UNITED NATIONS

EP

United Nations Environment Programme

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/64/34
15 June 2011

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Sixty-fourth Meeting
Montreal, 25-29 July 2011

PROJECT PROPOSALS: INDONESIA

This document consists of a note by the Secretariat, a document prepared by UNDP on the resubmission of stage I of the HPMP for Indonesia in response to decision 63/55, and the comments and recommendations of the Fund Secretariat on the following projects proposals that were submitted to the 63rd meeting:

Phase-out

• HCFC phase-out management plan (stage I, first tranche) (Sector plan for phase-out of HCFC-141b in the foam sector, phase I)	World Bank
• HCFC phase-out management plan (stage I, first tranche) (Umbrella project to phase-out HCFC-141b from the manufacturing of rigid polyurethane foam at Isotech Jaya Makmur, Airtekindo, Sinar Lentera Kencana and Mayer Jaya)	UNIDO
• HCFC phase-out management plan (stage I, first tranche) (Sector plans for HCFC phase-out in the air-conditioning, refrigeration and fire fighting sectors)	UNDP
• HCFC phase-out management plan (stage I, first tranche)	Government of Australia

Note by the Secretariat

1. At the 62nd Meeting UNDP, as the lead implementing agency, submitted the HCFC phase-out management plan (HPMP) for Indonesia, together with the following four sub-sector phase-out plans to phase-out of 140.7 ODP tonnes of HCFCs by 2015, at a total cost of US $28,061,804 plus agency support costs:

(a) Sector plan for HCFC phase-out in the foam sector (World Bank) and an umbrella project for the phase-out of HCFCs by four foam enterprises (UNIDO);

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

(c) Sector plan for HCFC phase-out in the refrigeration sector (UNDP); and

(d) Sector plan for HCFC phase-out in the fire fighting sector (UNDP).

2. Noting that additional time would be needed to assess new information on the sector phase-out plans, the Executive Committee decided to defer consideration of the HPMP for Indonesia to the 63rd meeting (decision 62/56).

3. At the 63rd meeting UNDP resubmitted a revised HPMP for Indonesia together with four sub-sector plans at a total funding of US $12,716,884, plus agency support costs. During its deliberations, the Executive Committee questioned whether the enterprise in the residential air-conditioning sector, which was 60 per cent foreign-owned, could be converted without the need for funding from the Fund; and noted that the HPMP was proposing to address more than 10 per cent of the baseline by 2015. Based on the report of the contact group that was set up to discuss the issues raised on the HPMP for Indonesia, the Executive Committee decided to request the Government of Indonesia to take into account the modifications proposed by the contact group and to forward its HPMP to the 64th meeting (decision 63/55). The key modifications proposed by the contact group were: revision of the total amount of HCFCs to be phased-out during stage I of the HPMP; introduction of other alternative technologies in the refrigeration and air conditioning subsectors to those originally proposed; prioritization of sectors.

4. UNDP informed that, subsequent to the 63rd meeting, it conducted several meetings with major stakeholders to address the issues raised by the Executive Committee. UNDP also reported that in late May 2011 at the margins of the West-Asia/South Asia network meeting in Maldives, it had discussion with the Ministry for Economy, Trade and Industry (METI) of Japan to seek its cooperation in persuading the major manufacturers of air conditioning and refrigeration equipment in Japan to adopt a more environmentally sound alternative technology in the conversion of the HCFC-22 based manufacturing enterprises, in particular in Indonesia. With the cooperation from the Government of Japan, a meeting was conducted on 6 to 8 June 2011 between two key equipment manufacturers (namely, Daikin and Panasonic), and representatives from the Government of Indonesia and UNDP.

5. On 11 June 2011, UNDP submitted a document in response to decision 63/55 for consideration by the Executive Committee at its 64th meeting. The document submitted by UNDP is attached to the present document as Appendix I.

6. Given the date of submission of the document (i.e., two days prior to the dispatch date of documents to members of the Executive Committee), the Secretariat was unable to review the document and make any consequent modifications to the HPMP for Indonesia and the relevant sub-sector phase-out plans (i.e., air-conditioning sector and refrigeration sector both submitted by UNDP).

7. The Secretariat would like to draw the attention of the Executive Committee to the following relevant information extracted from the document submitted by UNDP for ease of reference:

(a) "The following was agreed at the meeting held in Japan between representatives from the Government of Indonesia (Ministry of Environment, Ministry of Industry), the Government of Japan (METI) and representatives from Daikin and Panasonic:

(i) "Daikin and Panasonic will introduce, support and promote R-32 technology (GWP 675, atmospheric lifetime 4.9 years and energy efficiency gains of up to 10 per cent over other alternatives) for air conditioning and refrigeration applications including room air-conditioners in Indonesia, consistent with the timeframe of Indonesia's HPMP Stage-I implementation and compliance with the 2013 and 2015 targets;

(ii) "Indonesian government would work closely with the industry to ensure appropriate regulations, standards and infrastructure for managing the safe use of this technology throughout the product lifecycle. The proposed regulations could include restricting import of products/substances with high GWP;

(b) "Taking into account concerns of some of the ExCom members, Indonesia would not select R-134a for replacing any of the HCFC consumption and instead opt for hydrocarbons, CO_2, ammonia, etc. as feasible for each application. R-32 would be selected as an option for replacing 2.92 ODP tonnes used for factory-manufactured refrigeration units for small and medium sized walk-in cold rooms, where the charge quantities and operating conditions restrict use of explosive and toxic substances;

(c) "The light commercial air conditioning sub-sector (comprising of four Indonesian-owned manufacturers) with a 2009 consumption of 9.30 ODP tonnes has already selected R-32 technology as proposed in the HPMP;"

(d) "In the room air conditioner (or residential air conditioning) sub-sector, there is only one manufacturer in Indonesia (Panasonic) which has a 60% Japanese ownership and a 2009 HCFC consumption of 10.14 ODP tonnes of HCFC-22. It is noteworthy that Panasonic Indonesia caters to about 22% of the market in Indonesia for air-conditioners, while the remaining 78% of the market is served by imports of air-conditioners…..Panasonic Indonesia would now convert to R-32 technology instead of R-410A technology. No additional costs would be sought; moreover, some of the redesign/development and technical assistance cost elements would also not be sought". The total cost for the conversion of the enterprise to HFC-32 technology has been estimated at US $565,737 instead of US $642,737 previously requested, for the conversion to HFC-410A technology (after deducting the foreign owned component);"

(e) According to UNDP's calculations, the introduction of HFC-245fa, hydrocarbon, and HFC-32 technologies in the foam, refrigeration and air conditioning sub-sectors during stage I of the HPMP would avoid the direct emission of 2,594,800 CO2-eq tonnes annually from 2015.

8. The revised overall costs for implementation of stage I of the HPMP for Indonesia is US $12,692,684 excluding agencies' support costs as shown in the table below.

Table. Revised cost of stage I of the HPMP for Indonesia

Component	Agency	Phase-out (ODP tonnes)	Cost (US $)
Air conditioning sector plan	UNDP	32.27	4,428,453
Refrigeration sector plan	UNDP	54.51	4,022,649
Foam sector plan	World Bank	34.12	2,714,187

Component	Agency	Phase-out (ODP tonnes)	Cost (US $)
Group project for 4 enterprises in the foams sector	UNIDO	10.40	777,395
Technical assistance for refrigerant management	Australia	NA	300,000
Project management and coordination	UNDP	NA	450,000
Total		131.20	12,692,684
HCFCs to be phased out (mt)			1,636
Cost-effectiveness (us $/kg)			7.76

9. The HPMP for Indonesia, together with the four sub-sector phase-out plans as submitted to the 63rd meeting is attached.

APPENDIX I

RESUBMISSION OF INDONESIA HPMP STAGE-I PROPOSAL
(In response to ExCom Decision 63/55)
(Submitted by UNDP)

Background

1. On behalf of the Government of Indonesia, Indonesia's HPMP Stage-I for compliance with the 2013 and 2015 control targets, was first submitted by UNDP as the lead agency, for consideration at the 62nd ExCom meeting in December 2010, with total requested costs of US$ 28,061,804 plus agency support costs of US$ 2,104,636 comprising of the following components:

(a) Foam sector plan (World Bank)

(b) Umbrella project covering four foam enterprises (UNIDO)

(c) Air Conditioning Sector Plan (UNDP);

(d) Refrigeration Sector Plan (UNDP)

(e) Technical assistance for refrigerant management (Australia)

(f) Management components (UNDP)

2. Following an analysis of the submission and of the additional information provided by implementing agencies and detailed technical and cost-related discussions between the implementing agencies and the Secretariat prior to the 62nd ExCom meeting, the Secretariat issued documents UNEP/OzL.Pro/ExCom/62/35 and 62/35/Add.1.

3. Indonesia's HPMP was considered during the 62nd ExCom meeting held in November/December 2010. Informal consultations were held among interested ExCom members at the margins of the meeting, where it was noted that additional time would be needed to assess all the relevant information and to allow more detailed discussions among ExCom members on the submissions. Accordingly, the Executive Committee decided to defer consideration of the HPMP for Indonesia and accompanying sector plans to the 63rd ExCom meeting (Decision 62/56).

4. UNDP, as the lead implementing agency, submitted a revised HPMP Stage-I for Indonesia together with its components and sector plans, *reflecting resolution of technical and cost-related issues with the Secretariat, at a total funding level of US$ 12,716,884 plus agency support costs of US$ 970,267* for UNDP, UNIDO, World Bank and Government of Australia, for consideration at the 63rd ExCom meeting in April 2011. The Secretariat prepared and issued document UNDP/OzL.Pro/ExCom/63/34, which summarized and reflected the updates and understanding that had been taken place since the first submission of the HPMP to the 62nd ExCom meeting. The Secretariat's recommendations in Document 63/34 included requesting the ExCom to consider approval of the Indonesia HPMP at the level of costs indicated above.

5. During the 63rd ExCom meeting, a contact group of interested ExCom members discussed HPMPs from non-LVC countries, among which Indonesia HPMP was one. The comments of the contact group on the Indonesia HPMP consisted of *the total amount of HCFC phase-out, prioritization of sectors and selection of alternative technologies in the refrigeration and air conditioning sectors for Stage-I*

compliance. Since national stakeholders would need to be consulted to address and respond to these comments, and since this would require additional time, a final decision on the Indonesia HPMP could not be reached during the 63rd ExCom meeting. The Executive Committee, through Decision 63/55, therefore requested Indonesia to resubmit the HPMP to the 64th ExCom meeting, taking into account these comments.

6. Immediately following the 63rd ExCom meeting, UNDP as the lead agency for Indonesia's HPMP, fielded a mission to Indonesia for consultations with the government and industry stakeholders, on how best the views expressed by ExCom members could be taken into account. A situation analysis was conducted and a fast-track action plan was drawn up to address the issues.

Responses to comments from ExCom members

7. The three key issues from ExCom members on the Indonesia HPMP (Stage-I) submission, were as below:

(a) Total amount of HCFC phase-out

(b) Prioritization of sectors

(c) Alternative technologies in the Refrigeration and Air Conditioning sectors

The elaboration and corresponding responses to the above issues are as below:

Total amount of HCFC phase-out and Prioritization of Sectors

8. It is important to note that Indonesia adopted a bottom-up approach in developing the overarching HPMP strategy, involving a close collaboration between government and industry and has been a result of long and intensive consultations and thorough exhaustive sub-sector level analysis of the HCFC consuming sectors that covered HCFC consumption patterns; selection of viable, safe and efficient alternative technologies; practical, workable and consensual policies, regulations and enforcement to ensure sustainability of phase-out and implementability of actions within the limited timeframe available for achieving the Stage-I compliance targets.

9. The surveys conducted in Indonesia as part of the HPMP preparation, were extremely elaborate and intensive, with baseline information at enterprise/end-user level assiduously collected and documented. Almost 95% of the HCFC consumption was tracked in each sub-sector. HCFC consumption and growth patterns were modeled at the sub-sector level to ensure that phase-out required in each sub-sector in order to meet the national-level compliance targets, was established as reliably and realistically as possible. The breakdown of the 2009 by sector and substance is shown below (in ODP tonnes):

Sector/Substance	HCFC-22	HCFC-141b	Other	Total
Manufacturing				
Air Conditioning	32.30	-	-	32.30
Refrigeration	9.08	45.43	-	54.51
Firefighting	-	-	3.04	3.04
Foams	-	85.03	-	85.03
Solvents	-	-	-	-
Servicing	196.61	-	3.32	199.93
Total	**237.99**	**130.46**	**6.36**	**374.81**

10. The 2009 HCFC-141b consumption of 130.46 ODP tonnes is distributed between the Foam Sector (85.03 ODP tonnes) and Refrigeration Sector (45.43 ODP tonnes). Out of the HCFC-141b

consumption of 85.03 ODP tonnes in the Foam Sector, 40.51 ODP tonnes originates from applications where cost-effective, safe and mature alternatives cannot be currently implemented. The remaining 44.52 ODP tonnes in the Foam Sector, together with the 45.43 ODP tonnes from the Refrigeration Sector, amounting to a total of 89.95 ODP tonnes of HCFC-141b, would be phased out in Stage-I.

11. HCFC-22 consumption in manufacturing in the Air Conditioning and Refrigeration Sectors amounts to a total of 41.38 ODP tonnes in 2009. This represents about 20% of the quantum of refrigeration and air conditioning equipment entering the Indonesian market each year (rest of the equipment is imported). This has a direct correlation with the consumption in the Servicing Sector. There is rapid growth (over 14% annually) in demand for refrigeration and air conditioning equipment, resulting in rapid increase in the population of refrigeration and air conditioning equipment. Together with the demand in servicing of the existing population, the total HCFC-22 demand is projected to rise significantly and will need to be carefully analyzed and controlled to ensure compliance with the Stage-I targets.

12. The HPMP technical working groups and the Indonesian government carried out a detailed analysis and modeling of future HCFC-22 demand, and concluded that in order to ensure continued availability of HCFC-22 for servicing the existing population as well as cater to the expected population increase until 2015, it would be necessary to allow the HCFC-22 consumption in the Servicing Sector to increase in a controlled manner, by an average level of 6.7% annually until 2015, taking into account retirement of portions of the existing population and ingress of new population during 2011 to 2015.

13. In order to still ensure compliance with the 2013 and 2015 targets, while maintaining this availability of HCFC-22, it would be essential to phase out the HCFC-22 consumption in manufacturing during Stage-I. This would allow the government to effectively regulate (prohibit) manufacturing and import of HCFC-22 based refrigeration and air conditioning equipment from 2015, thus limiting the population of HCFC-22 based equipment to levels that would ensure compliance.

14. In view of the above, 41.38 ODP tonnes of HCFC-22 consumption (representing the entire consumption) in manufacturing of refrigeration and air conditioning equipment would need to be phased out.

15. Thus a total of 131.33 ODP tonnes covering HCFC-141b and HCFC-22 consumption in manufacturing in the Air Conditioning, Foams and Refrigeration sectors would need to be phased out by 2015, for complying with the 2013 and 2015 control targets.

16. The projected HCFC baseline consumption for Indonesia (average of 2009 and estimated 2010 consumption), by sector and substance is as below:

Sector/Substance	HCFC-22	HCFC-141b	Other	Total
Manufacturing				
Air Conditioning	34.90	-	-	34.90
Refrigeration	10.18	45.43	-	55.61
Firefighting	-	-	2.15	2.15
Foams	-	90.61	-	90.61
Solvents	-	-	0.02	0.02
Servicing	217.87	-	1.00	218.87
Total	**262.95**	**136.04**	**3.17**	**402.16**

17. The phase-out amount of 131.33 ODP tonnes thus represents 32.6% of the projected baseline consumption of 402.16 ODP tonnes.

18. The phase-out quantities targeted for 2013 and 2015 compliance in previously approved HPMPs for other countries with comparable projected baselines are shown below:

Country	Starting point/ Projected Baseline	Phase-out Target for Stage-I	Proportion of Baseline (%)
Colombia	223.35	78.91	35.33
Ghana	49.50	17.30	34.95
Iran	355.70	107.10	30.10
Pakistan	246.55	79.10	32.10
Vietnam	385.82	141.10	36.60

19. The rationale for the proposed sector prioritization and phase-out targets have been further substantiated in detail, in the HPMP Stage-I document submitted to the 63rd ExCom meeting. In addition, Indonesia will enact clear and targeted regulations to ensure sustainable compliance. HCFC consumption would be controlled through a quota management system. HCFC consumption in manufacturing in the selected sectors/sub-sectors would be banned from 2015. Also, import of HCFC-22 based refrigeration and air conditioning equipment would be prohibited from 2015.

Alternative technologies in the Air Conditioning and Refrigeration sectors

20. The profile of the 2009 HCFC consumption in manufacturing in the Air Conditioning and Refrigeration sectors in Indonesia is as below:

Sector/Substance	HCFC-22	HCFC-141b	Other	Total
Manufacturing				
Air Conditioning	32.30	-	-	32.30
Refrigeration	9.08	45.43	-	54.51
Total	**41.38**	**45.43**	**-**	**86.81**

Refrigeration Sector

21. The HCFC-141b consumption in the Refrigeration Sector (manufacturing) amounting to 45.43 ODP tonnes, representing 52.33% of the total consumption, will be phased out by converting to hydrocarbon (cyclopentane) technology, as proposed in the HPMP.

22. The HCFC-22 consumption in this sector is 9.08 ODP tonnes. The HPMP proposed to convert about 50% or 4.54 ODP tonnes of the consumption to R-32 (GWP = 675) and the remaining 50% to R-134a (GWP = 1,430). Compared to HCFC-22 (GWP = 1,810) both these alternatives reduce direct GHG emissions significantly as compared to HCFC-22.

23. Taking into account concerns of some of the ExCom members, Indonesia would not select R-134a for replacing any of the HCFC consumption and instead opt for hydrocarbons, CO_2, ammonia, etc. as feasible for each application. R-32 would be selected as an option for replacing 2.92 ODP tonnes used for factory-manufactured refrigeration units for small and medium sized walk-in cold rooms, where the charge quantities and operating conditions restrict use of explosive and toxic substances.

Air Conditioning Sector

24. The Air Conditioning sector, particularly the residential and light commercial air conditioning sub-sectors, presents a unique challenge for HCFC phase-out both in Indonesia and rest of the world. In Indonesia, it is the single largest consumer of HCFC-22.

25. In 2009, about 1.21 million room air-conditioners were sold in Indonesia (of which only 266,000 units or 22% were manufactured in Indonesia and the rest were imported). For light commercial air conditioning units, out of the 69,218 units sold in Indonesia, only about 8,000 were locally manufactured

and the rest imported or assembled with imported components. These two sub-sectors account for over 95% of the total HCFC-22 consumption in Indonesia in manufacturing and servicing.

26. The technology used in air-conditioners has a significant climate impact both through direct emissions (leakage and servicing) and indirect (energy use). In case of Indonesia, it is estimated that about 25-30% of the climate impact can be attributed to direct emissions and remaining 70-75% to indirect emissions. Thus, both the GWP of the refrigerant as well as the energy-efficiency of the system are critical.

27. Indonesia has assumed voluntary CO_2 emission reduction targets under the climate regime, amounting to 26% of the 2005 baseline, to be achieved by 2020. This is a significant challenge and requires careful consideration of Montreal Protocol compliance, while ensuring economic development with safe and efficient low-GWP technologies.

28. In view of the above, Indonesia has taken serious note of the concerns raised by some ExCom members regarding the choice of alternative technology in the Air Conditioning Sector.

29. In the light commercial air conditioning sub-sector (comprising of four Indonesian-owned manufacturers) with a 2009 consumption of 9.30 ODP tonnes has already selected R-32 technology as proposed in the HPMP. This is the first time in the world that such an initiative is being taken for this sub-sector. This will result in significant reductions in direct and indirect CO_2 emission reductions, due to the low GWP of R-32 (675) and high energy-efficiency.

30. In the room air conditioner (or residential air conditioning) sub-sector, there is only one manufacturer in Indonesia (Panasonic) which has a 60% Japanese ownership and a 2009 HCFC consumption of 10.14 ODP tonnes of HCFC-22. It is noteworthy that Panasonic Indonesia caters to about 22% of the market in Indonesia for air-conditioners, while the remaining 78% of the market is served by imports of air-conditioners. The other main players are from Korea (LG, Samsung), USA (Carrier, Trane), Japan (Daikin, Mitsubishi, etc) and China (Gree, Midea, etc), from where the imports take place.

31. Keeping in trend with the global transition to R-410A, Panasonic had proposed to convert to R-410A technology, which has a high GWP (2,088) and is not more energy-efficient than HCFC-22 technology. While this was not a desirable solution, it was accepted and incorporated by Indonesian government in the HPMP, considering the critical need for phasing out HCFC-22 in manufacturing at the earliest, as articulated in the rationale earlier.

32. Upon noting the comments from some ExCom members and after in-depth consultations with the technical working group and other national stakeholders during end-April 2011, Indonesian government, with the assistance of UNDP and Ministry of Economy, Trade and Industry (METI), Japan, embarked on a high-level engagement with the two main Japanese players (Daikin and Panasonic).

33. A high-level delegation of Indonesia government (Ministry of Environment and Ministry of Industry), METI-Japan and UNDP visited the headquarters of Panasonic and Daikin in Osaka, Japan, in early June 2011, with the aim of persuading the senior managements/decision-makers in these key Japanese air conditioning equipment manufacturers, to select low-GWP and energy-efficient technologies when phasing out HCFC-22 (the summary of the mission and outcomes is attached as Annex-I).

34. Both Daikin and Panasonic managements agreed to introduce and support R-32 technology as the alternative to HCFC-22 in the Indonesian market for air-conditioners. The Indonesian government would work closely with the industry to ensure appropriate regulations, standards and infrastructure for managing the safe use of this technology throughout the product lifecycle.

35. Thus, Panasonic Indonesia would now convert to R-32 technology instead of R-410A technology. No additional costs would be sought; moreover, some of the redesign/development and technical

assistance cost elements would also not be sought. A revised breakdown of costs for the Panasonic Indonesia component is attached as Annex-II.

36. A revised comprehensive breakdown of costs and impacts of the Indonesia HPMP (all sectors and substances) is presented in Annex-III.

Co-financing

37. Indonesia has assumed voluntary commitments for achieving national-level CO_2 emission reductions amounting to 26% of the 2005 levels by 2020. Since about 50% of the overall CO_2 emissions originate from energy use in buildings and a significant proportion of building energy use originates from air conditioning and refrigeration equipment, Indonesia considers the technology conversions under the HPMP, as an important opportunity to enhance energy-efficiency, thereby contributing to indirect emission reductions. With this in view Indonesia is taking concrete steps to pursue co-financing opportunities for energy-efficiency related interventions in conjunction with HPMP implementation.

38. The following co-financing efforts are either underway or are being explored for mobilizing co-financing for the additional investments that would be needed to implement energy-efficiency measures and which are not eligible under MLF:

(a) The GEF-approved (2008) project: *Barrier removal for cost-effective development and implementation of energy-efficiency standards and labeling* (BRESL), covering six countries in Asia-Pacific, of which Indonesia is one (Indonesian component amounts to US$ 1.8 million in GEF grant), is being implemented by UNDP. The project will link to refrigeration and air conditioning equipment energy-efficiency through updated energy-efficiency standards and labeling programme.

(b) A project specifically for enhancing energy-efficiency of refrigeration and air conditioning equipment is being developed jointly by Indonesian Ministry of Environment and UNDP, for funding by GEF. The first stakeholder workshop for this proposed project took place in end-April 2011 in Bandung, Indonesia and was attended by most of the HPMP stakeholders, in addition to other government departments and ministries. The project is targeted for submission to GEF during 2011 and approval in 2012.

(c) Discussions are in final stages for a bilateral project, for co-financing of additional investments needed for implementing energy-efficiency enhancements in refrigeration and air conditioning equipment manufactured by enterprises covered under the HPMP.

Climate impacts of HCFC phase-out in Stage-I

39. Following are the impacts on <u>direct</u> CO_2-eq emissions before and after the technology conversions in the HPMP Stage-I:

Before conversion

Sector/Substance	HCFC-22	HCFC-141b
Air Conditioning (metric tonnes)	587	0
Refrigeration (metric tonnes)	165	413
Foams (metric tonnes)	0	405
Total (metric tonnes)	**752**	**818**
GWP[1]	1,810	725
Impact (CO_2-eq tonnes)	1,361,120	593,050
Total Impact (CO_2-eq tonnes)	**1,954,170**	

After Conversion

Sector/Substance	R-410A	R-134A	R32	HC	HFC-245fa
Air Conditioning (metric tonnes)	0	0	432	0	0
Refrigeration (metric tonnes)	0	0	53	370	0
Foams (metric tonnes)	0	0	0	245	50
Total (metric tonnes)	**0**	**0**	**485**	**615**	**50**
GWP[1]	2,088	1,430	675	11	1,030
Impact (CO_2-eq tonnes)	0	0	327,375	6,765	51,500
Total Impact (CO_2-eq tonnes)	**385,640**				

Notes:

1. GWP values according to IPCC AR-4 (2007)
2. Additional direct emission reductions due to 3.7 ODP tonnes (67 metric tonnes) of HCFC-22 phase-out through effective refrigerant management (amounting to 121,270 CO_2-eq tonnes) and due to avoided emissions from minimum 500 metric tonnes of HCFC-22, that would not be needed in servicing due to regulatory bans on HCFC-22 based refrigeration and air conditioning equipment from 2015 (amounting to 905,000 CO_2-eq tonnes).

The net impact based on the above, amounts to direct emission reductions of 2,594,800 CO_2-eq tonnes annually from 2015.

40. In addition to the above, indirect emission reductions, due to enhanced energy efficiency of refrigeration and air conditioning equipment are estimated at a minimum of 1,600,000 CO_2-eq tonnes annually from 2015.

ANNEX-I

Low-GWP and energy-efficient alternatives in the Air Conditioning and Refrigeration Sectors in Indonesia: A strategic engagement with Japanese industry and government

Background

41. The key issue of low-GWP technology selection especially in the air conditioning sector has arisen in context of Indonesia HPMP because of the particular situation and opportunity that it presents.

42. Panasonic Indonesia, with about 40% Indonesian ownership, is one of the participating enterprises in the Indonesia HPMP. It is the sole manufacturer of room air-conditioners (up to 3 HP) in Indonesia. Panasonic Indonesia proposes to convert to R-410A technology for phasing out HCFC-22, its current technology. As it stands, according to the current MLF policies, Panasonic Indonesia is indeed technically eligible to receive funding for phasing out HCFC-22, in proportion to its Indonesian ownership. Accordingly, Indonesia requested funding from MLF for conversion of Panasonic Indonesia to R-410A technology as part of the Indonesia HPMP. However, R-410A technology is not necessarily an improvement over HCFC-22, in terms of maximizing climate benefits (MOP decision XIX/6).

43. The problem assumes significance in case of Indonesia, because Panasonic is the only manufacturer of room air-conditioners in Indonesia and accounts for about 22% of the market share; the rest of the market is catered to by imports. As per the HPMP, Indonesia will enact regulations prohibiting HCFC-22 in domestically manufactured and imported air-conditioners with effect from 01 January 2015, which is essential for Indonesia's compliance with the 2015 HCFC phase-out targets. When this happens, it is almost certain that Panasonic in Indonesia (as well as other manufacturers from abroad), will start placing R-410A based air-conditioners in the market. This will create a further servicing tail for R-410A in the future. In addition to the Montreal Protocol commitments, Indonesia has taken on voluntary CO_2 emission reduction targets of 26% of the 2005 levels by 2020. Extensive introduction of R-410A technology is considered a significant impediment and a source of adverse climate impacts.

44. A similar situation is likely to arise in other countries in the Asia-Pacific, such as China, India, Malaysia, plus other small countries, leading to widespread introduction of R-410A technology in developing countries. Current annual sales of air-conditioners in the developing countries in Asia-Pacific alone is around 30-35 million. By 2020, this is expected to cross 100 million, given the low market penetration and significant demand. This scenario indicates further and significant threats of adverse impacts on climate.

45. Thus, through the Indonesia HPMP approval process, there is a unique opportunity to send a "market signal" to the industry that the international community is indeed serious about not promoting high-GWP and inefficient options, and would instead promote energy-efficient low-GWP options. Currently R-410A technology is not penetrated much in developing countries, and this opportunity needs to be leveraged to prevent further and significant expansion of R-410A technology into the emerging markets, which are potentially much larger than the current developed-country markets (the population of -410A based air-conditioners in developed countries has already reached about 200 million units by end-2010 as per some industry estimates).

46. The Japanese companies are major players in the air conditioning sector, particularly in the developing countries, and especially in the key countries in Asia-Pacific such as China, India, Indonesia, Malaysia, etc. and also have the latest technologies available. These companies are in a position to potentially take the lead in introducing efficient low-GWP technologies in developing countries. The current timing (HPMP stage-I) is considered the right time to take such an initiative; otherwise, an important opportunity would be lost.

47. UNDP had several and exhaustive discussions with key ExCom members on the subject in the past three months, both in context of the Indonesia HPMP and in context of the larger opportunity such an initiative presents, for the potential significant and favorable climate impacts. At the sidelines of the recent joint West-Asia/South Asia network meeting in Maldives, further detailed discussions were held by UNDP and US, with METI Japan, to seek their cooperation in persuading the major Japanese manufacturers of air conditioning and refrigeration equipment, to adopt a more environmentally and commercially strategic approach on this critical technology issue.

48. METI-Japan kindly agreed to cooperate and facilitated a meeting between two key Japanese manufacturers, namely, Daikin and Panasonic, and representatives of UNDP and Government of Indonesia.

Meeting between UNDP, Indonesia government, METI-Japan, Daikin and Panasonic

49. Senior-level representatives from the Indonesian government (Ministry of Environment, Ministry of Industry), METI-Japan and UNDP, attended meetings with the high-level managements of Daikin and Panasonic, headquartered in Osaka, Japan, during 6-8 June 2011, which included field visits to the respective manufacturing facilities. The managements of these two main Japanese companies were apprised of the situation of Indonesia as well as the global situation, in context of alternatives to HCFC-22 in refrigeration and air conditioning equipment, specifically the importance of timing in context of HPMP Stage-I implementation and compliance. After detailed discussions on several technology alternatives which the two manufacturers had researched, agreement was reached on the following key points:

(a) Daikin and Panasonic will introduce, support and promote R-32 technology (GWP 675, atmospheric lifetime 4.9 years and energy efficiency gains of up to 10% over other alternatives) for air conditioning and refrigeration applications including room air-conditioners in Indonesia, consistent with the timeframe of Indonesia's HPMP Stage-I implementation and compliance with the 2013 and 2015 targets.

(b) Indonesian government would work closely with the industry to ensure appropriate regulations, standards and infrastructure for managing the safe use of this technology throughout the product lifecycle. The proposed regulations could include restricting import of products/substances with high GWP.

Impact

50. This development has potentially a profound impact on the air conditioning sector in Indonesia, as well as other developing countries particularly in Asia-Pacific, where interlinkages are present between countries in the region, in terms of manufacture of components and parts of air conditioners, as well as significant trade in air conditioners. Introduction of low-GWP technologies such as R-32, will lead to significant climate benefits, both through direct and indirect emission reductions.

ANNEX-II

Revised cost breakdown for Panasonic Indonesia

No	Item	Unit	Qty	Unit Cost	Total costs (63rd ExCom)	Revised Costs
1	System, component and process redesign	Lot	1	60,000	60,000	0
2	Heat exchanger processing modifications	Lot	2	45,000	90,000	0
3	Sheet metal processing modifications	Lot	1	30,000	30,000	30,000
4	Assembly line modifications					
	Charging area modifications	Lot	1	30,000	30,000	30,000
	Pressure testing equipment	No	1	10,000	10,000	10,000
	Refrigerant charging equipment	Nos	4	7,500	30,000	30,000
	Industrial leak detectors	Nos	2	7,500	15,000	15,000
	Vacuum pumps	Nos	12	2,500	30,000	30,000
5	Quality inspection, finishing and testing modifications	Lot	1	30,000	30,000	30,000
6	Product certification from external agencies	Lot	1	25,000	25,000	25,000
7	Prototype manufacturing, trials and testing	Nos	10	2,500	25,000	0
8	Process, operation, maintenance and safety training	Lot	1	15,000	15,000	30,000
9	Technical assistance from external experts	Lot	1	15,000	15,000	0
Sub-total					**405,000**	**230,000**
Contingencies (10%)					40,500	23,000
Total (ICC)					**445,500**	**253,000**

Incremental Operating Costs

No	Item	Unit	Qty	Unit Cost	Total costs (63rd ExCom)	Revised Costs
1	Compressors	Nos	266,641	5	1,333,205	1,333,205
2	Savings in heat exchangers	Nos	266,641	-2	-533,282	-533,282
3	Refrigerant (30% less charge)	Kg	184,340	4	691,275	516,152
Total (IOC)					**1,491,198**	**1,316,075**
Eligible IOC (US$ 6.30/kg-ODS)					**1,161,342**	**1,161,342**

Total Costs

No	Item	Total costs (63rd ExCom)	Revised Costs
1	Incremental Capital Costs	445,500	253,000
2	Incremental Operating Costs	1,161,342	1,161,342
Total Costs		**1,606,842**	**1,414,342**
Less for non-A5 ownership (60%)		964,105	848,605
Net eligible funding		**642,737**	**565,737**

Note: *All amounts in US dollars*

ANNEX-III

Revised overall costs for Indonesia HPMP

No	Component	Agency	Phase-out (ODP tonnes)	Funding Request (US$)
1	Air Conditioning Sector Plan	UNDP	32.27	4,428,453
2	Refrigeration Sector Plan	UNDP	54.51	4,022,649
3	Foam Sector Plan	World Bank	34.12	2,714,187
4	Group project for 4 enterprises in the Foams Sector	UNIDO	10.40	777,395
5	Technical assistance for Refrigerant Management	Australia	NA	300,000
6	Project Management and Coordination	UNDP	NA	450,000
Grand total			**131.20**	**12,692,684**
Total ODS phase-out (ODS tonnes)				**1,636**
Cost-effectiveness (US$/kg-ODS/y)				**7.76**

Note: *Not including agency support costs*

UNITED NATIONS

EP

United Nations Environment Programme

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/63/34
22 March 2011

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Sixty-third Meeting
Montreal, 4-8 April 2011

PROJECT PROPOSALS: INDONESIA

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) (Sector plan for phase-out of HCFC-141b in the foam sector, phase I)	World Bank
• HCFC phase-out management plan (stage I, first tranche) (Umbrella project to phase-out HCFC-141b from the manufacturing of rigid polyurethane foam at Isotech Jaya Makmur, Airtekindo, Sinar Lentera Kencana and Mayer Jaya)	UNIDO
• HCFC phase-out management plan (stage I, first tranche) (Sector plans for HCFC phase-out in the air-conditioning, refrigeration and fire fighting sectors)	UNDP
• HCFC phase-out management plan (stage I, first tranche)	Government of Australia

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Indonesia

(I) PROJECT TITLE	AGENCY
HCFC phase-out management plan (stage I, first tranche)	UNDP (lead)

(II) LATEST ARTICLE 7 DATA	Year: 2009	374.8 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP									Year: 2009
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123			3.0		3.3				6.4
HCFC-124					0.0				0.0
HCFC-141b		85.0		45.4					130.5
HCFC-142b									
HCFC-22				41.4	196.6				238.0
HCFC-225						0.0			0.0

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	To be determined	Starting point for sustained aggregate reductions:	n/a
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	0.0	Remaining:	

(V) BUSINESS PLAN		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Australia	ODS phase-out (ODP tonnes)	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	3.7
	Funding (US $)	300,000	0	0	0	0	0	0	0	0	0	300,000
World Bank	ODS phase-out (ODP tonnes)	6.2	12.4	6.2	6.2							31.0
	Funding (US $)	1,075,000	2,150,000	1,075,000	1,075,000							5,375,000
UNDP	ODS phase-out (ODP tonnes)	43.2	0.0	35.9	0.0	7.8	0.0	0.0	0.0	0.0	0.0	86.8
	Funding (US $)	5,505,000	0	3,429,407	0	717,896	0	0	0	0	0	9,652,303
UNIDO	ODS phase-out (ODP tonnes)	10.4										10.4
	Funding (US $)	879,000										879,000

CONTINUATION OF PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
Indonesia

(VI) PROJECT DATA			2011	2012	2013	2014	2015	Total
Montreal Protocol consumption limits (estimate)			n/a	n/a	402.16	n/a	361.94	n/a
Maximum allowable consumption (ODP tonnes)			n/a	n/a	402.16	n/a	361.94	n/a
Project Costs requested in principle(US$)	UNDP	Project costs	4,000,000	0	3,944,620	0	980,682	8,925,302
		Support costs	300,000	0	295,847	0	73,551	669,398
	Australia	Project costs	300,000	0	0	0	0	300,000
		Support costs	39,000	0	0	0	0	39,000
	World Bank	Project costs	1,500,000	0	923,181	0	291,006	2,714,187
		Support costs	112,500	0	69,239	0	21,825	203,564
	UNIDO	Project costs	777,395	0	0	0	0	777,395
		Support costs	58,305	0	0	0	0	58,305
Total project costs requested in principle (US $)			6,577,395	0	4,867,801	0	1,271,688	12,716,884
Total support costs requested in principle (US $)			509,805	0	365,085	0	95,377	970,267
Total funds requested in principle (US $)			7,087,200	0	5,232,886	0	1,367,065	13,687,151

(VII) Request for funding for the first tranche (2011)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNDP	4,000,000	300,000
Australia	300,000	39,000
World Bank	1,500,000	112,500
UNIDO	777,395	58,305

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

PROJECT DESCRIPTION

1. At the 62nd Meeting, UNDP, as the lead implementing agency submitted the HCFC phase-out management plan (HPMP) for Indonesia, together with the following four sub-sector phase-out plans to phase-out of 140.7 ODP tonnes of HCFCs by 2015:

(a) Sector plan for HCFC phase-out in the foam sector (World Bank) and an umbrella project for the phase-out of HCFCs by four foam enterprises (UNIDO);

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

(c) Sector plan for HCFC phase-out in the refrigeration sector (UNDP); and

(d) Sector plan for HCFC phase-out in the fire fighting sector (UNDP).

2. The costs of the sectoral phase-out plans, as submitted, totalled US $28,061,804 plus agency support costs of US $2,104,636 for UNDP, UNIDO and the World Bank. The Government of Australia would also be assisting in the implementation of some of the activities as a cooperating agency.

3. Informal consultations were held among interested Executive Committee members at the margins of the 62nd Meeting, where it was noted that additional time would be needed to assess new information on the sector phase-out plans that was presented to them. Accordingly, the Executive Committee decided to defer consideration of the HPMP for Indonesia and accompanying sub-sector phase-out plans to the 63rd Meeting (decision 62/56).

4. On behalf of the Government of Indonesia, UNDP, as the lead implementing agency, has submitted to the 63rd Meeting a revised HPMP for Indonesia together with four sub-sector plans at a total funding of US $12,716,884 plus agency support costs of US $970,267 for the Government of Australia and UNDP, UNIDO and the World Bank.

Scope of the document

5. The Secretariat has updated the documents UNEP/OzL.Pro/ExCom/62/35 and Add.1 submitted to the 62nd Meeting based on additional information submitted by the relevant bilateral and implementing agencies. To facilitate the review of the HPMP for Indonesia and the sub-sector phase-out plans, this document presents an overview of the HPMP itself, followed by a description of each of the sub-sectors mentioned above. The section on comments and recommendations has also been arranged similarly.

Section 1. HPMP document

Background

6. Indonesia's Environmental Law 23/1997 provided the legal framework for the regulations controlling the use and imports of ODS issued by individual ministries (Agriculture, Environment, Health, Industry or Trade). Since 2006, Indonesia has had a licensing system for HCFCs which allows the Government to mandate import quotas when needed.

7. The Ozone Unit, established within the Ministry of Environment, coordinates activities related to the implementation of the Montreal Protocol. A National Ozone Committee established in the mid-1990s and comprised of high-level representation from other ministries plus a number of other stakeholders provides strategic and policy guidance. Four Technical Working Groups (TWGs) were formed for each of the four main HCFC consuming sectors in Indonesia (air-conditioning, foam, refrigeration and fire fighting) in April 2009 to develop an HCFC phase-out strategy for each of the sectors.

HCFC consumption and sectoral distribution

8. Indonesia has no HCFC production or exports. The total HCFC consumption is shown is Table 1. HCFC consumption increased from 1,261 metric tonnes (mt) in 1996 to 3,949 mt in 2006, indicating an average annual growth rate of over 12 per cent over the 1996 to 2006 period. However, the growth in HCFC consumption since 2007 has been at 15.3 per cent on a metric tonne basis and 14.3 per cent on ODP-tonne basis. HCFC-22 and HCFC-141b account for the majority of HCFCs consumed by Indonesia. The growth in HCFC-22 consumption has shown a sharp increase in the past few years due to a rapid rise in demand for air conditioning and refrigeration systems, which has led to increased servicing demand.

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

HCFC	2005		2006		2007		2008		2009	
	ODP t	mt	ODP t	Mt	ODP t	mt	ODP t	mt	ODP	mt
HCFC-22	128.7	2,339.9	131.3	2,387.8	170.2	3,094.0	201.8	3,668.4	238.0	4,327.0
HCFC-141b	179.9	1,635.8	167.9	1,526.0	110.8	1,007.5	96.2	874.2	130.5	1,186.0
HCFC-123			0.7	34.7	5.8	288.4	1.8	91.5	6.4	318.0
HCFC-124					-	0.1			-	0.1
HCFC-225					0.0	0.5	0.0	1.4	0.0	0.6
Total	308.6	3,975.7	299.9	3,948.5	286.8	4,390.4	299.8	4,635.5	374.8	5,831.7

9. The HCFC baseline consumption for compliance is estimated at 402.16 ODP tonnes based on the average of the reported 2009 consumption data of 374.8 ODP tonnes under Article 7 of the Protocol and the estimated consumption for 2010 of 429.5 ODP tonnes.

10. The sectoral distribution of HCFCs used in 2009 in Indonesia is shown in Table 2. About 47 per cent of the total HCFC consumption (in ODP tonne) was used in the manufacturing sector. HCFC-141b accounts for almost 35 per cent of the total HCFC consumption (measured in ODP tonnes).

Table 2: Sectoral distribution by type of HCFC used in 2009 (ODP tonnes)

Sector	HCFC-22	HCFC-141b	HCFC-123	Total
Manufacturing				
Air conditioning	32.30			32.30
Refrigeration	9.08	45.43		54.51
Foam sector		85.03		85.03
Fire fighting			3.04	3.04
Subtotal	41.38	130.46	3.04	174.88
Servicing	196.61	-	3.32	199.93
Total	237.99	130.46	6.36	374.81

11. There are four manufacturers of HCFC-123-based fire extinguishing systems in Indonesia. Although a detailed survey and analysis of the solvent sector is still underway, given the small quantities of HCFC-225 used and its low ODP and global warming potential (GWP) value, it is not considered a priority sector for reaching the 2015 compliance target.

An overview of the HCFC phase-out strategy

12. The HCFC phase-out strategy proposed by the Government of Indonesia has been based on the lessons learnt and experience gained during the implementation of CFC phase-out projects and programmes that started in 1994. The overall strategy has taken into account the industry structure, HCFC consumption trends and profiles in various sectors, the situation of alternative technologies in the various HCFC consuming sub-sectors and related costs. The limited time available and management demands for implementing actions for meeting the imminent HCFC phase-out compliance targets of 2013 and 2015, managing effectively the HCFC consumption growth and the relatively uncertain maturity, availability

and viability of alternative technologies for many applications, are among the challenges for the Government of Indonesia and the industry for HCFC phase-out.

13. In designing the HCFC phase-out strategy for compliance with the 2013 and 2015 compliance targets, the following rationale and considerations were considered: a prioritization of the manufacturing sector; the maturity and availability of alternative technologies; the complete phase-out of HCFC consumption at sub-sector levels to avoid market distortion and to facilitate issuance of regulations; voluntary compliance and enforcement; and the selection of financially sound and viable enterprises with good technical and managerial capacity and relatively higher consumption. Accordingly, Stage I of the HPMP proposes to phase out 140.7 ODP tonnes of HCFCs by 2015, representing 35 per cent of the estimated baseline for compliance. Of this amount, 90.50 ODP tonnes would be phased out from the refrigeration manufacturing sector, 49.93 ODP tonnes from the foam sector and 0.25 ODP tonnes from the fire fighting sector. The refrigeration servicing sector would be addressed in stage II of the HPMP.

14. HCFC-22 consumption in the air-conditioning and refrigeration manufacturing subsectors will be completely phased out by 2015. In the foam sector, HCFC-141b will be phased out completely in the commercial refrigeration and refrigerated transportation, and thermoware and integral skin foam applications and partially in the manufacturing of sandwich panels by 2015. The only unaddressed manufacturing sectors that would remain after 2015 would be part of the rigid foam sub-sector, part of the fire fighting sector and the solvent sector.

15. In support of the investment component of the HPMP, the following regulatory measures are foreseen: raising import taxes for HCFCs in 2011; a ban on import of HCFC-based refrigeration and air-conditioning equipment from 1 January 2015; and, a ban on manufacturing/assembly of HCFC-22 based refrigeration and air-conditioning equipment from 1 January 2015. The establishment of new HCFC-141b-based foam enterprises and any expansion of existing production facilities will be banned by 2011.

16. Technical support will be provided, including the establishment and/or revision of existing product standards, technology assistance and information dissemination on alternative technologies. Technical assistance will also be provided to the servicing sector, including establishment of a product stewardship programme for effective management of refrigerants and reclaim equipment supply for demonstration purposes. An awareness programme will also be implemented. Similar mechanisms have been successfully implemented in Australia, with whom Indonesia has a long history of bilateral cooperation in various fields, such as trade, security and environment. The Government of Australia has agreed to assist the Government of Indonesia in setting up this programme, through technical assistance and government liaison.

Section 2. Sector plan for HCFC phase-out in the foam sector (World Bank) and an umbrella project for the phase-out of HCFCs by four foam enterprises (UNIDO)

Background

17. The sector plan for HCFC phase-out in the foam sector in Indonesia includes the following two components:

(a) A sector plan for the phase-out of HCFC-141b in the foam sector (Foam Sector Plan (phase 1)), at a total cost of US $5,233,557 plus agency support costs of US $392,517 for the World Bank as originally submitted to the 62nd Meeting. Implementation of the project will result in the phase-out of 39.5 ODP tonnes (359.4 mt) of HCFC-141b, at a cost-effectiveness of US $14.56/kg; and

(b) Umbrella project to phase-out 10.4 ODP tonnes (94.1 tonnes) of HCFC-141b from the manufacturing of rigid polyurethane (PU) foam at Isotech Jaya Makmur, Airtekindo, Sinar Lentera Kencana and Mayer Jaya, at a total cost of US $814,247 plus agency support costs of US $61,069 for UNIDO as originally submitted to the 62nd Meeting, at a cost-effectiveness of US $8.65/kg.

18. The overall cost of the Foam Sector Plan, including the umbrella project submitted by UNIDO, is US $6,047,804 plus agency supports costs of US $453,586 to phase out 49.9 ODP tonnes (453.5 mt) of HCFC-141b, at a cost-effectiveness of US $13.33/kg.

19. The Foam Sector Plan represents part of the Government's strategy to meet its 2013 and 2015 Protocol compliance targets. The plan will ensure compliance with the interim HCFC-141b consumption reduction steps, establish an implementation mechanism to support the long-term sustainability of the HCFC-141b phase-out in the foam sector, and create a private-public sector partnership to foster and promote the overall HCFC phase-out programme. In order to meet phase-out deadlines, the Foam Sector Plan focuses on the subsectors with a manageable number of enterprises and sufficient technical and financial capacity to undertake conversions rapidly.

20. Additional HCFC-141b phase-out will be addressed in subsequent stages to be submitted at a later date (i.e., HCFC-141b phase-out in the thermoware and water heater sub-sectors in 2016 and HCFC-141b phase-out in the sandwich panel sub-sector in 2020). Import of HCFC-141b will be strictly controlled through an import quota system which will be enforced once the sector plan is approved. A total ban on the use of HCFC-141b in the foam sector will be put in place in 2030.

HCFC-141b consumption

21. Of the total amount of HCFC-141b imported into the country, 80.2 ODP tonnes are used as a blowing agent in the manufacturing of foams and 16.1 ODP tonnes in the manufacturing of insulation foam in the refrigeration manufacturing sector. Of this total, 65.5 ODP tonnes are used by 70 enterprises manufacturing insulation foam for appliances, refrigerated trucks, water heaters, sandwich panels, slabstock, spray thermoware and integral skin foam for the automotive and furniture industries (Table 3). The remaining 14.7 ODP tonnes are used by enterprises manufacturing commercial refrigeration equipment and/or by small companies, and would be addressed in phase 2 of the HPMP. Based on annual growth rate of 12 per cent for rigid foam and 20 per cent for integral skin foam for 2009 and 2010, the 2009-2010 average consumption of HCFC-141b in the foam sector has been estimated at 78.9 ODP tonnes (717.7 mt). This amount excludes some 8.8 ODP tonnes (80 tonnes) of HCFC-141b contained in imported pre-blended polyols mainly used by small and medium size enterprises (both locally mixed and imported pre-blended polyols are sold to the same customers).

Table 3: HCFC-141b consumption in foam applications in Indonesia

Foam application	Metric tonnes	ODP tonnes
Freezers	51.6	5.7
Domestic refrigerators	117.2	12.9
Thermoware	106.7	11.7
Boardstock, laminate	37.5	4.1
Water heaters	11.1	1.2
Imitation wood	0.0	0.0
Sandwich panel continuous	38.1	4.2
Sandwich panel discontinuous	105.8	11.6
Block foams	32.3	3.6
Spray	0.6	0.1
Refrigerated trucks	5.9	0.7
Spray	4.9	0.5
Integral skin automotive	48.8	5.4

Foam application	Metric tonnes	ODP tonnes
Integral skin furniture	34.8	3.8
Total	**595.2**	**65.5**

22. Fifty-three foam enterprises covered under the Foam Sector Plan were converted from CFC-11 to HCFC-141b with the assistance from the Multilateral Fund. The HCFC-141b consumption of these enterprises was 49.7 ODP tonnes (452 mt) in 2008, representing 76 per cent of the total consumption in the sector. The remaining 17 enterprises (manufacturing thermoware, water heaters, imitation wood, sandwich panels, slabstock, and integral skin foam) have not received assistance from the Fund. Also, 49 enterprises used HCFC-141b pre-blended polyols, which are locally blended by six domestic systems houses; the remaining 21 enterprises purchase HCFC-141b directly from chemical suppliers and mix it with polyols *in situ*.

Technology selection

23. The baseline equipment of 53 rigid foam manufacturing plants consists of 42 high pressure dispensers, 12 low pressure dispensers (some enterprises having more than one dispenser), and 7 pieces of spray equipment; 8 enterprises use the hand-pouring method. The 17 integral skin foam manufacturers have 13 high pressure dispensers and 4 low pressure dispensers.

24. The Foam Sector Plan will promote the adoption of hydrocarbon technology, where possible, to maximize climate benefits. However, for those small and medium size enterprises where hydrocarbon technology is not a technically and economically viable option (due to domestic safety regulations and relocation costs), technologies with higher global warming potential (GWP) would be introduced.

25. With their existing business relationship and distribution channels, systems houses are expected to channel technical and financial assistance to their customers. The enterprises covered under the Foam Sector Plan will be assisted by the Ministry of Environment with policy actions that will keep them operational.

Cost of the foam sector

26. Phase 1 of the Foam Sector Plan will phase out 50.0 ODP tonnes (453.5 mt) of HCFC-141b used by 30 enterprises, as shown in Table 4.

Table 4: HCFC-141b consumption by enterprises covered under phase 1 of the Foam Sector Plan

Sub-sector	No. of enterprises	mt	ODP tonnes
Freezer	3	26.9	3.0
Domestic refrigeration	2	177.8	19.6
Refrigerated trucks	3	9.0	1.0
Integral skin automotive	11	85.0	9.3
Integral skin furniture	7	60.7	6.7
Panels	4	94.1	10.4
Total	30	453.5	50.0

27. The estimated cost of the Foam Sector Plan is US $16.8 million, of which US $9.8 million is considered eligible for funding (Table 5). The calculation of the total cost has been based on the following assumptions: the cost for conversion to hydrocarbon technology is based on retrofitting existing foaming dispensers; the cost for conversion to HFC-245fa and water-based technologies is based on retrofitting baseline equipment; and incremental operating costs for HFC-245fa are based on US $1.60/kg. The conversion of the four enterprises under the umbrella project includes, at each plant, hydrocarbon storage system, retrofit or replacement of foam dispensers, safety systems, civil works, technology transfer, trials and training. Conversion of these four enterprises results in operating savings of US $2,107.

Table 5: Total cost of the Foam Sector Plan in Indonesia

Sub-sector	Technology	HCFC (mt)*	Total cost (US $)	CE (US $/kg)		Total funding (US $)	
				Actual	Threshold	MLF	Counterpart
Freezers	HFC, HC	78.2	780,109	9.97	7.83	612,306	167,803
Household refrigerators	HC	177.8	2,096,641	11.79	9.79	1,740,662	355,979
Thermoware	HFC	161.9	2,384,618	14.73	7.83	1,267,677	1,116,941
Boardstock/laminated	HFC	56.9	421,759	7.41	7.83	421,759	
Water heaters	HFC	16.8	506,033	30.15	7.83	131,544	374,489
Panels continuous	HC	57.8	1,112,806	19.26	9.79	565,862	546,944
Panels discontinuous	HFC	160.6	2,839,729	17.68	7.83	1,257,498	1,582,231
Block foam	HFC	49.1	404,416	8.24	7.83	384,453	19,963
Spay foam	HFC	0.9	320,496	351.93	7.83	7,047	313,449
Transportation	HFC	9	489,876	54.29	7.83	70,470	419,406
Transportation, spray	HFC	7.5	502,441	67.42	7.83	58,725	443,716
Automotive	HFC	85	2,380,355	28.02	16.86	1,433,100	947,255
Furniture	HFC	60.7	1,381,274	22.77	16.86	1,023,402	357,872
Umbrella project**	HFC	94.1	1,203,147	12.78	8.65	813,965	389,182
Total		1,016.30	16,823,700			9,788,470	7,035,230

* Estimated HCFC-141b consumption in 2012.
**Submitted by UNIDO. HCFC consumption is for 2009.

28. To support implementation of investment interventions under phase 1 of the Foam Sector Plan, US $250,000 is requested for technical assistance, including: training workshops for foam enterprises (US $50,000); technical consultant services (US $100,000); revision of technical standards and formulation (US $50,000); and public awareness activities (US $50,000). An additional US $453,051 is requested for a Project Management Office with full responsibility to implement the Foam Sector Plan. The total funding requested from the Multilateral Fund for phase 1 of the Foam Sector Plan is US $6,047,804 with the breakdown shown in Table 6.

Table 6: Funding level requested from the Multilateral Fund for phase 1 of the Foam Sector Plan

Technology/sub-sector	HCFC-141b		CE (US $/kg)	Funding (US $)
	ODP tonnes	mt		
Rigid foam (hydrocarbon)	22.53	204.80	9.79	2,004,796
Integral skin sector (HFC-245fa)	16.02	145.60	16.86	2,455,052
Other subsectors	0.99	9.00	7.83	70,658
Umbrella project (hydrocarbon)	10.35	94.10	8.65	814,247
Total investment cost				5,344,753
Technical assistance				250,000
Management fee				453,051
Total cost of phase 1	49.89	453.50	13.34	6,047,804

Section 3. Sector plan for HCFC phase-out in the air-conditioning sector (UNDP)

Background

29. The air conditioning sector plan represents part of the Government's strategy to meet its 2013 and 2015 Montreal Protocol compliance levels. It includes conversion of one manufacturer of residential air-conditioners, and 4 major and 18 smaller enterprises manufacturing other air-conditioning products. The sector plan proposes to phase out the entire consumption of HCFC-22 in the manufacturing of air-conditioning equipment, through the use of HFC-410A, while at the same time suggesting that the companies could at a later stage convert further to HFC-32 by introducing the necessary changes relating to the flammability of this refrigerant.

30. The air conditioning sector in Indonesia has experienced very high growth, especially in the past decade due to an initial low market penetration of air conditioning equipment followed by a combination of steady economic development and increasing purchasing power of the population. Since most air conditioning equipment uses HCFC-22 as refrigerant, its consumption has also grown at a high rate.

HCFC-22 consumption

31. The total HCFC consumption in the air-conditioning sector in 2009 was estimated to be 3,114 mt (171.3 ODP tonnes) of which about 587.3 mt (32.3 ODP tonnes) were used for manufacturing equipment and the remainder in servicing. The estimated baseline of the air-conditioning manufacturing sector is 634.5 mt (34.9 ODP tonnes).

Cost of the air-conditioning sector plan

32. The air conditioning sector plan establishes the costing for three groups of enterprises. Group I relates to the residential air conditioning sector and consists of one enterprise. Group II relates to light commercial refrigeration equipment manufactured by the four next largest enterprises, with a consumption between 9.8 (0.5 ODP tonne) and 68.5 mt (3.8 ODP tonnes) of HCFC-22. Group III comprises 18 small and medium enterprises (SMEs) that assemble equipment, with a total consumption of 233.5 mt (12.8 ODP tonnes) of refrigerant, i.e. an average of 13 mt (0.7 ODP tonnes) per enterprise.

33. For each of the three groups, a generalized approach was taken, establishing a list of equipment necessary to operate the enterprises using HFC-410A refrigerant as a replacement of HCFC-22. Possibilities for retrofitting equipment in enterprises of Groups II and III were not explored. The cost requested for the conversion of the manufacture of residential air-conditioners (Group I) is US $4,660,000; however, due to a 60 per cent foreign ownership of the single enterprise concerned, the funding requested from the Multilateral Fund is US $1,864,000. The incremental capital costs for Group II are US $1,276,000 per enterprise; in addition incremental operating costs of US $115 per unit produced are requested. The capital costs for the conversion of the 18 smaller enterprises in Group III are US $110,000, and incremental operating costs of US $100 per unit produced. An overview over the total cost for the conversion of the enterprises is provided in Table 7.

Table 7: Incremental costs for the conversion of 23 enterprises in the air-conditioning sector in Indonesia (as submitted to the 62nd Meeting)

Description	Total costs (US $)	Counterpart funding (US $)	Funding request (US $)	Phase-out (HCFC-22 mt)	CE (US $/kg)
Residential air conditioning (1 enterprise)	4,660,000	2,796,000	1,864,000	184.34	10.11
Light commercial and other (about 4 enterprises)	8,342,000	-	8,342,000	169.12	49.33
SMEs and assembly (about 18 enterprises)	3,060,000	-	3,060,000	233.51	13.10
*Sub-total**	*16,062,000*	*2,769,000*	*13,276,000*	*586.97**	*22.62*
Socialization of regulatory measures	180,000	-	180,000	40.00**	4.50
Technology information dissemination/awareness	240,000	-	240,000	53.33**	4.50
Total	**16,482,000**	**2,796,000**	**13,686,000**	**680.30**	**20.12**

* Sector specific reduction in consumption

** Reductions through non-investment activities not counted as reductions in the sector

34. The Government of Indonesia proposes to enact sector-specific regulations on the national level. In order for the regulations to be effective, interaction with stakeholders in industry and the production of extension materials (publications) would be needed. The related measures are subsumed in the budget under "socialization of regulatory measures". Alternative technologies for air conditioning applications,

which would need to meet a broad range of requirements including safe handling and environmental friendliness, are currently neither mature nor commercialized fully. Therefore Indonesia proposes to undertake specific information sharing and exchange activities: the related measures are subsumed in the budget under "technology information dissemination/awareness".

Section 4. Sector plan for HCFC phase-out in the refrigeration sector (UNDP)

Background

35. The sector plan for HCFC phase-out in the refrigeration sector in Indonesia (Refrigeration Sector Plan) covers refrigeration equipment in the commercial, industrial and transport sub-sectors. For these sub-sectors, a total cost of US $6,198,000 plus agency support costs of US $464,850 for UNDP (as originally submitted to the 62nd Meeting). The implementation of the project will result in the phase-out of the entire consumption of 54.5 ODP tonnes of HCFCs (comprising 165 mt (9.07 ODP tonnes) of HCFC-22 and 413 mt (45.43 ODP tonnes) of HCFC-141b used in the manufacturing of commercial, industrial and transport refrigeration equipment.

36. The Refrigeration Sector Plan represents part of the Government's strategy to meet its 2013 and 2015 Protocol compliance levels. The market for residential, commercial, industrial and transport refrigeration equipment had expanded significantly in Indonesia in recent years due to the increasing demand for processing, preservation, transport and storage of perishable foods.

HCFC-22 consumption

37. The Refrigeration Sector Plan states that the total 2009 HCFC consumption in the sector was 1,703 mt (116.4 ODP tonnes), with 165 mt (9.1 ODP tonnes) of HCFC-22 consumption in the manufacturing of refrigeration equipment and 1,125 mt (61.9 ODP tonnes) of HCFC-22 consumed in servicing. For the manufacturing of the equipment, also 413 mt (45.5 ODP tonnes) of HCFC-141b have been consumed.

Technology selection

38. The Refrigeration Sector Plan reviewed a number of alternative technologies in the commercial refrigeration sector. Ammonia technology is proposed where feasible, particularly in large systems. Other viable alternatives such as HFC-134a and HFC-410A are proposed for the medium term, where no low-GWP options are immediately available, and to prepare for the development of other low-GWP technologies. Specific information on the proportion of the different alternative technologies to be adopted has not been provided. For the conversion of foam blowing operations, a number of alternatives have been investigated. The sector plan comes to the conclusion that large and organized enterprises in the sector will convert to hydrocarbon technology, while small and medium-sized enterprises will select HFC-245fa.

Costs of the Refrigeration Sector Plan

39. The Refrigeration Sector Plan will phase out 116.4 ODP tonnes of HCFC-141b and HCFC-22 in 27 enterprises (Groups I, II and III); all enterprises are locally-owned and were established before 2007. There are 6 further enterprises in Group I which appear to need no assistance. For each of the three groups, the costs for the equipment necessary to use alternative technology has been determined, and the total of those costs is the requested funding. For the foaming operations, three large enterprises belonging to Group I and five of the medium-sized enterprises of Group II have high-pressure foam dispensing equipment. All remaining enterprises have low or medium pressure foam dispensing equipment. The HCFC-141b used is almost entirely due to earlier conversion from CFC-11 with assistance from the Multilateral Fund. A pilot programme to redesign the refrigeration systems for the onboard refrigerated storage in fishing vessels will be carried out. The redesigned systems will use ammonia to the extent

possible or HFC-134a as the refrigerant. These redesigned systems will be initially applied to about ten vessels to gain credibility. The results will be widely disseminated to promote transition to the new systems by existing vessels. This early initiative is meant to cost-effectively control the avoidable HCFC-22 consumption in this application.

40. The total estimated cost for the conversion of the three different groups of enterprises as well as technical assistance activities foreseen is presented in Table 8.

Table 8: Project costs for the conversion of 27 enterprises in the refrigeration sector

Group of enterprises	Total cost (US $)
Group I (3 enterprises)	1,878,000
Group II (12 enterprises)	3,060,000
Group III (about 12 enterprises)	660,000
Technical assistance to fisheries sector	180,000
Socialization of regulatory measures	180,000
Technology information dissemination/awareness	240,000
Total	**6,198,000**

41. The Government of Indonesia is proposing to enact sector-specific regulations on the national level and familiarize stakeholders with them through industry interaction meetings and publications. The related measures are subsumed in the budget under "socialization of regulatory measures". Alternative technologies for air conditioning applications which would meet a broad range of requirements including safe handling and environmental friendliness are presently neither mature nor commercialized fully. Indonesia proposes therefore to undertake specific information sharing and exchange activities; the related measures are subsumed in the budget under "technology information dissemination/awareness".

Section 5. Sector plan for HCFC phase-out in the fire fighting sector (UNDP)

Background

42. A technical working group for the fire fighting sector was established in April 2009 by the decree of the Ministry of Environment, to carry out data collection and analysis and to develop a medium and long term strategy for HCFC phase-out in the sector. HCFC-123 has been a preferred blend component in fire extinguishing systems because of its ability to counter combustion chemically, without use of water, foam or powder. HCFC-123 is inert and stable, provides a long or unlimited shelf life, and it has a low GWP value (60 to 80).

43. There are two types of fire extinguishing systems manufactured in Indonesia with HCFC-123 as the key blend component: portable fire extinguishers and total flooding systems. The sector consumed about 240 mt (4.8 ODP tonnes) of HCFC-123 in proprietary blends in 2009, in the manufacturing (152 mt or 3.0 ODP tonnes) and servicing (88 mt or 1.8 ODP tonnes) of fire extinguishing equipment. There are four manufacturers of HCFC-123 based fire extinguishing systems in Indonesia (all manufacture portable systems and three manufacture total flooding systems). Due to the proliferation of end-point consumer outlets and regulations on consumer safety, the demand for portable fire extinguishing systems has been consistently increasing in the past few years. It is expected that the consumption of HCFC-123 in the fire fighting sector will grow at least at 5 per cent annually until 2015.

Alternative technologies

44. The main commercially available alternative blends to HCFC-123 are mainly HFC-based: HFC-136 and HFC-227 for portable systems; and HFC-227, HFC-125, FK-1230, and inert gases and their blends for total flooding systems. These options are not drop-in replacements for HCFC-123; therefore their introduction requires new equipment or modification to existing equipment in manufacturing. The main challenges foreseen by the sector for introducing non-HCFC alternatives are obtaining certifications

for performance, toxicity and other environmental impacts. Resources are also a constraint for field testing and end-user training to convince users about alternatives.

Phase-out strategy

45. To contribute to the reductions in HCFC consumption, the Government of Indonesia is proposing to sustainably reduce its consumption of HCFC-123 by about 12.5 mt (0.25 ODP tonnes) by 2015. The main elements of the strategy for achieving reductions include: technical assistance to the four manufacturers for transitioning to alternatives, certifications and regulatory approvals, field testing and training, and information dissemination.

Phase-out cost

46. The overall cost for phasing out 12.5 mt (0.25 ODP tonnes) of HCFC-123 prior to 2015 has been estimated at US $400,000 as shown in Table 9.

Table 9: Cost for the phase-out of HCFC-123 in the fire fighting sector in Indonesia

Component	Total cost (US $)		
	Total	Counterpart	Requested
Technical assistance to manufacturers	170,000	20,000	150,000
Certifications and regulatory approvals	110,000	20,000	90,000
Field trials and testing	30,000	0	30,000
User training	30,000	0	30,000
Stakeholder interactions	60,000	0	60,000
Total	400,000	40,000	360,000

47. This sector plan will be implemented as a part of the overall Stage-I of the HPMP. The Ministry of Environment will coordinate the implementation. UNDP is the implementing agency.

Section 6. Overall cost of the HPMP

48. The overall cost of achieving reductions as articulated in Stage I of the HPMP is US $32,734,247. Of this amount, US $28,061,804 is requested from the Multilateral Fund (i.e., US $26,291,804 for investment projects and US $1,770,000 for non-investment activities) and US $4,672,443 will be borne by the industry and the country. The summary of the costs is shown in Table 10.

Table 10: Overall cost of the HPMP for Indonesia

Sector	Agency	Cost (US $)		
		Total	Requested	Co-funding
Investment components				
Air-conditioning sector plan	UNDP	16,482,000	13,686,000	2,796,000
Refrigeration sector plan	UNDP	6,198,000	6,198,000	0
Fire fighting sector plan	UNDP	400,000	360,000	40,000
Group project in foam	UNIDO	814,247	814,247	0
Foam sector plan	World Bank	6,800,000	5,233,557	1,566,443
Non-investment components				
Policies and regulations	UNDP	180,000	120,000	60,000
Management and monitoring	UNDP	450,000	360,000	90,000
Technical support	UNDP	300,000	300,000	0
Technical assistance for servicing sector	UNDP	750,000	750,000	0
Awareness and capacity-building	UNDP	360,000	240,000	120,000
Total		32,734,247	28,061,804	4,672,443

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

49. The Secretariat reviewed the HPMP for Indonesia 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), subsequent decisions on HPMPs made at the 62nd Meeting, the 2011-2014 business plan of the Multilateral Fund submitted to the 63rd Meeting, and the HPMP for Indonesia including the sub-sector phase-out plans submitted to the 62nd Meeting.

Section 1. HPMP document

HCFC data

50. Explaining the 26 per cent increase in HCFC consumption between 2008 (4,635 tonnes) and 2009 (5,832 tonnes), UNDP (as the lead implementing agency for the HPMP for Indonesia) said that Indonesia has shown consistent economic growth since 1999, particularly in the HCFC consuming sectors, as noted in the HCFC survey carried out from 2005 to 2007. Although Indonesia was less impacted by the recession in 2008 than many other countries, it may be noted that the HCFC-141b consumption dropped by about 13.3 per cent from 2007 to 2008. The increase in consumption in 2009 from 2008 levels is not a net increase, but rather the result of markets recouping after the relative slump in 2008 coupled with a rapid growth in demand for air conditioning and refrigeration equipment. The growth in HCFC-22 consumption in the past few years is due to a rapid increase in demand for air conditioning and refrigeration equipment, which has also led to increased servicing demand.

51. UNDP also indicated that the HCFC import data for 2007 to 2009 has been collated and reconciled between the Department of Customs, Central Bureau of Statistics, Ministry of Trade and Ministry of Environment and reflects the results of painstaking work to ensure its accuracy and consistency.

Phase-out strategy

Amount of HCFCs to be phased out to meet the 2013 and 2015 control targets

52. To meet the 2013 and 2015 phase-out targets, the Government of Indonesia is proposing the phase out of 140.7 ODP tonnes. This amount is equivalent to 35 per cent of the HCFC baseline estimated in the HPMP (402.2 ODP tonnes) or 40.9 per cent of the HCFC baseline used in the 2010-2014 consolidated business plan noted by Executive Committee at its 61st Meeting (344.1 ODP tonnes). In addressing this issue, UNDP indicated that the feasibility of conversions of enterprises within each sector/sub-sector, which could be carried out in 2-3 years, were established. A complete phase-out at a sub-sector or application level was required, to enable effective and enforceable regulations, while maintaining a level playing field without market distortion. This was one of the important lessons learnt during CFC phase-out. Using a bottom-up analysis for all sub-sectors, taking into account several factors and potential measures to control HCFC consumption, it was concluded that the consumption arising from unaddressed sectors/sub-sectors would need to be controlled at no higher than 6.7 per cent annually, if 140.7 ODP tonnes could be addressed in Stage I.

Prioritization of HCFC phase-out

53. The 2009/2010 average consumption of HCFC-141b used in the foam sector alone (i.e., excluding that used for the manufacturing of refrigeration equipment) in Indonesia amounted to 90.61 ODP tonnes, equivalent to 22.5 per cent of the estimated HCFC baseline consumption in the country. Accordingly, Indonesia might be able to meet the 2015 control target by addressing only the

consumption of HCFC-141b in the foam sector. However, the Government is proposing to meet the 2013 and 2015 control measures by phasing out not only consumption of HCFC-141b, but also HCFC-22 used in the refrigeration/air conditioning manufacturing and servicing sectors and HCFC-123 used in the fire fighting sector.

54. In addressing this issue UNDP indicated that the Government of Indonesia, the national stakeholders and the agencies who jointly developed the overarching strategy and associated components of the country's HPMP, concluded that it was not possible to meet the 2013 and 2015 compliance targets through phase-out of HCFC-141b alone, based on the following factors:

(a) Consistent with the Executive Committee's guidance, the Government of Indonesia has already prioritized the phase-out of HCFC-141b. Since over 80 per cent of the HCFC-141b consumption in the foam sector originates from second stage conversion enterprises, it is inevitable to include several of them in stage I, i.e., 95 ODP tonnes (863.6 mt) of the total 130 ODP tonnes (1,181.8 mt) of HCFC-141b consumed in 2009 will be phased out by 2015. Due to the large number of SMEs in the sectors (consuming less than 20 mt of HCFC-141b), further phase-out in the sector will be neither cost-effective nor implementable at this stage;

(b) The annual sales of residential and light commercial air conditioning units were about 1.3 million units in 2009. Even with no growth over the next five years, the number of new equipment will be over 6 million units, adding about 10,000 to 15,000 mt (550 to 825 ODP tonnes) of HCFC-22 banks and about 1,000 to 1,500 mt (55.0 to 82.5 ODP tonnes) annually to the servicing demand (the current annual demand of HCFC-22 for servicing is 3,575 mt or 196.6 ODP tonnes). Therefore, if HCFC-22 consumption is not addressed at an early stage, its rapid growth for manufacturing and servicing uses will nullify the reductions achieved through even a complete phase-out of HCFC-141b;

(c) Furthermore, consistent with decision XIX/6 for maximizing climate benefits from HCFC phase-out and consistent with Indonesia's voluntary national CO_2 emission reduction targets, the Government and stakeholders would like to avoid proliferation of appliances with high-GWP refrigerants, while promoting energy-efficiency in appliances, equipment and buildings. Addressing HCFC-22 consumption at an early stage would thus minimize adverse impacts on ozone and climate significantly (i.e., reduction in annual HCFC-22 consumption of 1,000 to 1,500 mt post-2015, and avoiding direct emissions of about 2.5 million CO2-equivalent tonnes);

(d) Due to the specific HCFC-22 consumption profiles and structure of the refrigeration and air conditioning industry, it is feasible to achieve complete phase-out of HCFC-22 used in this industry by introducing predominantly low-GWP alternatives.

Second-stage conversion

55. During the phase-out of CFCs, the Executive Committee approved 41 foam projects for the phase-out of 886.7 ODP tonnes of CFC-11. The projects were converted to HCFC-141b technology. Additionally, 26 projects were approved in the manufacturing of domestic and commercial refrigeration units, resulting in the replacement of 1,541.6 ODP tonnes of CFC-11 with HCFC-141b. As a result, 2,695.4 tonnes (296.5 ODP tonnes) of HCFC-141b were phased in. However, the Foam Sector Plan has estimated the 2009 HCFC-141b consumption in Indonesia at 1,186.3 metric tonnes (130.5 ODP tonnes). In explaining the difference between the HCFCs that were phased in and the estimated amount consumed in 2009, the World Bank stated that during the preparation of the foam and refrigeration components of the HPMP, some enterprises that were previously converted to HCFC-141b technology were closed or moved to other countries; others changed their business products and others converted to a final solution

on their own. Furthermore, the levels of production have decreased significantly due to the economic crisis.

56. In spite of the fact that, during the conversion from CFCs to HCFC-141b, due consideration was given to enhancing the baseline equipment so that enterprises could introduce a final technology at a minimum cost, the overall cost-effectiveness of the conversion from HCFC-141b to a final technology has been estimated at US $13.33/kg. The World Bank has indicated that, aside from a few larger enterprises manufacturing refrigeration equipment, the foam enterprises have low levels of HCFC-141b consumption. The alternative technologies are too expensive, either due to high up-front investment costs (hydrocarbon), or because the blowing agents are either too expensive (HFC-245fa) or not yet proven (methyl formate).

57. The World Bank also indicated that, during the preparation of the Foam Sector Plan, consideration was given to selecting more enterprises that had not received assistance from the Fund. Since commitments to phase out HCFC-141b consumption were secured only from enterprises manufacturing domestic refrigerators and freezers and integral skin products, it was necessary to include second-stage conversion enterprises in phase 1 of the Foam Sector Plan to comply with the Protocol's HCFC phase-out targets.

58. In regard to the justification for second stage conversion projects the World Bank explained that under the Foam Sector Plan, the total level of HCFC-141b consumption in the foam enterprises that received assistance under the Multilateral Fund to convert from CFC-11 was 237.1 mt in 2008, representing 39 per cent of the total HCFC-141 consumption in the foam sector and 5 per cent of the total HCFC consumption in the country. In terms of ODP tonne, this amount represented 14 per cent of the total consumption in the manufacturing sector and 7.9 per cent of the total HCFC consumption in the country for the same year. The estimated cost-effectiveness value of foam enterprises that received assistance from the Fund for CFC phase-out and were included in the Foam Sector Plan, is US $7.48/kg as compared with US $$9.67/kg for foam enterprises that have not received assistance from the Fund.

Additional funding for policies and regulations

59. In regard to the request for support for policies and regulations (US $120,000), it was noted that US $173,750 was approved at the 55th Meeting for the preparation of the HPMP including assistance for inter alia, policy and legislation; survey of HCFC use and analysis of data; and, US $200,000 was approved for the preparation of projects in the manufacturing sector. UNDP indicated that the understanding of decision 56/16(b)(i) is that the funding levels agreed through that decision pertained to HPMP preparation. The activities carried out with those funds led to the HPMP document that is a framework policy document, and to Indonesia's national-level controls on HCFC imports through an operating licensing system. The support requested under "policies and regulations" is for targeted regulatory actions that involve government processes and costs. These elements have been included in the guidance provided by decision 54/39

Section 2. Sector plan for HCFC phase-out in the foam sector (World Bank) and umbrella project for the phase-out of HCFCs by four foam enterprises (UNIDO)

Technology selection

60. The selection of hydrocarbon and HFC-245fa technologies will result in major counterpart contributions (US $7,035,230, representing 42 per cent of the total cost) from the majority of the enterprises, particularly SMEs, which usually have low investment capacity (the smaller the size of the enterprise, the larger the counterpart contribution, in some cases reaching more than 90 per cent of the cost of the conversion). From the information presented in the Foam Sector Plan, it appears that the enterprises have not been fully informed of the provision of counterpart contributions (in decision 24/49 the 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 should be known to the implementing agency to be in place before the projects were submitted). The World Bank informed that the issue of counterpart funding has been the major issue discussed by the TWG. The main justification for selecting the automotive and furniture sub-sectors as a priority was that they have sufficient profit margins to allow for the increasing costs of alternative technology. Because of this fact, the TWG agreed with the Ministry's proposal to phase out the use of HCFC-141b completely by 1 January 2016. The umbrella project submitted by UNIDO proposes to convert four foam plants to hydrocarbon technology as one umbrella project, rationalizing costs. The enterprises were informed about estimated cost-sharing and they agreed to bear the costs. It is stated in the project document: "Selection of pentane technology would result in additional investment costs. However, all the companies' owners decided to convert to pentane technology". The companies agreed with the provision.

61. Limited information was provided on latest developments in emerging technologies. The technology selection procedure should also consider the potential for utilization of new technologies, such as methyl formate, that could be more cost-effective, particularly as the majority of the foam enterprises in Indonesia use relatively small amounts of HCFCs. It was pointed out that the demonstration project for the use of methyl formate as a blowing agent under UNDP implementation has been completed and that foam projects submitted by several Article 5 countries had selected methyl formate as the most cost-effective and sustainable replacement technology. The World Bank and UNIDO responded that the methyl formate alternative had been discussed extensively by the TWG. While this technology is being used in other countries, it is not yet considered as mature in the Asia-Pacific region, mainly because of the absence of infrastructure including supply issues. Pre-blended methyl formate systems are currently difficult to procure cost-effectively, given the long procurement cycles and uncertainties, particularly for SMEs. None of the local systems houses in Indonesia offer such systems. It is expected that this technology, along with other technologies based on aliphatic compounds (i.e., methylal), may become viable in the future. However, establishing the required supply chain, logistics and infrastructure for this technology in Indonesia is expected to take about two years. Furthermore, there are concerns pertaining to the stability of the foam; foam density may have to be increased significantly, resulting in higher operating costs; methyl formate is flammable; long-term effects of methyl formate concentration in the air are unknown, and could pose a health impact to workers. On this basis, the stakeholders concluded that this technology cannot be introduced immediately, to enable the required reductions in HCFC consumption for compliance with the 2013 and 2015 targets to be achieved. In regard to the use of hydrocarbon-based formulations, even if preblended, would need to be further reviewed and clarified against the regulations in place. However, current regulations and standards for handling flammable substances would make it unviable for SMEs to carry out conversions cost-effectively. To reduce the impact on the climate, reduced HFC-245fa formulations with water-blowing were selected for those enterprises where hydrocarbon technology could not be applied.

62. With regard to the selection of HFC-245fa, it was indicated that HFCs are among the gases controlled by the Kyoto Protocol and that the Parties to the Montreal Protocol are considering proposals to include these gases under the Montreal Protocol. The implementing agencies informed the Secretariat that extensive consultations with foam experts and the TWG took place during the preparation of the Foam Sector Plan, where the selection of HFC-245fa as a co-blowing agent with water was confirmed as a proven technology without adversely affecting the foam properties and quality.

63. In spite of the existence of a number of systems houses in Indonesia that are supplying systems to a large number of customers (SMEs), they have not been included in the Foam Sector Plan. The World Bank indicated that systems houses are members of the TWG. At this point, none of the systems houses have expressed their interest in exploring methyl formate as a blowing agent. However, the Government of Indonesia and the World Bank agree with the Secretariat's view that it is important to involve systems houses. Therefore, the Foam Sector Plan does propose to include system houses during the implementation of Stage I, in the interest of flexibility.

Methodology for calculating incremental costs

64. Several technical and cost related issues were discussed between the Secretariat and the World Bank and UNIDO. These issues included, *inter alia;* the classification of the foam enterprises according to their HCFC consumption (small enterprises with HCFC consumption below 5 mt, medium enterprises with consumption between 5 and 10 mt and large enterprises with consumption above 10 mt); the cut-off HCFC consumption for conversion to hydrocarbon to allow for a cost-effective conversion of the equipment in the baseline, including safety related items; the assumption that all enterprises are the same size, and are using average consumption of HCFC-141b to be phased out for each of the subsectors identified; the enterprise counterpart contributions totalling over US $7 million. All these issues were satisfactorily addressed. Hydrocarbon technology will be introduced only in the largest HCFC consuming enterprises; capital costs were based on the level of HCFC consumption and the equipment in the baseline at the enterprise level; and operating costs were also adjusted. The agreed level of funding is presented in Table 11.

Table 11: Agreed funding level for the Foam Sector Plan in Indonesia

Technology/sub-sector	HCFC-141b		CE (US $/kg)	Funding (US $)
	ODP tonnes	mt		
Rigid foam (hydrocarbon)	15.01	136.47	9.79	1,336,041
Integral skin sector (HFC-245fa)	18.49	168.11	7.01	1,178,146
Umbrella project (hydrocarbon)	11.01	100.09	7.77	777,395
Total investment cost				3,291,582
Technical assistance				200,000
Total	44.51	404.67	8.63	3,491,582

Section 3. Sector plan for HCFC phase-out in the air-conditioning sector (UNDP)

Technology selection

65. The selection of HFC-410A technology is meant as an interim technology, prior to a second conversion to HFC-32. Technically, this is a logical step; both technologies share a number of important design characteristics of the equipment, and a conversion from HFC-410A to HFC-32 should be feasible if the related equipment has been designed from the outset with the use of HFC-32 technology and its flammability in mind. The reason for a two-step approach has been that currently suitable compressors for the use with HFC-32 are not available, and therefore the conversion to HFC-32 cannot be ensured. However, the conversion to HFC-410A is not the most advantageous choice in terms of climate impact.

Technical assistance for a stewardship scheme for the manufacturing sector

66. UNDP indicated that Indonesia's strategy for compliance with the 2013 and 2015 targets, prioritizes manufacturing. It proposes a novel approach through the establishment of a product stewardship programme, learning from experiences with similar programmes in the region, which will lay the foundation for actual phase-out in the servicing sector in subsequent stages of the HPMP. The proposed technical assistance is an important element in controlling the HCFC consumption (and growth thereof) until 2015 in that sector, including after sales-care, and is an integral component of the overall strategy; however, no actual phase-out is being targeted. The activity will target both air conditioning and refrigeration manufacturing sectors.

Methodology for calculating incremental costs

67. Upon a request for information regarding enterprises and products provided in conjunction with the air conditioning sector plan UNDP submitted the following information: the air conditioning sector consists of 21 eligible enterprises. One enterprise, PT Panasonic Gobel, with 60 per cent non-Article 5ownership, will be converted to HFC-410A refrigerant. Four enterprises, namely Fatasarana Makmur, Gita Mandiri Tehnik, Industri Tata Udara, and Metropolitan Bayutama; with a total consumption of 169.1 mt (9.3 ODP tonnes) of HCFC-22, will be converted to HFC-32 refrigerant. A group of 16 enterprises with an aggregated consumption of 233.6 mt (12.85 ODP tonnes) of HCFC-22 will be converted to HFC-410A refrigerant. UNDP informed that in meetings with component suppliers the availability of HFC-32 components in Indonesia would be assured in the timeframe needed for the implementation of the project.

68. The determination and discussion of the incremental cost for the conversions took into account the baseline equipment of the companies, the specifics of the different refrigerants, in particular the difference in flammability between the replacements, and costs savings in several items related to training and technical assistance where, due to the large amount of enterprises to be addressed at the same time, savings could be realized. The funding requested for PT Panasonic Gobel included conversion of the heat exchangers at an additional cost of US $52,800 (if the heat exchange manufacturing is found to be eligible). Incremental operating costs for Panasonic Gobel was calculated at the threshold of US $6.3/kg, while for the four medium size enterprises was US $1.47/kg and for the 16 small enterprises was US $4.09/kg.

69. The cost of the phase-out sector plan, which has a cost effectiveness of US $7.27, is shown in Table 12. Should the Executive Committee decide at a future meeting to fund the conversion of heat exchanger manufacturing, the cost effectiveness would increase to a level of US $7.35 per kilogramme of HCFC-22 phased out.

Table 12: Agreed funding level for the Air Conditioning Sector Plan in Indonesia

Description	Cost (US $)				
	Capital	Operating	Total	Eligible	Heat exchangers
Investment					
Residential air conditioning (Panasonic)	313,500*	1,161,342	1,474,842	589,937	+ 52,800
Commercial air conditioning (4 enterprises)	1,571,500	248,416	1,819,916	1,819,916	
Commercial air conditioning (16 enterprises)	968,000	954,800	1,922,800	1,922,800	
Sub-total	2,853,000	2,364,558	5,217,558	4,332,653	+ 52,800
Non-investment					
Sector technical support	120,000	0	120,000	120,000	
Stewardship programme	300,000	0	300,000	300,000	
Sub-total	420,000	0	420,000	420,000	
Grand total				4,752,653	4,805,453
HCFC to be phased out (mt)					653.46
Cost-effectiveness (US $/kg)				7.27	7.35

*Funding does not include cost items related to the conversion of the manufacturing of tube-and-fin heat exchangers.

70. The HCFC consumption in the air conditioning manufacturing sector will be completely phased out in Indonesia by 2015. The Government of Indonesia will prohibit import and manufacturing of HCFC-22-containing air conditioners with effect from 1 January 2015. This will significantly support the Government in achieving subsequent Montreal Protocol reduction targets, as it will reduce future service demand for HCFC-22. The Government of Indonesia has agreed to make the enactment of this regulation a pre-condition for the submission of the request for the 2015 funding tranche.

Section 4. Sector plan for HCFC phase-out in the refrigeration sector (UNDP)

Technology selection

71. The technology selection for the Refrigeration Sector Plan is proposed along the lines of conventional, well known refrigerants, in particular HFC-134a and ammonia. For costs reasons the application of ammonia will be limited to larger equipment, and therefore at this stage it is likely that the majority of equipment will be converted to HFC-134a or HFC-32 refrigerants.

Methodology for calculating incremental costs

72. UNDP indicated that, given the need to target more than 10 per cent of the baseline consumption for 2013 and 2015 compliance, the Refrigeration Sector Plan aims to completely phase-out the HCFC consumption in manufacturing by 2015 and controlling the HCFC-based equipment population and future consumption in servicing, and hence maximizing environmental benefits. It also aims to maximize cost-effectiveness by consolidating and rationalizing the manufacturing capacity. To that extent UNDP felt that, this proposal is a strategic plan, rather than a project covering a group of assorted enterprises involving individually funded conversions. The necessary degree of flexibility therefore needs to be built into the plan in terms of the level of detail in information and for application of funding.

73. It was also pointed out that it might be more meaningful to address in Stage I the HCFC consumption for the foam component, which alone can phase out 45.4 ODP tonnes of HCFCs, equivalent to more than 10 per cent of the estimated baseline consumption. In addressing this suggestion, UNDP indicated that the Refrigeration Sector Plan, which is an integral part of Indonesia's HPMP, targets the complete phase-out of HCFC consumption in manufacturing in this sector, i.e., HCFC-141b and HCFC-22. This approach, which is based on lessons learnt during CFC phase-out, allows for effective regulations prohibiting manufacturing and imports of HCFC-based refrigeration equipment from 2015, without distorting the market and reducing enforcement burdens. This will also lead to controlling the increase in HCFC-based equipment, and resulting HCFC demand for servicing. If left uncontrolled, the growth in HCFC consumption in the servicing sector could nullify the reductions achieved through piecemeal interventions and jeopardize compliance.

74. Based on the above explanations it was agreed to address HCFC consumption in the refrigeration sector through converting three manufacturing enterprises (i.e., PT. Sumo Elco Mandiri, PT. Rotaryana Prima and PT. Alpine Cool Triutama) with a consumption between 19.1 and 28.9 mt (1.05 to 1.59 ODP tonnes) of HCFC-22 and 28.7 to 44.1 mt (3.16 to 4.85 ODP tonnes) of HCFC-141b; converting 12 smaller enterprises (umbrella approach) with total consumption of 50.3 mt (2.77 ODP tonnes) of HCFC-22 and 126 mt (13.86 ODP tonnes) of HCFC-141b; and converting 12 enterprises with no foam operations (umbrella approach) with a total consumption of 38.1 mt (2.10 ODP tonnes) of HCFC-22. Six other enterprises belonging to the major organized industrial groups will consolidate their foam blowing and refrigeration consumption with the three enterprises to be converted through the Refrigeration Sector Plan, which will enable the cost-effective funding of hydrocarbon foam blowing technology.

75. The replacement technology proposed for PT. Sumo Elco Mandiri and PT. Alpine Cool Triutama is HFC-32 refrigerant and for PT. Rotaryana Prima is HFC-134a refrigerant, while the three enterprises propose replacement of HCFC-141b in foam blowing with cyclopentane. Enterprises in Group II will introduce HFC-134a refrigerant and methyl formate or HFC-245fa in pre-blended polyol as blowing agent (the selection between the two alternatives will depend on applicability, local availability and costs). Enterprises in Group III will convert to HFC-32 refrigerant. Assessment of the incremental cost for all conversions took into account the baseline equipment of the enterprises, the specific characteristics of the different refrigerants and foam blowing agents, and cost savings in several items related to training and technical assistance given the large number of enterprises to be converted. The agreed funding level for the Refrigeration Sector Plan is provided in Table 13, with a cost-effectiveness of US $6.96/kg.

Table 13: Agreed funding level for the Refrigeration Sector Plan in Indonesia

Description	HCFC consumption (mt)			Funding (US $)		
	HCFC-22	HCFC-141b	Total	Capital	Operating	Total
Investment						
Group I (3 enterprises)	76.60	287.00*	363.60	1,669,250	121,476	1,790,726
Group II (12 enterprises)	50.30	126.00	176.30	1,293,600	191,520	1,485,120
Group III (12 enterprises)	38.10	-	38.10	501,600	125,203	626,803
Non-investment						
Sector technical support						120,000
Total	165.00	413.00	578.00	3,464,450	438,199	4,022,649

* Including 171.4 mt of HCFC-141b used by six enterprises that would be consolidated in the Refrigeration Sector Plan.

76. Through the implementation of the Refrigeration Sector Plan, HCFC consumption in the refrigeration manufacturing sector will be completely phased out in Indonesia by 2015. The Government of Indonesia will prohibit imports and manufacturing of HCFC-22-containing refrigeration products with effect from 1 January 2015. This will significantly support the Government of Indonesia in achieving subsequent Montreal Protocol reduction targets, as it will help to reduce the future service demands for HCFC-22. The Government of Indonesia has agreed to make the enactment of this regulation a pre-condition for the submission of the request for the 2015 funding tranche.

Section 5. Sector plan for HCFC phase-out in the fire fighting sector (UNDP)

77. In regard to the activities for the phase-out of 12.5 mt (0.25 ODP tonnes) of HCFC-123, at a cost-effectiveness of US $28.8/kg, it was pointed out that HCFC-123 has the lowest ODP of all common HCFCs and at this stage, phase-out in the sector could not be considered as a priority to meet the 2013 and 2015 control targets. UNDP indicated that early intervention in the sector would allow Indonesia to prohibit HCFC-123-based fire fighting equipment sooner by providing early incentives to the industry to adopt safer alternatives. This will effectively control the growth in equipment containing HCFC-123 and the use of HCFC-123 in both manufacturing and servicing of this equipment. UNDP proposes to undertake a small technical assistance activity (US $30,000) to educate the stakeholders and prepare them for planning new HCFC-123-free fire fighting systems, as well as for considering retrofitting of existing systems. Such an activity would allow, to the degree necessary, the transfer of technology for alternatives to HCFC-123 based fire fighting systems, through a series of three or more stakeholder workshops. While the costing appears reasonable for such an activity, the Secretariat maintains that, since HCFC-123 has the lowest ODP of all common HCFCs, phase-out in the sector could not be considered as a priority to meet the 2013 and 2015 control targets.

Section 6. Overall cost of the HPMP

78. The level of funding agreed between the Secretariat and relevant implementing agencies for the implementation of stage I of the HPMP for Indonesia is US $12,716,884 with an overall cost-effectiveness of US $7.62/kg, as shown in Table 14.

Table 14: Overall cost of the HPMP for Indonesia

Component	Agency	HCFC consumption		Funding (US$)
		mt	ODP tonnes	
Air Conditioning Sector Plan	UNDP / Australia	653.46	35.94	4,752,653
Refrigeration Sector Plan	UNDP	611.18	54.51	4,022,649
Foam Sector Plan	World Bank	304.64	33.51	2,714,187
Umbrella foam project	UNIDO	100.09	11.01	777,395
Project management and coordination	UNDP			450,000
Total		1,669.37	134.97	12,716,884
Cost-effectiveness (US$/kg)				7.62

79. In regard to co-financing opportunities that will be sought for mobilizing additional resources to maximize the environmental benefits from the HPMP for Indonesia, UNDP indicated that Indonesia has assumed voluntary commitments for achieving national-level CO_2 emission reductions amounting to 28 per cent of the 2005 levels by 2020. Since about 40 to 50 per cent of the emissions originate from energy use in buildings and a significant proportion of building energy use originates from air conditioning and refrigeration equipment, Indonesia considers the technology conversions under the HPMP, as an important opportunity to enhance energy-efficiency, thereby contributing towards reducing indirect emission. The following co-financing efforts are either underway or are being explored for mobilizing co-financing for the additional investments that would be needed to implement energy-efficiency measures:

(a) The Global Environment Facility (GEF) approved project (2008) for barrier removal for cost-effective development and implementation of energy-efficiency standards and labelling, covering six countries in Asia and the Pacific region including Indonesia (component amount of US $1.8 million in GEF grant), is being implemented by UNDP;

(b) Discussions are underway with potential bilateral and private sector entities, for co-financing of additional investments needed for implementing energy-efficiency enhancements in refrigeration and air conditioning equipment manufactured by enterprises covered under the HPMP; and

(c) Discussions are also underway with potential bilateral and private sector entities for co-financing investments needed for developing an infrastructure for life-cycle management of ODS-containing products.

2011-2014 business plans

80. Table 15 shows the level of funding and amounts of HCFCs to be phased out according to the 2011-2014 business plan of the Multilateral Fund submitted to the 63rd Meeting. The level of funding requested for the implementation of the Stage I of the HPMP of US $13,317,753 (i.e., US $12,716,884 plus agency support costs of US $600,869) is below that of the 2011-2014 business plan (US $16,205,614). The difference is related to the funding for the Foam Sector Plan where the business plan from the World Bank was based on the level of funding requested in the plan when first submitted to the 62nd Meeting.

Table 15: 2011-2014 business plan of the Multilateral Fund

Agency	2011	2012	2013	2014	2015	Total
Funding (US$)						
Australia	300,000	-	-	-	-	300,000
UNDP	5,504,157	-	3,429,407	-	717,896	9,651,460
UNIDO	879,154	-	-	-	-	879,154
World Bank	1,075,000	2,150,000	1,075,000	1,075,000	-	5,375,000
Total	7,758,311	2,150,000	4,504,407	1,075,000	717,896	16,205,614
Phase-out (ODP tonnes)						
Australia	-	-	-	3.67	-	3.67
UNDP	43.17	-	35.89	-	7.77	86.84
UNIDO	10.40					10.40
World Bank	6.20	12.40	6.20	6.20		31.00
Total	59.77	12.40	42.09	9.87	7.77	131.91

Impact on the climate

81. A calculation of the impact on the climate of HCFC consumption through the investment components of stage I of the HPMP in Indonesia based on the GWP values of the HCFCs and alternative substances introduced and their level of consumption before and after conversion is presented in Table 16 (foam sector) and Table 17 (refrigeration sector).

Table 16: Impact on the climate: foam sector

Substance	GWP	Tonnes/year	CO2-eq (tonnes/year)
Before conversion			
HCFC-141b	713	404.7	288,551
Total before conversion		404.7	288,551
After conversion			
Cyclopentane	25	142.0	3,550
HFC-245fa	1,020	84.1	85,782
Total after conversion			89,332
Net impact			(199,219)

Table 17: Impact on the climate: refrigeration sector

Input	**Generic**							
	Country	[-]	**Indonesia**					
	Company data (name, location)	[-]	**Refrigeration and AC sector plans**					
	System name		Industrial mid-size cooling systems	Display cases	Storage freezing rooms	Residential (window) AC	Light commercial AC	Commercial, on-site assembled AC
	System type	[list]	Commercial cooling, on-site assembly	Commercial cooling, factory assembly	Commercial freezing, on-site assembly	Air conditioning, factory assembly	Air conditioning, factory assembly	Air conditioning, on-site assembly
	General refrigeration information							
	HCFC to be replaced	[-]	HCFC-22					
	Amount of refrigerant per unit	[kg]	100	1.4	5	1.05	4.3	8
	No. of units	[-]	730	38000	7760	365000	40000	3965
	Refrigeration capacity	[kW]	250	1.5	3	2	10	14
	Selection of alternative with minimum environmental impact							
	Share of exports (all countries)	[%]	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Calculation of the climate impact							
	Alternative refrigerant (more than one possible)	[list]	HFC-410A, HC-290	HFC-32, HFC-410A	HFC-410A, HC-290	HFC-410A, HC-290	HFC-32, HFC-410A	HFC-410A, 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 life time as compared to HCFC-22, on the basis of the amount produced within one year. Additional/different outputs are possible*							
	Country		**Indonesia**					
	System name		Industrial mid-size cooling systems	Display cases	Storage freezing rooms	Residential (window) AC	Light commercial AC	Commercial, on-site assembled AC
	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 (-23%)	HC-600a (-19%)	HC-600a (-51%)	HC-600a (-26%)	HC-600a (-23%)	HC-600a (-36%)
			HC-290 (-19%)	HC-290 (-16%)	HC-290 (-48%)	HC-290 (-22%)	HC-290 (-19%)	HC-290 (-32%)
			HFC-32 (-14%)	HFC-32 (-9%)	HFC-32 (-34%)	HFC-32 (-15%)	HFC-32 (-11%)	HC-32 (-24%)
			HFC-134a (-6%)	HFC-134a (-4%)	HFC-134a (-11%)	HFC-134a (-6%)	HFC-134a (-1%)	HFC-134a (-8%)
			HCFC-22	**HCFC-22**	HFC-407C (-3%)	HFC-407C (-1%)	HFC-407C (-3%)	HFC-407C (-1%)
			HFC-407C (2%)	HFC-407C (2%)	**HCFC-22**	**HCFC-22**	**HCFC-22**	**HCFC-22**
			HFC-410A (6%)	HFC-410A (5%)	HFC-410A (5%)	HFC-410A (6%)	HFC-410A (4%)	HFC-410A (5%)
	Calculation of the climate impact							
	Per unit, over lifetime (for information only):							
			HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22	HCFC-22
	Energy consumption	[kWh]	3,655,548,934	743,234,237	108,362,340	3,397,959,976	1,861,895,877	260,730,941
	Direct climate impact (substance)	[kg CO2 equiv]	550,982	98,218	71,633	707,556	317,546	84,397
	Indirect climate impact (energy): In country	[kg CO2 equiv]	2,536,878	515,790	75,201	2,358,116	1,292,118	180,942
	Indirect climate impact (energy): Global average	[kg CO2 equiv]	-	-	-		-	-
	Calculation of the climate impact of the conversion							
	System name		Industrial mid-size cooling systems	Display cases	Storage freezing rooms	Residential (window) AC	Light commercial AC	Commercial, on-site assembled AC
	Selected refrigerant		**HFC-410A**	**HFC-32**	**HFC-410A**	**HFC-410A**	**HFC-32**	**HFC-410A**
	*Total direct impact (post conversion – baseline)**	*[t CO2 equiv]*	*14,900.0*	*(62,227.0)*	*1,937.0*	*19,134.0*	(201,183)	2,283
	*Indirect impact (country)***	*[t CO2 equiv]*	*156,178.0*	*2,412.0*	*5,210.0*	*163,351.0*	8,240	12,258
	*Indirect impact (outside country)***	*[t CO2 equiv]*	-	-	-	-	-	-
	Total indirect impact	*[t CO2 equiv]*	*156,178.0*	*2,412.0*	*5,210.0*	*163,351.0*	*8,240.0*	*12,258.0*
	Total impact of the selected refrigerant	**[t CO2 equiv]**	**171,078**	**(59,815)**	**7,147**	**182,485**	**(192,943)**	**14,541**
	Alternative refrigerant		**HC-290**	**HFC-410A**	**HC-290**	**HC-290**	**HFC-410A**	**HC-290**
	*Total direct impact (post conversion – baseline)**	*[t CO2 equiv]*	*(548,466)*	*2,656*	*(71,306)*	*(704,325)*	*8,588*	*(84,012)*
	*Total indirect impact (country)***	*[t CO2 equiv]*	*(26,291)*	*28,892*	*480*	*15,037*	*89,508*	*(1,802)*
	*Total indirect impact (outside country)***	*[t CO2 equiv]*	-	-	-	*1*	-	-
	*Total indirect impact***	*[t CO2 equiv]*	*(26,291)*	*28,892*	*480*	*15,038*	*89,508*	*(1,802)*
	Total impact of alternative refrigerant	**[t CO2 equiv]**	**(574,757)**	**31,548**	**(70,826)**	**(689,287)**	**98,096**	**(85,814)**

*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 CO2 when generating electricity.

Draft Agreement

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

RECOMMENDATION

83. The HPMP for Indonesia is submitted for individual consideration. The Executive Committee may wish to consider:

(a) Approving, in principle, stage I of the HCFC phase-out management plan (HPMP) for Indonesia, at the amount of US $12,716,884 plus agency support costs of US $970,267 comprising US $300,000 plus agency support costs of US $39,000 for the Government of Australia; US $8,925,302 plus agency support costs of US $669,398 for UNDP; US $777,395 plus agency support costs of US $58,305 for UNIDO; and US $2,714,187 plus agency support costs of US $203,564 for the World Bank;

(b) Noting that the Government of Indonesia had agreed to establish as its starting point for sustained aggregate reduction, the estimated baseline of 402.2 ODP tonnes, calculated using actual consumption reported in 2009 of 374.8 ODP tonnes and estimated consumption for 2010 of 429.5 ODP tonnes;

(c) Deducting 134.97 ODP tonnes of HCFCs from the starting point for sustained aggregate reduction in HCFC consumption;

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

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

(f) Requesting UNDP as the lead implementing agency, to submit a funding request for heat exchanger conversion as a component of the first tranche of the HPMP for Indonesia, once the Executive Committee has taken a decision on the funding of conversion for heat exchanger manufacturing, on the understanding that the level of funding would be calculated on the basis of that decision and would not exceed a maximum of US $52,800, and to further request the Secretariat to update Appendix 2-A to the Agreement accordingly; and

(g) Approving the first implementation plan for 2011-2012, and the first tranche of the HPMP for Indonesia at the amount of US $6,577,395 plus agency support costs of US $509,805 comprising US $300,000 plus agency support costs of US $39,000 for the Government of Australia; US $4,000,000 plus agency support costs of US $300,000 for UNDP; US $777,395 plus agency support costs of US $58,305 for UNIDO; and US $1,500,000 plus agency support costs of US $112,500 for the World Bank.

Annex I

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

1. This Agreement represents the understanding between the Government of Indonesia (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 361.94 ODP tonnes prior to 1 January 2015 in compliance with Montreal Protocol schedules, with the understanding that this figure is to be revised one single time in 2011, when the baseline consumption for compliance would be 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 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 which 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 which exceeds the level defined in rows 4.1.3, 4.2.3 and 4.3.3.

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 (the "Funding Approval Schedule").

4. The Country will accept independent verification, to be commissioned by the relevant bilateral or implementing agency, of achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2 A ("The Targets, and Funding") of this Agreement as described in sub-paragraph 5(b) of this Agreement.

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 60 days prior to 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. Exempt are 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;

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

(c) That the Country had submitted tranche implementation reports in the form of Appendix 4-A (the "Format of Tranche Implementation Report and Plan") 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 a tranche implementation plan in the form of Appendix 4-A (the "Format of Tranche 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.

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A (the "Monitoring Institutions and Roles") will monitor and report on Implementation of the activities in the previous tranche implementation plan 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 sub-paragraph 5(b);

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 phase-down and phase-out of the Substances specified in Appendix 1-A. Reallocations categorized as major changes must be documented in advance in a Tranche Implementation Plan and approved by the Executive Committee as described in sub-paragraph 5 (d). Major changes would relate to reallocations affecting in total 30 per cent or more of the funding of the last approved tranche, issues potentially concerning the rules and policies of the Multilateral Fund, or changes which would modify any clause of this Agreement. Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan under implementation at the time and reported to the Executive Committee in the Tranche Implementation Report. Any remaining funds will be returned to the Multilateral Fund upon closure of the last tranche of the plan.

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

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

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

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the "Lead IA") and the Government of Australia, UNIDO and the World Bank have agreed to be the cooperating agencies 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 IA taking part in this Agreement.

10. The Lead IA will be responsible for carrying out the activities of the plan as detailed in the first submission of the HPMP with the changes approved as part of the subsequent tranche 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 agencies to ensure appropriate timing and sequence of activities in the implementation. The cooperating agencies 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 agencies have entered into a formal agreement regarding planning, reporting and responsibilities under this Agreement to facilitate a co-ordinated implementation of the Plan, including regular coordination meetings. The Executive Committee agrees, in principle, to provide the Lead IA and the cooperating agencies with the fees set out in rows 2.2, 2.4, 2.6 and 2.8 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 amounts set out in Appendix 7-A in respect of each ODP tonne 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.

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 agencies to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the cooperating agencies with access to information necessary to verify compliance with this Agreement.

14. The completion 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 has been specified in Appendix 2-A. Should at that time activities be still outstanding 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 Appendix 4-A (a), (b), (d) and (e) continue until the time of the completion if not specified by the Executive Committee otherwise.

15. All of the agreements 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	262.95
HCFC-141b	C	I	136.04
HCFC-123 and HCFC-225	C	I	3.17
Total			402.16

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	402.16	n/a	361.94	n/a
1.2	Maximum allowable total consumption of Annex-C, Group-I substances (ODP tonnes)	n/a	n/a	402.16	n/a	361.94	n/a
2.1	Lead IA UNDP agreed funding (US $)	4,000,000	0	3,944,620	0	980,682	8,925,302
2.2	Support costs for Lead IA (US $)	300,000	0	295,847	0	73,551	669,398
2.3	Cooperating agency Australia agreed funding (US $)	300,000	0	0	0	0	300,000
2.4	Support costs for Australia (US $)	39,000	0	0	0		39,000
2.5	Cooperating IA World Bank agreed funding (US $)	1,500,000	0	923,181	0	291,006	2,714,187
2.6	Support costs for World Bank (US $)	112,500	0	69,239	0	21,825	203,564
2.7	Cooperating IA UNIDO agreed funding (US $)	777,395	0	0	0	0	777,395
2.8	Support costs for UNIDO (US $)	58,305	0	0	0	0	58,305
3.1	Total agreed funding (US $)	6,577,395	0	4,867,801	0	1,271,688	12,716,884
3.2	Total support cost (US $)	509,805	0	365,085	0	95,377	970,267
3.3	Total agreed costs (US $)	7,087,200	0	5,232,886	0	1,367,065	13,687,151
4.1	4.1.1 Total phase-out of HCFC-22 agreed to be achieved under this agreement (ODP tonnes)						90.45
	4.1.2 Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)						0.00
	4.1.3 Remaining eligible consumption for HCFC-22 (ODP tonnes)						172.5
4.2	4.2.1 Total phase-out of HCFC-141b agreed to be achieved under this agreement (ODP tonnes)						44.52
	4.2.2 Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)						0.00
	4.2.3 Remaining eligible consumption for HCFC-141b (ODP tonnes)						91.52
4.3	4.3.1 Total phase-out of HCFC-123 and HCFC-225 agreed to be achieved under this agreement (ODP tonnes)						0
	4.3.2 Phase-out of HCFC-123 and HCFC-225 to be achieved in previously approved projects (ODP tonnes)						0
	4.3.3 Remaining eligible consumption for HCFC-123 and HCFC-225 (ODP tonnes)						3.17

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval not earlier than the first meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plan will consist of five parts:

   (a) A narrative report regarding the progress in 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 further highlight successes, experiences and challenges related to the different activities included in the Plan, reflecting on changes in the circumstances in the country, and providing other relevant information. The report should also include information about and justification for any changes vis-à-vis the previously submitted tranche plan, 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 about 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 in the next tranche, highlighting their interdependence, and taking into account experiences made and progress achieved in the implementation of earlier tranches. The description should also include a reference to the overall Plan and progress achieved, as well as any possible changes to the overall plan foreseen. The description should cover the years specified in sub-paragraph 5(d) of the Agreement. The description should also specify and explain any revisions to the overall plan which were found to be necessary;

(d) A set of quantitative information for the report and plan, submitted into a database. As per the relevant decisions of the Executive Committee in respect to the format required, the data should be submitted online. 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), and will cover the same time periods and activities; it will also capture the quantitative information regarding any necessary revisions of the overall plan as per sub-paragraph 1(c) above. While the quantitative information is required only for previous and future years, the format will include the option to submit in addition information regarding the current year if desired by the country and lead implementing agency; and

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

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The monitoring process will be managed by the Indonesia Ministry of Environment (Kementerian Lingkungan Hidup – KLH) through the National Ozone Unit (NOU) with the assistance of the Lead IA.

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

3. The NOU shall compile and report the following data and information on an annual basis on or before the relevant due dates:

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

(b) Annual reports on progress of implementation of HPMP to be submitted to the Executive Committee of the Multilateral Fund; and

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

5. The evaluating entity shall have full access to relevant technical and financial information related to implementation of the HPMP.

6. The evaluating entity shall prepare and submit to the Ministry of Environment and the Lead IA, a consolidated draft report at the end of each Tranche Implementation Plan, comprising of the findings of the evaluation and recommendations for improvements or adjustments, if any. The draft report shall include the status of the Country's compliance with the provisions of this Agreement.

7. Upon incorporating the comments and explanations as may be applicable, from Ministry of Environment, Lead IA and the cooperating agencies, the evaluating entity shall finalize the report and submit to the Ministry of Environment and Lead IA.

8. The Ministry of Environment shall endorse the final report and the Lead IA shall submit the same to the relevant meeting of the Executive Committee along with the Tranche Implementation plan and reports.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for 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 phase-out plan;

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

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

(d) Ensuring that the experiences and progress is reflected in updates of the overall Plan and in future Tranche Implementation Plans consistent with sub-paragraphs 1(c) and 1(d) of Appendix 4-A;

(e) Fulfilling the reporting requirements for the tranches and the overall Plan as specified in Appendix 4-A as well as project completion reports for submission to the Executive Committee. The reporting requirements include the reporting about activities undertaken by the cooperating agencies;

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

(g) Carrying out required supervision missions;

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

(i) Coordinating the activities of the cooperating agencies, and ensuring appropriate sequence of activities;

(j) Co-ordinating implementing agencies are defined as cooperating agencies with the role of a lead agency for one or several sectors, as specified in the formal agreement between lead and cooperating agencies specified in paragraph 10 of this agreement;

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

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

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

APPENDIX 6-B: ROLE OF COOPERATING AGENCIES

1. The cooperating agencies will be responsible for the following:

(a) Assisting the Country in the implementation and assessment of the activities funded by the cooperating agencies, and refer to the Lead IA to ensure a coordinated sequence in the activities; and

(b) 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 $189 per ODP tonne 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.

– – – –