-141b;

(c) As a matter of completeness, the enterprises mentioned above are still using HCFC-141b and therefore are not double counting;

(d) The equipment provided to Iran Polyurethane was destroyed during a fire before 2007; the newly installed equipment is, strictly speaking, not a second conversion.

47. The Foam Sector Plan includes a request for US $200,000 for training and monitoring activities for three XPS foam enterprises that were established after the 21 September 2007 cut-off date. These enterprises are not eligible. Furthermore, considering the very small amount of HCFC consumption (less than 2.6 ODP tonnes) the overall reduction of HCFCs in the country associated with these enterprises will be minimal even if the consumption continues to grow until 2012. The Government of Germany indicated that the XPS lines at these enterprises are not working at full capacity, therefore the consumption of HCFCs is relatively low. There are indications from one company that it intends to install an XPS line before the HCFC quota system is enforced. The decision has been made, in conjunction with the Ozone Unit, to take proactive measures by providing the proper technology supported by the Government.

Technology selection

48. The strategy proposed in the Foam Sector Plan is based exclusively on hydrocarbon technology, in spite of the low level of foam production, and the associated low consumption of HCFC-141b at each enterprise. The reason provided for selecting hydrocarbon technology is a lack of availability of other alternatives due to Iran's political situation and the fact that most of the blowing agents that could be considered, including methyl formate, are manufactured or developed mainly by companies from the United States. As the enterprises are predominantly small and medium size enterprises (SMEs), with limited technical support and financial resources, the selection of hydrocarbon technology will result in major counterpart contributions (the smaller the enterprises, the greater the need for co-financing). For instance, the cost effectiveness of the six enterprises manufacturing continuous panels ranges between US $4.44/kg and US $16.15/kg, while the cost effectiveness for the seven integral skin foam enterprises ranges from US $10.95/kg to US $47.28/kg. Through decision 24/49, the Executive Committee decided, *inter alia,* that in cases where counterpart contributions were needed to ensure implementation, in order to avoid delays in the projects' implementation, those counterpart contributions had to be known by the implementing agency to be in place before the projects were submitted.

49. The Government of Germany indicated that the average cost-effectiveness values for each group of foam applications were below the thresholds. Furthermore, the Government of the Islamic Republic of Iran will use its flexibility in the implementation of the Foam Sector Plan to achieve a fair and balanced distribution of eligible funds throughout eligible sector enterprises, thus ensuring obligatory conversion of SMEs and avoiding disadvantages for individual companies. Necessary levels of counterpart contributions have been ensured by the Government in consultations with stakeholders. In regard to the importation of raw materials from global companies, including European countries and the United States of America, the Government of Germany indicated that there are few indirect imports for long-term existing applications in the country. However, this is not consistent with the official policy. For the existing indirect imports, the suppliers from the United States of America have already mentioned (announced) officially that they will terminate any exports to the country.

50. The minutes of a workshop that was held to help prepare the Foam Sector Plan provided insight into the needs of the foam manufacturing enterprises in the Islamic Republic of Iran. Low in capital resources, and lacking leverage with material and equipment suppliers, these enterprises are at high risk of failing to adopt a hydrocarbon-based technology that requires a high level of maintenance. The difficulties that SMEs face were the reason that their adoption of transitional HCFC-141b technologies still persists. As a strategy to meet the 2013 and 2015 phase-out targets, the Government of the Islamic Republic of Iran may wish to focus on larger companies (50 metric tonnes of HCFC-141b or more) that may have the capacity to adopt hydrocarbon technology. For the small and medium-scale manufacturers, the ideal situation to circumvent the numerous problems outlined in the minutes would be to convert to a similar liquid technology that would not require the need for local works and other unforeseen expenditures related to installation of new equipment (as there would be virtually no change to baseline equipment); and would not require specialized maintenance personnel. Currently, the technology that fits that description is methyl formate, which has been the subject of validation exercises for system-wide use through the Multilateral Fund. This technology is established in commercial polyurethane production in various countries in four regions of the world. Methyl formate is widely available in commercial quantities, including in the Asia-Pacific region and the Middle East. Methyl formate can be used pre-blended, in-line blended and direct-injected into the mixhead, which makes it a versatile process. It also has low global warming potential (GWP).

51. In addressing the above issue, the Government of Germany pointed out that methyl formate has been a known blowing agent for more than 15 years and has been tested extensively. It has not developed in non-Article 5 and Article 5 markets for various reasons and is not a mature technology for the proposed applications. GTZ carried out a survey with all major raw material suppliers (e.g., Bayer, Elastogran, Dow, Huntsman), and none of the suppliers have appropriate systems for the proposed applications, nor

would they recommend it now or in future, because of its long-known weaknesses for the proposed applications. The state-of-the-art conversion technology in the Islamic Republic of Iran is hydrocarbons, as they have been already used for insulation and integral foam applications, and are being produced locally. The strategy is in place, as a system house in the country has been selected to provide pre-blended hydrocarbon polyols for use by SMEs. The Government of Germany further pointed out that methyl formate is extremely flammable and harmful; and the assumption that there are virtually no changes to baseline equipment is not correct. On this issue the Secretariat referred to the technical report on the assessment for the application of methyl formate in Multilateral Fund projects submitted by UNDP to the 62nd Meeting, where the issue of flammability of methyl formate in pre-blended polyols is discussed extensively.

Methodology for calculating incremental costs

52. The total cost of the Foam Sector Plan was calculated based on seven identified subsectors plus a systems house. Capital cost calculations were based on the assumption that all enterprises are the same size (e.g., the capital cost for an enterprise that consumes 1 tonne/year is the same as for an enterprise that consumes 24 tonnes/year; or, in the discontinuous sandwich panel subsector, the same technology and the same equipment are being proposed for a company that uses 0.8 tonne/year and for another company that uses 18 tonnes/year). Furthermore, no baseline information was provided to make it possible to determine the appropriate level of incremental costs for the conversion of the various enterprises. Following this approach, the total costs for phasing out HCFC-141b in the foam sector amount to US $6.8 million. The Government of Germany reported that it agreed with the Ozone Unit to proceed with the implementation of group projects, providing the same equipment to all the enterprises. This also makes it possible to limit counterpart funding by enterprises, provide equal technology, and not create disparities between the enterprises. When it comes to completion of the sector plan, overall costs (based on group projects) are important, not individual project costs.

53. The four systems houses in the country, which are supplying polyol systems to a large number of customers (SMEs), are not included in the Foam Sector Plan, except for the request for US $263,789 to retrofit one of them to technologies that are not explained. Moreover, there was no indication of the downstream foam users that would benefit from the alternative non-HCFC-141b formulations. Involvement of systems houses to develop a feasible option is considered an important strategy by some countries for ensuring sustainable availability of pre-blended systems for the foam industry. The Government of Germany indicated that the approach taken in the Islamic Republic of Iran is the most cost-effective, as the first downstream users will be the companies who are going to be converted. One systems house (USC) has shown interest in providing pre-formulated hydrocarbon blends to converted enterprises. According to the experience garnered from other Fund projects, this is important in order to provide sustainable availability of pre-blended systems.

Section 3. Sector plan in the air conditioning sector (UNDP)

54. The Secretariat requested a complete list of enterprises and their location, baseline equipment and more information in order to assess the incremental cost associated with the project proposal. While UNDP provided information, in particular for the largest enterprise, all information for smaller enterprises was only provided in a generic format, with what UNDP considered to be typical values for baseline assembly equipment data, product types and amount produced.

55. UNDP included the conversion of heat exchanger manufacturing for the single large enterprise, and argued that a typical conversion to HFC-410A would include converting the heat exchanger, and would reduce energy consumption. The Secretariat advised of the decision at the 61st Meeting to continue with the existing practice of using the quality of components as a measure for the baseline, indicating that as long as no technical changes to the heat exchanger are necessary, heat exchanger conversions are not eligible. In the context of energy efficiency improvements, UNDP pointed to the cost of certification

requested under the sector plan; UNDP explained that this certification is currently not mandatory, and discussions about the eligibility of the related costs are ongoing.

56. The Secretariat also raised a number of points regarding the level of cost necessary for particular items. For example, it had been established in the past that vacuum pumps only need to be retrofitted and not purchased new. The need for charging boards, which are a substantial cost item in the project costs provided, is necessary in companies where charging using a balance or charging by measuring the temperature changes in the refrigeration equipment is not suitable due to mass production and time constraints. These two items already cover 90 per cent of the necessary investment cost for small enterprises. At the time of completion of this write-up, UNDP had not yet responded to the above point, nor to the request for additional information regarding the need for assembly line modifications, technical assistance and trials, which amount to 84 per cent of the non-investment costs requested for small enterprises.

Section 4. Sector plan in the refrigeration servicing sector (Government of Germany and UNEP)

57. UNDP, as the lead implementing agency, noted that improved service sector activities will result in better servicing practices that would reduce wastage of HCFCs. At the same time the activities would also facilitate better recovery and reuse of HCFCs and improve the adoption of substitutes. These activities will be facilitated by a parallel awareness programme. If the service sector were left unaddressed it would be difficult to re-engage the large number of small enterprise, and to re-build the necessary capacity and infrastructure at a later stage would be difficult and expensive.

Need for activities in the servicing sector and connection with the NPP

58. The Secretariat requested further information regarding the need for activities in the servicing sector. The Government of Germany pointed to the need for a servicing sector project because of the implementation structure established under the national CFC phase-out plan. Disruption of these working relationships would result in uncontrolled growth in the servicing sector. Germany further pointed out that, since the control of HCFC-containing equipment is not mandatory under the Montreal Protocol, commercial importers will not accept such controls, leading to a further increase in HCFC-22-containing equipment, and a consequent increase in the demand for servicing. Germany also maintains that their activities can achieve an actual reduction of 345 mt (19 ODP tonnes) for the Islamic Republic of Iran, based on experience gained in other countries through better servicing practices for refrigeration and air-conditioning equipment. Consequently, and given significant growth in the servicing sector, Germany maintains that the proposed programme would be meaningful and important for the Islamic Republic of Iran and should be given priority.

59. The Secretariat further pointed out that some funding was still available under the national CFC phase-out plan (NPP) at the beginning of 2010, and that a total of 475 units of recovering and recycling equipment had been delivered. The Secretariat therefore requested more information regarding coordination of the activities in the servicing sector plan with the activities in the former NPP, and how experience had been transferred. This issue could not be completely clarified in the time available.

Technical cost items

60. The Secretariat further questioned the inclusion of standards to check the quality of imported refrigeration equipment until 2013, and whether standard development would be eligible under the Multilateral Fund. Germany responded that these standards, once developed, would be used to prepare inspection guidelines for customs and affiliated laboratories, as well as help monitor imports and enforce any import bans. The Secretariat also commented on the funding for awareness and information campaigning. Upon request, Germany provided further details regarding activities and associated funding.

The information provided by Germany suggests that, in total, 11 awareness workshops for industry associations and government would be carried out; that simple, easily accessible information packages explaining the HCFC phase-out would be provided; and that two short videos covering the refrigeration and air-conditioning, refrigerator, and foam sectors would be produced in the Persian language. The total cost of all these activities would be US $174,000. Discussions on the costs for guideline development, tools on the internet, and technical stakeholder consultations had not been finalised at the time of writing this document. Germany also provided more insight into the training of technicians and customs officers and the related costs. Finally, a number of smaller cost items were also raised with Germany.

61. The supermarket programme proposed by Germany is aimed at improving the leak tightness of refrigeration equipment in supermarkets substantially. It is based on a number of specific activities, targeting the typical positions of leaks in centralised supermarket refrigeration equipment and trying to improve the related servicing practice. In addition to the five supermarkets to be treated, 40 service enterprises will receive tools. Germany explained that it was necessary to supply the tools to a significant number of companies to allow immediate replication of the experiences and results of the leak reduction programme. The Secretariat also pointed to the fact that the desired effect of widespread use of leak reduction measures in supermarkets could not be achieved in time for the 2013 and 2015 compliance measures. Germany replied by underlining the long-term importance of the effect sought.

62. The proposed servicing sector plan indicated that activities in the refrigeration and air conditioning servicing sector included in Stage I of the HPMP will be critical to ensure compliance with the 2013 and 2015 control measures as these activities will contribute to reduce or even reverse the growth of HCFC-22 consumption. Not addressing the refrigeration and air conditioning servicing sector at this point would mean dismantling until 2015 a very effective structure established during the implementation of the NPP that was instrumental in achieving effectively the sustained phase-out of CFCs that were used in the sector. The approach to reduce servicing sector emissions by establishing a leak search and repair programme is innovative and has potential to contribute significantly to the reduction of HCFC-22 consumption. The Secretariat also noted the comprehensive, holistic and integrated approach proposed in the servicing sector plan that would allow for immediate reductions in HCFC consumption in this sector.

Outstanding technical and cost issues

63. The Secretariat is still discussing outstanding technical and cost-related issues on the sector plans with the relevant bilateral and implementing agencies. The Secretariat will make every effort to complete this task and communicate the results of the discussions to the Executive Committee prior to the 62nd Meeting.

RECOMMENDATIONS

64. Pending.

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