Stage 1 HPMP Design and Implementation

Evaluation

FINAL Report

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Submitted on: February 12, 2019

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List of Abbreviations and Acronyms

CFC	Chlorofluorocarbons
CO	Country Office
CP	Cyclopentane
DAC	Development Assistance Committee
ExCom	Executive Committee
GEF	Global Environment Facility
GWP	Global Warming Potential
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFO	Heavy Fuel Oil
HPMP	HCFC Phase-out Management Plan
HS	Harmonized System
LVC	Low Volume Country
MLF	Multilateral Fund
MP	Montreal Protocol
MPU	Montreal Protocol and Chemicals Unit
NIM	National Implementation Modality
NOU	National Ozone Unit
ODS	Ozone Depletion Substance
ODP	Ozone Depleting Potential
OECD	Organization for Economic Co-operation and Development
PCR	Project Completion Report
PU	Polyurethane
RAC	Refrigeration and Air Conditioning
SDG	Sustainable Development Goals
SME	Small and Medium Enterprise
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEG	United Nations Evaluation Group
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
WCO	World Customs Organization

Acknowledgements

This report was prepared by Mr. Jean-Joseph Bellamy (JJ@Bellamy.net) with the support of Ranojoy Basu Ray and Ashutosh Pandey. The Evaluation Team would like to express their gratitude and appreciation to all stakeholders they interviewed. Their contributions were most appreciated, and the facts and opinions they shared played a critical part in the conduct of this evaluation.

The Evaluation Team would also like to extend special thanks to the personnel of the United Nations Development Programme (UNDP) who supplied key information and key contacts to conduct this evaluation. A special thank you to Ms. Xiaofang Zhou (Director, MPU) and Ms. Monica Kapadia (Programme Analyst, MPU) for supporting the organization of this evaluation and introducing the Evaluation Team to key Stakeholders. They all provided invaluable support that contributed to the successful assignment.

1. Main Conclusions and Recommendations[1]

1.1. Background - Introduction

This report presents the findings of the Evaluation of Stage I HCFC Phase-out Management Plans (HPMP) implemented by UNDP. This evaluation was performed by an Evaluation Team composed of Mr. Jean-Joseph Bellamy, Mr. Ashutosh Pandey and Mr. Ranojoy Basu Ray on behalf of UNDP.

HPMPs are plans to support Article 5 countries to phase-out HCFCs, which are part of Annex C, Group I substances under the Montreal Protocol (MP). The phasing-out of HCFCs began in 1996 and will go on until a complete phasing-out is achieved by 2030. HCFCs are used as refrigerants, solvents, blowing agents for plastic foam manufacture, and fire extinguishers.

Table 1: Summary of UNDP Implemented HPMPs

Programme Title:	Stage I Phase-Out Management Plans (HPMPs)
Number of Projects:	49 (30 led by UNDP)
Number of Countries:	47[2] (26 LVCs and 21 Non-LVCs)
Portfolio Start-up Date:	60th ExCom Meeting (Montreal April 2010)
MLF Total financing:	USD 173M (UNDP implemented HPMPs)

The Montreal Protocol (MP) on Substances that Deplete the Ozone Layer - a protocol to the Vienna Convention - is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. It entered into force on January 1, 1989. Since its inception, the Protocol has undergone eight revisions with the latest one being the Kigali agreement, which was adopted at the 28th meeting of the Parties in Kigali in October 2016 and which entered into force on January 1, 2019.

In 2007 the meeting of the Parties to the MP made the decision for an accelerated time schedule to phase-out HCFCs for Article 5 countries: (i) choose as baseline the average of the 2009 and 2010 level of respectively consumption and production; (ii) freeze, at that baseline level, consumption and production in 2013; and (iii) complete the accelerated phase-out of consumption and production in 2030 in four reduction steps: (a) 10 per cent by 2015; (b) 35 per cent by 2020; (c) 67.5 per cent by 2025; (d) An annual average of 2.5% during the period 2030–2040. In 2008, it was decided that Article 5 countries should adopt a staged approach to the implementation of HCFC phase-out management plans (HPMPs). Stage one of a country's HPMP would address meeting the baseline freeze for HCFCs in 2013 and the 10 per cent reduction in 2015.

This evaluation provides an in-depth assessment of 49 HPMPs supported by UNDP and implemented in 47 countries. HPMPs are performance-based agreements between each country and the MLF Executive Committee, whereby agreed-upon funding tranches are released when conditions related to HCFCs phase-out and disbursements are met. The total value of this portfolio of Stage I HPMPs implemented by UNDP is about USD 173M with an expected reduction of about 2,744 ODP tonnes of HCFCs. Most Stage I HPMPs started in 2011-2012 with a timeframe for non-LVCs HPMPs to reach the 2015 target and for LVCs to either chose the option of the 2015 target or the 2020 target.

This evaluation report documents the analysis of the Stage I HPMP portfolio. It starts with this chapter summarizing the key conclusions and recommendations, followed by 5 other chapters. Chapter 2 described the context of Stage I HPMPs; chapter 3 briefly describes the evaluation framework, including the limitation and constraints encountered during this evaluation; chapter 4 provides an overview of the Stage I HPMP portfolio; chapter 5 presents the findings of the evaluation; and chapter 6 presents the key lessons learned. Relevant annexes are found at the back end of the report.

1 Conclusions and Recommendations are in Chapter 1 with a brief background section. It is structured as an Executive Summary but also a stand-alone section presenting the highlights of this evaluation. It could be easily printed out separately for wider distribution.
2 China has 3 HPMPs: ICR, National Coordination and Solvent

1.2. Conclusions

Relevance

a) HPMPs are very relevant to meet the Montreal Protocol and UNDP objectives; it is a critical instrument to phase-out HCFCs.

The main objective of HPMPs is to phase-out HCFCs, which have been transitional substances to replace CFCs particularly in the foam and RAC sectors and which have started since January 1, 2010 for Article 5 countries. It is the main instrument used by the MLF Secretariat and the implementing agencies including UNDP to support Article 5 countries to phase-out HCFCs and replacing them with alternative technologies that are not damaging to the ozone layer. Countries can adopt a staged approach which for stage I could be either reaching the 2015 reduction target of -10% or the 2020 reduction target of -35%.

UNDP is one of the most active agencies supporting countries in their foam and refrigerant transition to climate-friendly technologies as well as helping countries promote energy efficiency in the foam, refrigeration and A/C sectors. It is part of the UNDP contribution to the Green Economy. UNDP provides services that include technology transfer and technical assistance, formulation and implementation of country and sector strategies, capacity building, accessing funding from different sources, and facilitating public/private partnerships. Under the MP, UNDP supports Article 5 countries to eliminate ODS. It uses HPMPs as an instrument to develop activities aiming at phasing-out HCFCs in 47 participating countries (28 as the lead agency and 19 as the cooperating agency), which combined represent 77% of the global consumption of HCFCs. Supported activities include conversion of manufacturing processes to non-HCFC climate-friendly alternatives in the foam, refrigeration and air-conditioning (RAC) manufacturing sectors as well as in the solvent and servicing sector.

b) HPMPs are very relevant for participating countries to meet their HCFCs phase-out targets.

Participating countries are all Parties to the Montreal Protocol; they ratified the Protocol and as such they are obligated to comply with the obligations set by the Treaty. The Montreal Protocol has set binding progressive phase-out obligations for developed and developing countries for all the major ozone depleting substances, including hydrochlorofluorocarbons (HCFCs). As a result, as Parties to the Montreal Protocol, Article 5 countries are bound to a mandatory timetable for the phase-out of HCFCs. HPMPs became the key instrument for Parties to comply with targets established under the MP in order to phase-out HCFCs. As a management instrument, HPMPs are, therefore, very relevant to the 47 countries covered by this evaluation. Implementing HPMPs is the only mechanism to get financing for implementing activities seeking to phase-out HCFCs.

Overall, the implementation of HPMPs involves a package of technologies and policy interventions for phasing out HCFCs. It allows participating countries to comply with the control targets of the MP HCFC phase-out schedule, while at the same time avoiding the introduction of high Global Warming Potential (GWP) HFC alternatives when available and economically feasible. Activities include policy interventions such as legislative action, implementation of a licensing/quota system, assistance to customs to control the import of ODS, etc. It also includes assistance to the private sector in refrigeration and air conditioning servicing sector such as training of refrigeration technicians but also assistance to the manufacturing industry in larger countries such as the conversion of foam manufacturing processes, replacement of HCFC coolants in the refrigeration and air conditioning sector and replacement of HCFC-based machines manufacturing solvents.

c) The concept of HPMP is coherent and logical. It includes detailed guidelines and procedures for the formulation of country-based strategies to phase-out HCFCs and meet MP targets.

The main purpose of HPMPs is to develop country-based strategies to allow Article 5 countries to meet the reduction levels in HCFC consumption. In agreeing to the accelerated phase-out schedule, the Parties to the MP were encouraged to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations.

Comprehensive guidelines were adopted to assist Article 5 countries in preparing compliant stage I HPMP submissions. This guidance provides an effective way to formulate realistic strategies to phase-out HCFCs. It includes a situational analysis looking at legislative aspects and the consumption data, which is used to establish the baseline and the targets to be met by the HPMP. Then, on this basis, the HCFC phase-out strategy is developed as well as the plan of action for the first tranche of the HPMP.

Effectiveness

d) HPMPs have surpassed their 2015 targets; the 47 Article 5 countries are in compliance with the Montreal Protocol. However, the implementation of many activities supported by these plans have been delayed.

Each HPMP submission was approved with a set of baseline and scheduled targets including the freeze consumption and production at baseline level by 2013, the reduction by 10% by 2015 and for those HPMPs with a longer timeframe, a reduction by 35% by 2020. Together the total quantity eliminated of HCFCs through the 49 HPMPs and reported by countries to the Ozone Secretariat by 2015 is 8,062 ODP tonnes; that is 5,318 ODP tonnes above the expected amount of HCFCs to be eliminated by 2015 (+194%). Therefore, all 49 HPMPs met their reduction target of 2015 on time and in some cases with wide margins. Therefore, based on the 2015 targets, all 47 countries are in compliance with the Montreal Protocol; it is a highly successful outcome from these HPMPs.

Focusing on the differences between planned and actual amounts phased-out, it indicates that some countries exceeded their expected 2015 target by a lot. It includes most of the large countries such as Brazil, China, India, Indonesia, Mexico in terms of total exceeded ODP tonnes of HCFCs eliminated. However, it also includes many other countries when these differences are proportioned with their respective expected (planned) amount to be eliminated by 2015. It is the case of Armenia (+566%), Barbados (+484%), Congo DR (+668%), El Salvador (+394%), Georgia (+610%), Ghana (+544%), Kyrgyzstan (+515%), Nepal (+450%), and Trinidad and Tobago (+658%).

However, despite that countries met their 2015 targets, many activities under these HPMPs did not take place as planned and many activities have been delayed. These delays were confirmed by a desk study on the evaluation of HCFC phase-out projects in the foam sector conducted in 2014. It identified several reasons including: under estimation of project duration; administrative delays related to the signature of contracts and legal agreements; complex procurement processes; hesitation by several enterprises to adopt alternative technologies; delayed site preparation to accommodate new technologies, and unavailability of or lack of regular supply of alternative foam systems.

These delays coupled with the reducing supply of HCFCs may result in enterprises moving straight to HFC alternatives. More and more reports in this area highlight market trends moving toward the use of HFCs, especially in the RAC sector where the use of R410a is increasing. This creates significant risks as countries will meet their HCFC targets but their HFC consumptions will increase. This risk may also be compounded by the lack of available alternative technologies, which makes it harder for countries to avoid using HFCs.

Gender considerations has not been considered in the full project cycle for HPMPs from the formulation stage, monitoring and reporting progress to completion reports. No information on gender was found in all project documents, which was confirmed by a gender analysis commissioned by UNDP in 2018. This analysis identified six overarching inter-related findings and, on this basis, an action plan was developed with a set of recommendations grouped into four main actions: organize gender training activities for stakeholders; establish collaborations with colleagues and external stakeholders working on gender equality; link project activities with wider efforts towards gender equality; and ensure that gender is considered internally, i.e. throughout the human resource processes. UNDP is committed to implement this action plan.

e) More and more alternative technologies to replace HCFCs do exist; however, the sharing and exchange of this information is not happening as it should.

From a technology perspective, the portfolio of HPMPs consists of technology conversions that happened mostly in medium and large countries; whereas LVCs are mostly dependent on imports of HCFCs. Almost half of UNDP HPMPs (41%) intervene in the PU foam sector. This is a sector where it exists well proven alternatives that medium and large companies took advantage of, such as replacing HCFCs with cyclopentane and more broadly hydrocarbons (n-pantene, etc.). For other options like methylal and methyl formate adoption was limited to select companies in a few non-LVC countries such as Brazil, Mexico, Egypt and Nigeria. However, in the majority of countries, these options were not commercially adopted except for a few demonstration projects. At the time of the formulation of these HPMPs (2010-2011), these technologies were not well tested in these countries and hence not considered as feasible options[3]. HFOs as alternate technology options were also mentioned in a few HPMPs. However, during the implementation of these HPMPs, most of them mentioned the lack of market availability of HFOs and high costs as reasons for non-adoption for commercial purposes.

Some LVCs planned to use CP/water and similar alternatives but finally shifted to HFCs due mostly to the fact that CP/water is not a viable option for SMEs. Overall, many companies have shifted to HFCs on their own. This is a risk for future Kigali phase-down as many companies would have moved to HFCs. As a result, a special care is needed for Stage II HPMPs to ensure that the market does not shift to HFCs for companies which aren't supported by HPMPs. Additionally, it would be important to track the market of HFCs over time under these HPMPs to monitor market trends, which is missing in Stage I HPMPs.

In the meantime, UNDP has, since 1996, supported demonstration projects in various regions and sectors to find alternative solutions and cost-saving methods that will be used to carry out HCFC-investment activities in future years, bearing in mind the impact on the climate. These successful demonstrations provide regionally tested alternative technologies and more should be tested in the future to demonstrate climate-friendly and energy-efficient alternative technologies. However, information on existing alternative technologies is not circulating efficiently; UNDP needs to strengthen its knowledge sharing and data exchange on available alternative technologies.

Efficiency

f) Funding criteria are in place for defining HPMPs incremental costs, resulting in cost-effective projects to phase-out HCFCs.

MLF financing of HPMPs is done according to well established guidelines to assess cost-effectiveness of these projects, including cost-effectiveness threshold values for each sector and sub-sector. These guidelines state that no funding can be approved to convert HCFC-based manufacturing capacity installed after September 21, 2007 (*cut-off date*); set principles for funding eligible incremental costs of second-stage conversion projects; define the starting points for aggregate reductions in HCFC consumption; and identify the eligible incremental costs of HCFC phase-out projects including the funding of up to a maximum of 25 per cent above the cost effectiveness threshold for projects introducing low global warming potential (GWP) alternatives. The guidelines also include a clause to ensure that the last tranche for a HPMP in the refrigeration servicing sector comprises 10 per cent of the total funding and scheduled for the last year of the plan.

There are many checks and balances in place to standardize the cost of eliminating HCFCs resulting in cost-effective projects. A desk study conducted by the MLF in 2014 reveals that as of end of June 2014, the total amount of HCFCs phased out from stage I HPMPs is 3,709.1 tonnes at the cost of US $15,534,763 resulting in an overall cost effectiveness of US $4.19/kg metric.

Regarding co-financing, the MLF guide to prepare HPMPs provide some guidelines to countries in this area; however, it is not a requirement when submitting HPMPs for funding. Progress reports and project completion reports do not provide information on co-financing. It is just not part of the progress reporting process identified by the ExCom and MLF Secretariat.

3 Since then, methylal and methyl formate were adopted as alternative technologies for Stage II HPMPs.

g) As an implementing agency, the UNDP-MPU team provides effective services to support the elimination of ODS, including the formulation and implementation of HPMPs.

UNDP established a dedicated Montreal Protocol Unit (MPU) based in New York in 1991 to spearhead and coordinate its efforts to support developing countries in meeting their MP obligations. The MPU also includes technical teams based at UNDP Regional Centers: Bangkok (Asia-Pacific), Istanbul (Europe, Arab States, Africa), and Panama (Latin America & Caribbean). These regional teams work with staff at UNDP Country Offices in their respective regions to assist government counterparts in developing projects to eliminate ODS – including Stage I HPMPs.

The MPU is responsible for overseeing the programme related to the Montreal Protocol. It provides a variety of services to support developing countries in their efforts to comply with Montreal Protocol provisions. These services include technology transfer and technical assistance, formulation and implementation of country and sector strategies, capacity building, accessing funding from different sources, and facilitating public and private partnerships. Overall, the effort of the MPU is on assisting private and public sector enterprises in their ODS elimination efforts; focusing on sector and national ODS phaseout programmes especially covering SMEs. It includes the support to Article 5 countries to formulate and implement their Stage I HPMPs.

Despite its relatively small size, the MPU has been implementing a large number of projects to eliminate ODS, including HCFCs. For the period 1991-2017, UNDP has implemented almost 2,400 projects funded by the MLF representing a total financing of USD 787.2 million. The total expected elimination of ODS through these projects was 67,466 ODP T/year of which 99% were phased-out by December 31, 2017. Regarding Stage I HPMPs, UNDP is the lead implementing agency for 30 HPMPs out of 49. The geographical distribution among the three regional technical teams is: 16 projects are in Asia and Pacific; 14 projects are in Africa, Europe and Central Asia; and 19 projects are in the Caribbean and Latin America.

With a total staff of 17 (9 female and 8 male) plus international experts and considering the entire portfolio of projects managed/administered, the MPU is an effective implementation unit. NOUs appreciate the support they get from the MPU during the formulation of HPMPs but also through their implementation and particularly the support to formulate tranche requests. This performance is confirmed by the yearly performance assessment conducted by the MLF Secretariat. This assessment is done through eight weighted performance indicators in three areas: approval, implementation, and administration. In 2017, UNDP fully met 5 out of 8 targets for a total score of 90%. Indeed, it is a cohesive team. They all know each other and trust each other, resulting in a very responsive team to address any communication needs and providing a strong link between the MLF Secretariat and NOUs.

Impact

h) As of 2015, HPMPs have phased-out 8,062 ODP tonnes of HCFCs – 31% of the baseline - contributing greatly to the objective of the Montreal Protocol that is to eliminate ODS.

According to the data reported by countries as of 2015, they easily met their 2015 targets, complying with the MP obligations. Together, as of 2015, the 49 Stage I HPMPs contributed to the elimination of 8,062 ODP tonnes per year and more is expected for HPMPs that have a longer timeframe, such as the 2020 and 2025 targets. This result represents 31% of the baseline, which was established with the 2009 and 2010 data reported by each country.

HPMPs have been part of a continuum of actions and strategies to eliminate ODS substances that are damaging to the ozone layer. The implementation of these plans allowed Article 5 countries to learn a lot about how to eliminate HCFCs, including how to replace existing technologies with alternative ones. Overall, HPMPs have not only contributed to the phasing-out of HCFCs but also to raise skills and knowledge on ODS and improve the legislation and regulations to better monitor and eliminate damaging substances. The knowledge accumulated during this implementation period, including best practices to implement this type of project constitutes an excellent body of knowledge, which should be very useful for the implementation of follow up activities in the medium and long-term.

In the meantime, in the context of the decision XIX/6 to accelerate the phase-out of HCFCs, stage I HPMPs focused on phasing-out HCFC-141b and replace them with hydrocarbons, which were well developed and accepted technologies. For instance, medium and large companies in the PU foam sector were able to take advantage of well proven alternatives such as replacing HCFC-141b with cyclopentane and more broadly hydrocarbons. When considering that 43% of HPMPs intervened in this sector, it has been a relatively easier way to meet the 2015 targets. In the future, it is expected that as countries are moving to Stage II HPMPs and the phasing-out of HFCs under the Kigali amendment, reaching these targets should be more complex and add pressure on the need to offer well tested and viable alternative technologies.

Finally, if the technical impact of these HPMPs is known through the quantity of HCFCs that has been phased-out, there is no information on the positive (and negative) potential impact of these plans. Through the implementation of these plans, there is a strong interaction with the private sector, which is the main driver in the production and consumption of HCFCs. HPMPs support the cost of retrofitting or replacing existing technologies with less damaging technologies. Through the process, these investments may contribute to raising the productivity of these enterprises and consequently their competitiveness. They could also have an impact on health and employment. No systemic reporting process is in place to capture these impacts on the local environment.

Sustainability

i) Sustainability is not explicitely mentioned in HPMPs but through activities undertaken under these plans, the sustainability of the phase-out of HCFCs is implicit.

The concept of sustainability is not much developed in project documents. The guides provided by the MLF Secretariat barely mentioned sustainability and no section is required in the HPMP documents when submitting requests for funding. The only reference to sustainability in the guidelines is the need to demonstrate the long-term sustainability of training programmes. No project completion reports discuss the sustainability of HPMP activities.

However, it is true that all reductions of ODS is a clear benefit for the environment. This is accomplished through the retrofitting/replacement of HCFCs. As long as enterprises, which have changed their production methods/processes, do not return to their old practices, the environmental benefits are there to stay over the long term. In addition, prior to any requests for HPMP funding, it is requested that Article 5 countries confirm that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and in compliance with the MP HCFC phase-out schedule. As a result, Article 5 countries have an adequate enabling environment from the outset of HPMP projects, which in itself is a contributing factor to ensure the sustainability of activities implemented in this area. Finally, with the reduction of HCFCs production, export and import, the market for HCFCs should be less and less available; hence contributing to the sustainability of HCFCs phase-out.

j) An implementation model has emerged, which could be replicated for other ODS phase-out programmes and possibly for other global environment programmes.

Over the years, the implementation of HPMPs provided an excellent platform to test and demonstrate best practices as well as refining procedures and guidelines. It is a good process to support countries to eliminate their consumption and production of HCFCs. A model to implement such programme has emerged. This model could certainly be replicated for the phasing-out HCFCs and HFCs and some best practices could also be used by other global environment programmes.

In the meantime, procedures have tended over time to become more time consuming with more and more detailed information requesting more effort in formulating, reporting, verifying and requesting funding tranches. A review of these procedures – including the way information is administered/managed - is recommended to identify where they could be streamlined. It should include the feasibility of a web-based system to constitute a body of knowledge related to the phasing-out of HCFCs and for the staff to easily access all information on projects.

1.3. Recommendations

Based on the findings of this evaluation, the following recommendations are suggested.

Recommendation 1: It is recommended to conduct a study of MPU operations to identify bottlenecks and potential cost-saving measures.

Issue to Address

Based on the experience accumulated through the implementation of these HPMPs, a model to implement such programme has emerged with established guidelines and procedures of the MLF and of UNDP. This model could certainly be replicated for the next phases in eliminating HCFCs but also HFCs under the Kigali agreement. It has been tested and over time, procedures and guidelines were improved. However, despite recognizing that the overall process is good, these guidelines and procedures have tended to become more time consuming. There is a perception that the process is being more and more centrally micro-managed, and pressure is increasing on the UNDP technical teams to deliver these projects on time and on budget but with the same level of resources.

It is recommended to conduct a review of guidelines but particularly of procedures to identify where bottlenecks exist and where potential cost-saving measures could be implemented to streamline processes to formulate, implement, monitor, verify and report on these projects. The review should include the identification of all steps needed to formulate these projects, procedures, templates needed and also the type of system to manage/administer the information related to the implementation of these projects. With a full web-based system, staff should be able to easily access all information on projects and get the status of any project "*at their fingertips*" such as the GEF website project database providing access by project and by country.

Recommendation 2: It is recommended that UNDP strengthens its knowledge sharing/exchange including best practices as well as tracking prices, costs and technologies.

Issue to Address

Phasing-out HCFCs means retrofitting and/or replacing the use of HCFCs by alternative technologies that are not damaging to the ozone layer. As of the time when these HPMPs started to be formulated, alternative technologies were mostly limited to HFCs. Over time, other alternative technologies with lower GWP have been identified but they are also often classified with some level of flammability and/or toxicity requiring additional security measures. However, the time it takes for this information to "trickle" down to each country can be long and uneven. Currently, the main mechanisms for transferring this knowledge is mostly through exchanges with international experts, exchanges at the various meetings led by the MP, ExCom and the implementing agencies as well as informal networks among people involved in eliminating HCFCs in countries, implementing agencies and MLF Secretariat.

It is recommended that UNDP develops a platform for knowledge exchange and sharing best practices as well as tracking prices, costs and available technologies, including regionally-based and/or country-based information.

Recommendation 3: It is recommended to better monitor other benefits from HPMPs such as impact on productivity on enterprises, competitiveness, employment, health, etc.

Issue to Address

Not much information is collected on the positive and negative impacts of these HPMPs on the local environment. The entire process to formulate, implement, monitor, verify and report on Stage I HPMPs is mostly focused on the technical aspects of phasing-out HCFCs. The entire body of knowledge accumulated through the implementation of HPMPs is much focused on documenting progress made towards the set targets to eliminate HCFCs, including details on how these plans will replace existing technologies that contain damaging HCFCs with not damaging alternative technologies.

There is no information on capacities built, nor on productivity gains with new technologies in the private sector,

nor on employment, etc. It is recommended to monitor these potential other benefits, including an assessment of these benefits at the end of these HPMPs and this information being reported in project completion reports.

Recommendation 4: It is recommended to conduct stronger assessments/evaluations at the end of HPMPs to better capture achievements at the country level, including best practices and lessons learned.

Issue to Address

Information on achievements of HPMPs can mostly be found in Project Completion Reports (PCRs) and to some extent in verification reports. Verification reports focus mostly on verifying the data provided by the country on the elimination of HCFCs. PCRs are completed on the basis of a template provided by the MLF Secretariat. They contain 8 sections but are mostly descriptive in nature and are completed by the implementation units in the respective countries.

It is recommended to conduct external project assessments/evaluations near the end of these plans to provide an external review of the performance of these HPMPs. It should include assessments of other potential benefits of these HPMPs and of the technologies involved in these projects, particularly focusing on what worked and what did not work and also recommendations for the way forward based on the respective experiences in these countries.

Recommendation 5: As HCFCs are being phased-out, it is recommended to track the HFCs market and use in countries to monitor the market movements of HFCs.

Issue to Address

The impact of delays in implementing investment and non-investment activities, reduction of supply of HCFCs and the apparent lack of alternative technologies may result in enterprises moving straight to HFC alternatives. More and more reports in this area highlight market trends moving toward the use of HFCs. A recent analysis of surveys of ODS alternatives commissioned by the ExCom, reveals that the use of R410a in the RAC sector has been increasing by a compounded rate of 40% per year during the period 2012-2015, which means that the consumption of R410a is doubling every other year. This creates significant risks as countries will meet their HCFC targets but their HFC consumptions may significantly increase.

It is recommended to monitor the use of HFCs at the country level but also the HFCs market and highlight any trends, which would indicate a surge of HFCs use. The reduction of HCFCs should not result in higher HFCs consumption.

2. CONTEXT OF STAGE I HPMPs

1. The Vienna Convention for the Protection of the Ozone Layer is a Multilateral Environmental Agreement, which was agreed upon at the Vienna Conference of 1985 and entered into force in 1988. It was ratified by 197 states including the European Union. This convention acts as a framework for the international efforts to protect the ozone layer. However, it does not include legally binding reduction goals for the use of CFCs, the main chemical agents causing ozone depletion. These are laid out in the accompanying Montreal Protocol.

2. The Montreal Protocol (MP) on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention) is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. It was adopted on September 16, 1987 and entered into force on January 1, 1989. The Protocol sets out, among other things, binding, time-targeted and measurable commitments for the signatory countries to phase out the consumption and production of Ozone Depleting Substances (ODS). A unique feature of the protocol is an adjustment provision that enables the Parties to the Protocol to respond quickly to new scientific information, in a bid to accelerate the reductions required on chemicals already covered by the Protocol. These adjustments are then automatically applicable to all countries that ratified the Protocol. Since 1987, the Protocol has undergone eight revisions with the latest one being the Kigali amendment[4] which was adopted at the 28th meeting of the Parties in Kigali in October 2016 and which will enter into force on January 1, 2019.

> A 2015 report by the U. S. Environmental Protection Agency estimates that the protection of the ozone layer under the treaty will prevent over 280 million cases of skin cancer, 1.5 million skin cancer deaths, and 45 million cataracts in the United States.
> *https://www.epa.gov/sites/production/files/2015-11/documents/ahef_2015_update_report-final_508.pdf*

3. At the second meeting of the Parties to the Montreal Protocol (London, June 1990) a decision was made to establish the Multilateral Fund (MLF), which began its operation in 1991. Its objective is to assist developing country Parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries[5]. The MLF is managed by an Executive Committee with equal membership from developed and developing countries. It is assisted by the Fund Secretariat located in Montreal, which was created in 1991. Projects and activities supported by the Fund are implemented by four international implementing agencies: UNDP, UNEP, UNIDO and The World Bank. Contributions to the MLF from non-Article 5 countries have come from 45 countries and totaled over US$ 3.7 billion as of November 2017. The Fund has been replenished ten times.

4. Since the inception of the Fund, the Executive Committee approved projects such as industrial conversion, technical assistance, training and capacity building; as of the end of December 2016, 488,909 ODP tonnes have already been phased out. To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans, has funded the establishment and the operating costs of ozone offices (National Ozone Units (NOUs)) in 145 Article 5 countries and has also approved a total of US $12.5 million for projects for fast-start implementation of the HFC phase-down.

5. The MP is structured around several groups of halogenated hydrocarbons that deplete stratospheric ozone.

4 The Kigali amendment produced a timetable, mandating countries to phase down the production and usage of hydrofluorocarbons (HFCs) and replace HFCs with more planet-friendly alternatives. HFCs are man-made chemicals that are primarily used in air conditioning, refrigeration and foam insulation; they replace CFCs and HCFCs. HFCs pose no harm to the ozone layer because, unlike CFCs and HCFCs, they do not contain chlorine. However, there are greenhouse gases, with a high global warming potential (GWP), comparable to that of CFCs and HCFCs and are contributing to climate change. The Kigali amendement divided the world economies into three groups, each with a target phasedown date. (1) the richest countries, including the United States and those in the European Union, will reduce the production and consumption of HFCs from 2019; (2) much of the rest of the world, including China, Brazil and all of Africa, will freeze the use of HFCs by 2024; and (3) a small group of the world's hottest countries such as Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the United Arab Emirates will freeze HFCs use by 2028.

5 Article 5 countries have an annual consumption of less than 0.3kg of ODS per capita.

All of the ODS controlled by the Montreal Protocol contain either chlorine or bromine; however, some ODS are not yet controlled by the Montreal Protocol, including nitrous oxide (N_2O). For each group of ODS, the treaty provides a timetable on which the production of those substances must be phase-out and eventually eliminated.

HCFC Phase-out Management Plans (HPMPs)

6. HCFCs are part of Annex C, Group I substances. The phasing-out of the less damaging HCFCs began in 1996 and will go on until a complete phasing-out is achieved by 2030. HCFCs are used as refrigerants, solvents, blowing agents for plastic foam manufacture, and fire extinguishers; there are transitional CFCs replacements, particularly in the foam sector.

7. At the 19th meeting of the Parties to the MP (Montreal, September 2007) a decision (XIX/6) was made for Article 5 Parties to: (i) choose as baseline the average of the 2009 and 2010 level of respectively consumption and production; (ii) freeze, at that baseline level, consumption and production in 2013; and (iii) complete the accelerated phase-out of consumption and production in 2030 in four reduction steps: (a) 10 per cent by 2015; (b) 35 per cent by 2020; (c) 67.5 per cent by 2025; (d) An annual average of 2.5% during the period 2030–2040.

8. At the 54th meeting of the Executive Committee (Montreal, April 2008), the Executive Committee approved that countries should adopt a staged approach to the implementation of HCFC phase-out management plans (HPMPs) within the framework of their over-arching-strategy (Decision 54/39). It also approved the guidelines for the preparation of HPMPs and released funding to the implementing agencies to begin HPMPs preparations. The guidelines set out a staged approach that allows the guidelines to be updated as new technologies are developed. Stage one of a country's HPMP would address meeting the baseline freeze for HCFCs in 2013 and the 10 per cent reduction in 2015.

Formulation of HPMPs

9. Guidelines to formulate HPMPs have been developed particularly for Article 5 countries where most or all of the HCFCs are used in the refrigeration and air conditioning servicing sector and have a relatively small HCFC-based manufacturing sector. However, these guidelines could also be used by Article 5 countries with a broader HCFC use in the manufacturing sector and/or with HCFC production facilities.

10. The guidelines include six main sections: (i) HCFC consumption data; (ii) phase-out strategy; (iii) project coordination and management; (iv) plan of action (associated with the first tranche); (v) draft agreement between the Executive Committee and the country; and (vi) relevant sources of information. Consideration should be given to providing funding for assistance to include HCFC control measures in legislation, regulations and licensing systems as part of the funding of HPMP preparation as necessary and confirmation of the implementation of the same should be required as a prerequisite for funding implementation of the HPMP. In cases where there were multiple implementing agencies in one country, a lead agency should be designated to coordinate the overall development of stage one of the HPMP.

HPMP Tranches

11. HPMPs are funded by tranches. Tranches are identified at the formulation stage of each HPMP in a "*Tranche Implementation Plan*", following the "*Appendix 4-A - Format of Tranche Implementation Reports and Plans*" that is in the Agreements. Based on the total cost and the timeline of each HPMP, activities and associated budgets are divided into implementation periods (tranches) of about two years or less. Then, following the first tranche, a request for funding the next tranche should be submitted only when there is a significant level of implementation of activities initiated with the previously approved tranche, including when the rate of disbursement of funding from the previously approved tranche has reached 20 per cent. These tranche requests should include five main sections: (i) a narrative progress report under the previous tranche; (ii) a verification report; (iii) a tranche implementation plan and changes to the Agreement (if needed); (iv) relevant sources of information; and (v) an executive summary. The implementing agencies were requested, when preparing multi-year HPMPs, to ensure that the last tranche comprised 10 per cent of the total funding for the refrigeration servicing sector in the agreement and was scheduled for the last year of the plan.

HPMP Verification Reports

12. A verification report has to be provided together with each tranche request, covering all the years of the previous tranche. It should be provided according to guidelines for the verification of national consumption targets for the multi-year agreements. This report verifies HPMP results and the consumption of substances mentioned in the Agreement between each country and the MLF Executive Committee.

3. EVALUATION FRAMEWORK

13. This evaluation has been initiated by UNDP MPU/Chemicals. UNDP is one of the four Implementing Agencies (IAs) designated by the Multilateral Fund (MLF) to implement the Montreal Protocol´s Ozone Depletion Substances (ODS) phase-out projects. The evaluation was managed by the Director of UNDP MPU/Chemicals and the Evaluation Team reported to the Director as the Task Team Leader.

3.1. Objectives

14. The evaluation's objective of Stage I HPMP design and implementation is threefold: (i) analyze and document results and lessons learned from the funding received from the MLF by countries to develop national strategies to achieve the 2013 freeze and 2015 control target ("Stage I"); (ii) provide recommendations regarding achievement of the 2020 control target ("Stage II") as well as the upcoming hydrofluorocarbon (HFC) phasedown; and (iii) highlight opportunities for scaling up and replicating good practices.

3.2. Scope

15. The evaluation provides an in-depth assessment of 49 projects supported by UNDP and implemented in 47 countries, both large and small HCFC users. These projects were a response to the decision XIX/6 made by the Parties to the Montreal Protocol (Montreal, September 2007) to accelerate the phase-out of production and consumption of the hydrochlorofluorocarbons (HCFCs). They consist in the implementation of HCFC Phase-out Management Plans (HPMPs). These HPMPs are performance-based agreements between each country and the MLF Executive Committee, whereby agreed-upon funding tranches are released when conditions related to ODS phaseout and disbursements are met.

16. The evaluation used the five standard evaluation criteria developed by the OECD/DAC for evaluating development assistance that are:

- ***Relevance:*** The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.
- ***Effectiveness:*** The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
- ***Efficiency:*** A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
- ***Impact:*** Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.
- ***Sustainability***: The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.

17. It also identified lessons learned, provided a set of conclusions and recommendations regarding the achievement of the 2020 control target ("Stage II") as well as the upcoming hydrofluorocarbon (HFC) phasedown, and, finally, highlighted opportunities for scaling up and replicating good practices.

18. An initial set of key evaluation questions was identified during the preparation of this evaluation and were included in the TORs (see Annex 1). They include:

- What were the results of Stage I HPMPs? Quality of Stage I HPMPs produced based on defined criteria?
- What are the main lessons learned from the Stage I HPMP process, i.e. with respect to relevance, efficiency, effectiveness, impacts, and sustainability?
- How can these lessons be applied to Stage II HPMP implementation as well as the upcoming hydrofluorocarbon (HFC) phasedown related to the Kigali agreement?
- What were the factors behind technology selection in countries?
- How to replicate and scale up successful experiences (in either selected technology, implementation modality, or other good practices) to other countries/regions?

19. Based on the scope of this evaluation and the five evaluation criteria described above, an evaluation matrix was developed, containing all evaluation questions with their respective indicators and sources (see Annex 2).

20. The evaluation also considered the different sectors where the HCFCs are used such as foam, refrigeration, air conditioning, etc., the technology selection drivers, the geographic similarities, the number of jobs created, the human health impact, and also the HCFCs production facilities. Any key differences/trends were highlighted in the report.

3.3. Approach and Methodology

21. The approach and methodology that were used to conduct this evaluation complies with the guidance, rules and procedures established by UNDP; particularly the guidance provided in the "*Handbook on Planning, Monitoring and Evaluating for Results*." It also complies with international criteria and professional norms and standards; including the norms and standards adopted by the UN Evaluation Group (UNEG).

3.3.1. Overall Approach

22. The evaluation adopted a consultative and transparent approach with internal and external stakeholders throughout the evaluation process. It was conducted in accordance with the guidance, rules and procedures established by UNDP as well as the norms and standards adopted by UNEG. It was undertaken in-line with evaluation principles, which are: *independent, intentional, transparent, ethical, impartial, of high quality, timely, and used.* The process promoted accountability for the achievement of objectives and promote learning, feedback and knowledge sharing on results and lessons learned among partners and beyond.

23. The evaluation also adopted a *Utilization Focused Evaluation (UFE)*[6] approach, which is predicated on maximizing the practical value of the evaluation to stakeholders. The evaluation was planned and conducted in ways that enhanced the likely utilization of both findings and of the process itself to inform decisions and improve performance of the initiative. Using this approach, the Evaluation Team did not make decisions independently of the intended users, but they rather facilitated decision making amongst the people who will use the findings of the evaluation.

24. In addition to UNDP and UNEG guidance for project evaluation, the Evaluation Team also applied to this mandate its knowledge of evaluation methodologies and approaches and its expertise in global environmental issues. The Evaluation Team also applied several methodological principles such as (i) *Validity of information*: multiple measures and sources were sought out to ensure that results are accurate and valid; (ii) *Integrity*: Any issue with respect to conflict of interest, lack of professional conduct or misrepresentation were immediately referred to the client; and (iii) *Respect and anonymity*: All participants had the right to provide information in confidence.

25. The evaluation was conducted following a set of steps presented in the table below:

6 http://www.betterevaluation.org/en/plan/approach/utilization_focused_evaluation

Table 2: Steps Used to Conduct the Evaluation

I. Inception Phase ▪ Start-up teleconference ▪ Collect and review project documents ▪ Develop evaluation instruments ▪ Elaborate and submit **Inception Report**	**III. Analyze Information** ▪ In-depth analysis and interpretation of data collected: interview notes, observations and documents ▪ Follow-up interviews (if necessary) ▪ Draft selected thematic analyses ▪ Draft and submit **Draft Evaluation Report**
II. Collect Information ▪ Collect all relevant documents ▪ Desk review/data collection through emails ▪ Collate contact list of stakeholders ▪ Phone/skype interviews	**IV. Finalize Evaluation Report** ▪ Circulate draft report to Stakeholders ▪ Integrate comments and submit **Final Evaluation Report**

26. Finally, the Evaluation Team signed and applied the "*Code of Conduct*" for Evaluation Consultants (*see Annex 3*). The Evaluation Team conducted evaluation activities, which were *independent*, *impartial* and *rigorous*. It has personal and professional integrity and was guided by propriety in the conduct of its business.

3.3.2. Evaluation Instruments

27. The evaluation provides evidence-based information that is *credible*, *reliable* and *useful*. Information was mined from project documents as secondary information. Primary information was obtained through data-gathering activities conducted for this evaluation; most prominently interviews with key informants. Using several evaluation tools and gathering information from different types of stakeholders at different levels of management, the information collected was triangulated[7] through the concept of "***multiple lines of evidence***", which validated the findings. To conduct this evaluation the following evaluation instruments were used:

Evaluation Matrix: An evaluation matrix was developed based on the scope of the evaluation presented in the TOR, the programme framework and the initial review of key project documents (*see Annex 2*). This matrix is structured along the five OECD/DAC evaluation criteria and includes all evaluation questions. The matrix provided overall directions for the evaluation and was used as a basis for interviewing people and reviewing project documents.

Document Review Protocol: A review protocol (*see Annex 4*) was developed and was used to review documents. It was used to collect factual information that was relevant for this evaluation.

Documentation Review: As a main source of information, the Evaluation Team conducted a documentation review at home offices. A list of documents was identified during the start-up phase it included: project documents approved by ExCom (HPMP strategy), agreements, tranche requests, tranche progress reports, verification reports, and project completion reports (*see Annex 5*). These reports for all 49 projects have been collected and stored in a Dropbox folder to be available to the Evaluation Team. Other documents were consulted as needed during the collect and analysis of information. Collecting project documents was a critical task to be done early, allowing sufficient time to analyze them and triangulate any findings.

Interview Protocol: Based on the evaluation matrix, an interview guide was developed (*see Annex 6*) to solicit information from stakeholders. As part of the participatory approach, the Evaluation Team ensured that all parties view this tool as balanced, unbiased, and structured.

Short List of Interview Questions: A short list of key interview questions was completed (*see Annex 7*); it included only the key questions from the *Interview Protocol* adapted to the context of country-based stakeholders (NOUs). This short list of key interview questions was emailed to few stakeholders prior to interviews.

7 *Triangulation*: The use of three or more theories, sources or types of information to verify and substantiate an assessment. By combining multiple data sources, methods, analyses or theories, evaluators seek to overcome the bias that inevitably comes from single informants, single methods, single observations or single theories. (DFID, *Guidance on Evaluation and Review for DFID Staff*, London. 2005)

Key Informants Interviews: Stakeholders were interviewed (*see Annex 8)*. Semi-structured interviews were conducted using the interview protocol adapted for each interview. All interviews were conducted by skype with some follow up using emails when needed. Confidentiality was guaranteed to interviewees and findings were incorporated in the final report. The list of interviewees was made in such a way to ensure that there was a balanced representation of views and interests among stakeholders. It included staff at MPU and MLF Secretariat, Regional Advisers, and staff in UNDP-COs and in NOUs.

3.4. Limitations and Constraints

28. A number of limitations were encountered throughout this evaluation:

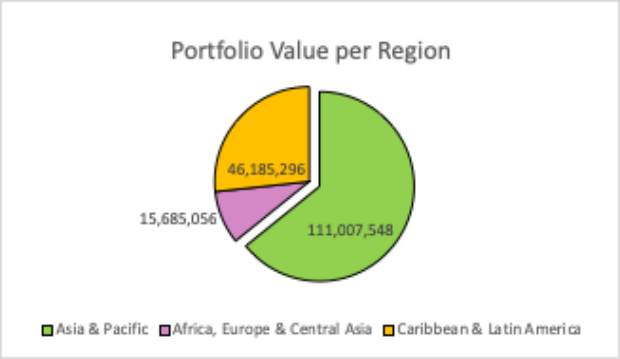
- *No country visits were conducted*; the collection of evaluative evidence was done through skype interviews of stakeholders and review of projects documents;
- *Narrow timeframe to collect all information necessary to conduct the analysis*. Gathering documents for all projects took longer than expected. Key documents were not readily available, and much time was spent to gather all of them before being able to conduct the analysis.
- *Limited availability of stakeholders*. As one of the main sources to collect evaluative evidence, it was challenging to set up interviews. A total of 24 people was interviewed but only 4 NOU representatives were available for a Skype interview.

29. However, within the context of available resources and the planned approach, the Evaluation Team was able to conduct a detailed assessment of the Stage I HPMP portfolio and on this basis to identify lessons learned and recommendations.

4. OVERVIEW OF PORTFOLIO OF HPMPs

30. The portfolio of HPMPs reviewed for this evaluation includes 49 HPMPs, which are implemented in 47 countries[8]. Out of 47 countries, 26 countries (53%) are categorized as Low Volume-ODS consuming Countries (LVCs)[9] and 21 countries are Non-LVCs. The geographical distribution of the 47 countries is:

- 16 projects (33%) are in Asia and Pacific with a total portfolio value of about $111M;
- 14 projects (29%) are in Africa, Europe and Central Asia with a total portfolio value of about $15.7M; and
- 19 projects (38%) are in the Caribbean and Latin America with a total portfolio value of $46.2M.



31. In term of value of regional portfolios, the portfolio in the Asia and Pacific region represents 64% of the total portfolio value ($173M), Africa, Europe and Central Asia 9%, and the Caribbean and Latin America 27%.

32. When considering the 49 HPMPs, UNDP leads the implementation for 30 plans (61%), UNEP leads 17 HPMPs (35%) and UNIDO leads the implementation for 2 projects (4%). According to the MLF inventory of HPMP projects, the total grant made by the MLF through UNDP is about USD 179.73M of which 43% are estimated as capital cost. At the time of this evaluation, 93% (USD 167.77M) has been approved and about 81% has been disbursed. Based on the information from the MLF inventory, only 7 HPMPs (14%) are financially

8 3 HPMPs are implemented in China: 1 focusing on solvents, 1 on industrial, commercial and air conditioning (ICR) and 1 on national coordination.
9 LVCs are countries with an annual consumption level below 360 tonnes of ODS.

completed and 41 HPMPs (84%) are still ongoing[10].

33. According to this inventory, the expected impact of these investments is a reduction of about 1,875 ODP tonnes per annum; given that under stage I HPMPs, some countries set their targets for 2015 (-10% from the baseline) and other countries set their targets for 2020 and a few other countries set their target for other dates.

34. The first HPMP (Maldives) of the portfolio reviewed was approved at the 60th ExCom meeting (April 2010) and the last one (Mauritania) was approved at the 80th ExCom meeting (November 2017). Most of these 49 HPMPs (80%) were approved between the 62nd and the 65th ExCom meetings. Their durations vary; about half of these Stage I HPMPs were designed to reach the 2015 target (-10%) and the other half the 2020 target (-35%). In this regard most LVC HPMPs are designed with the 2020 target; that are longer projects for countries with mostly low volume consumptions. Only 6 LVC (out of 26) HPMPs were designed with the 2015 target.

35. According to the information gathered for this evaluation, an average of just over 3 tranches per HPMP implemented by UNDP were approved as of the time of this evaluation for an average value of USD 1.09M. The overall average is strongly affected by the wide range of grant sizes for each HPMP implemented by UNDP. The larger HPMP is one of three HPMPs in China intervening in industrial, commercial and air conditioning sectors with a total grant of USD 61M. The smaller HPMP is in Saint Kitts and Nevis with a total grant of USD 40k. If we consider the non-LVC countries, the average tranche value is USD 1.93M and it is USD 130k for LVC countries.

36. Regarding the type of intervention of these HPMPs, the vast majority of these 49 HPMPs intervenes in the servicing sector. Almost 82% (40) intervene in this sector; only 9 HPMPs have no servicing sector component: Bangladesh, China (3), Egypt, Lebanon, Swaziland, Indonesia and India. Almost half (22) HPMPs intervene in the manufacturing sector: 20 in the foam manufacturing sector, including 2 HPMPs focusing in the foam and AC manufacturing sectors and one in foam, refrigerant and AC manufacturing sectors; 1 in the AC sector; and 1 in both refrigerant and AC sector. The table below presents key data points for these 49 HPMPs.

10 It was noted that the HPMP for South Sudan was not part of the MLF inventory reviewed by the Evaluation Team.

Table 3: Key Data Points for UNDP Implemented HPMPs

Country	LVC / Non-LVC	Lead Agency	Approval Date	UNDP MLF Grant	Planned StartDate	Planned End Date	Foam Manufacturing Sector	Refrigerant Manufacturing Sector	AC Manufacturing Sector	Servicing
Angola	LVC	UNDP	65th ExCom	176,000	2012	2015	No	No	No	Yes
Armenia	LVC	UNDP	62nd ExCom	562,838	2011	2016	Yes	No	No	Yes
Bangladesh	Non-LVC	UNDP	65th ExCom	1,201,074	2012	2018	Yes	No	No	No
Barbados	LVC	UNEP	69th ExCom	88,000	2012	2020	No	No	No	Yes
Belize	LVC	UNEP	62nd ExCom	66,500	2011	2021	No	No	No	Yes
Bhutan	LVC	UNEP	63rd ExCom	188,000	2012	2025	No	No	No	Yes
Brazil	Non-LVC	UNDP	64th ExCom	15,506,257	2011	2015	Yes	No	No	Yes
Brunei Darussalam	LVC	UNEP	66th ExCom	132,000	2012	2020	No	No	No	Yes
Cambodia	LVC	UNEP	61st ExCom	650,000	2013	2032	No	No	No	Yes
Chile	Non-LVC	UNDP	63rd ExCom	1,497,966	2011	2017	Yes	No	No	Yes
China (ICR)	Non-LVC	UNDP	64th ExCom	61,000,000	2012	2015	No	No	Yes	No
China (Nat. Co-ordination)	Non-LVC	UNDP	65th ExCom	360,000	2012	2015	Coordination project			
China (Solvent)	Non-LVC	UNDP	64th ExCom	5,000,000	2012	2015	Solvent sector project			
Colombia	Non-LVC	UNDP	62nd ExCom	6,721,483	2011	2016	Yes	No	No	Yes
Congo, DR	Non-LVC	UNEP	63rd ExCom	240,000	2011	2018	No	No	No	Yes
Costa Rica	LVC	UNDP	64th ExCom	1,153,523	2012	2020	Yes	No	No	Yes
Cuba	LVC	UNDP	65th ExCom	1,747,527	2012	2020	Yes	No	No	Yes
Dominican Republic	Non-LVC	UNDP	65th ExCom	1,646,225	2012	2015	Yes	No	No	Yes
Egypt	Non-LVC	UNIDO	65th ExCom	6,195,400	2012	2019	Yes	No	No	No
El Salvador	LVC	UNDP	65th ExCom	699,277	2012	2021	Yes	No	No	Yes
Fiji	LVC	UNDP	65th ExCom	199,500	2012	2020	No	No	No	Yes
Georgia	LVC	UNDP	63rd ExCom	500,900	2011	2021	No	No	No	Yes
Ghana	Non-LVC	UNDP	61st ExCom	1,031,311	2010	2021	No	No	No	Yes
Guyana	LVC	UNEP	63rd ExCom	48,000	2012	2015	No	No	No	yes
Haiti	LVC	UNEP	68th ExCom	97,119	2013	2021	No	No	No	Yes
India	Non-LVC	UNDP	66th ExCom	18,438,490	2012	2015	Yes	No	No	No
Indonesia	Non-LVC	UNDP	64th ExCom	8,901,102	2012	2018	No	Yes	Yes	Yes
Iran	Non-LVC	UNDP	63rd ExCom	4,340,246	2011	2019	Yes	No	Yes	No
Jamaica	LVC	UNDP	63rd ExCom	578,450	2012	2020	Yes	No	No	Yes
Kyrgyzstan	LVC	UNDP	63rd ExCom	52,800	2011	2016	No	No	No	Yes
Lebanon	Non-LVC	UNDP	64th ExCom	2,495,109	2011	2018	Yes	No	Yes	No
Malaysia	Non-LVC	UNDP	65th ExCom	9,587,470	2012	2015	Yes	No	No	Yes
Maldives	LVC	UNEP	60th ExCom	420,000	2012	2020	No	No	No	Yes
Mali	LVC	UNEP	63rd ExCom	280,000	2011	2021	No	No	No	Yes
Mauritania	Non-LVC	UNEP	80th ExCom	305,000	2018	2026	No	No	No	Yes

Country	LVC / Non-LVC	Lead Agency	Approval Date	UNDP MLF Grant	Planned StartDate	Planned End Date	Foam Manufacturing Sector	Refrigerant Manufacturing Sector	AC Manufacturing Sector	Servicing
Mexico	Non-LVC	UNIDO	64th ExCom	13,654,016	2011	2018	Yes	No	No	Yes
Moldova, Rep	LVC	UNDP	63rd ExCom	88,000	2011	2016	No	No	No	Yes
Nepal	LVC	UNEP	62nd ExCom	84,000	2012	2020	No	No	No	yes
Nigeria	Non-LVC	UNDP	62nd ExCom	2,999,750	2011	2015	Yes	Yes	Yes	Yes
Panama	Non-LVC	UNDP	65th ExCom	265,545	2012	2016	No	No	No	Yes
Paraguay	LVC	UNEP	63rd ExCom	300,000	2011	2021	No	No	No	Yes
Peru	Non-LVC	UNDP	68th ExCom	232,671	2013	2017	No	No	No	Yes
Saint Kitts and Nevis	LVC	UNEP	64th ExCom	40,000	2012	2021	No	No	No	Yes
South Sudan	LVC	UNEP	77th ExCom	90,000	2016	2020	No	No	No	Yes
Sri Lanka	LVC	UNDP	62nd ExCom	398,866	2011	2020	Yes	No	No	Yes
Swaziland	LVC	UNEP	62nd ExCom	667,948	2012	2020	Yes	No	No	No
Timor Leste	LVC	UNEP	62nd ExCom	106,800	2012	2015	No	No	No	Yes
Trinidad and Tobago	Non-LVC	UNDP	64th ExCom	1,462,733	2011	2020	Yes	No	No	Yes
Uruguay	Non-LVC	UNDP	65th ExCom	380,004	2011	2015	No	No	No	Yes
TOTALS:				172,877,900						

UNDP as a cooperating agency for implementation of HPMP

5. EVALUATION FINDINGS

37. This section presents the findings of this evaluation adhering to the basic structure proposed in the TORs and as reflected in the UNDP project evaluation guidance.

5.1. Key Evaluation Question 1: Relevance

Are activities outlined in countries' national HPMP strategies relevant to address the protection of the ozone layer and the climate and are these strategies included in national development strategies?

Sub-question 1.1: *How are HPMPs relevant to the Montreal Protocol objectives?*

38. The implementation of HPMPs is part of key instruments instituted under the Montreal Protocol to phase-out ozone-depleting substances (ODS). The main objective of HPMPs is to phase-out HCFCs, which have been transitional substances to replace CFCs. It could be seen as the second phase of the MP in eliminating ODS. The first phase was the elimination of CFCs, the second phase is the phasing-out of HCFCs through the implementation of HPMPs and then the third phase will be the phasing out of the HFCs, which is the objective of the Kigali agreement[11]. HPMPs are, therefore, a relevant instrument to replace HCFCs with alternatives technologies that are not damaging to the ozone layer and are clearly contributing to the objective of the MP.

39. HPMPs are performance-based agreements between each Article 5 country and the MLF Executive Committee, whereby agreed-upon funding tranches are released when conditions related to ODS phaseout and disbursements are met. The main purpose of HPMPs is to develop an overarching strategy that allows Article 5 countries to meet the reduction levels in HCFC consumption. At the XIX meeting of the Parties to the MP in September 2007, the decision XIX/6 was taken to accelerate the phase-out schedule of HCFCs, which includes the following reduction steps based on the baseline of the average consumption of ODS for the year 2009 and 2010: by 2015 reduction of 10 per cent; by 2020 of 35 per cent; by 2025 of 67.5 per cent; and an annual average of 2.5 per cent during the period 2030–2040.

40. This decision encouraged Parties to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations. Following this decision, the Executive Committee adopted the guidelines for the preparation of HPMPs at its 54th meeting. It included an indicative outline and content for these HPMPs. Then, the MLF Secretariat developed a guide to assist and facilitate the process of preparing stage I of HPMPs, in line with these guidelines.

Sub-question 1.2: *How are HPMPs relevant to UNDP objectives?*

41. UNDP is one of the most active agencies supporting countries in their foam and refrigerant transition to climate-friendly technologies as well as helping countries promote energy efficiency in the foam, refrigeration and A/C sectors. It supports Article 5 countries to eliminate ODS. It is one of four agencies to implement HPMPs; UNEP, UNIDO and the World Bank are the other three institutions. In addition to be an implementing agency for the MLF financing the implementation of the MP, UNDP is also an implementing agency for the Global Environment Facility (GEF), which also funds programmes to eliminate ODS in countries with economies in transition.

42. UNDP provides services that include technology transfer and technical assistance, formulation and implementation of country and sector strategies, capacity building, accessing funding from different sources, and facilitating public/private partnerships. As of end of 2014, UNDP has assisted about 120 countries to access USD 733.5M in funding, helping to eliminate 67,870 tonnes of ODS and reducing 5.08 billion tonnes of CO2-eq greenhouse gas emissions.

11 Since the adoption of the MP in 1987 and as of end of 2014, it is estimated that activities to reduce the consumption of ODS have successfully eliminated over 98 percent of controlled ODS; helping to reverse the damage to the ozone layer.

43. As one MLF implementing agency, UNDP has assisted Article 5 countries to comply with the HCFC consumption freeze (2013), the 10% reduction targets (2015) and the 35% reduction targets (2020). It supports the implementation of national HCFC Phase-Out Management Plans (HPMPs) in 47 countries (as the lead agency in 28 countries and cooperating agency in 19 other countries). Combined, these 47 countries represent 77% of the global consumption of HCFCs. As part of this support to implement HPMPs, UNDP also supports countries to convert manufacturing processes to non-HCFC climate-friendly alternatives in the foam, refrigeration, air-conditioning, solvents and other sectors.

44. Implementing HPMPs is a key step in the process of eliminating ODS and reverse the damage to the ozone layer. It sets targets for each country to reduce their consumption of HCFCs and strategize the transition to HFCs to replace HCFCs. The implementation of HPMPs by UNDP is spearheaded and coordinated by a dedicated Montreal Protocol Unit (MPU), which was established in 1991. It is the focal point for UNDP's global MP programme, responsible for strategic planning, policy, programme and financial oversight, and reporting to the MP-MLF Secretariat and ExCom.

45. As discussed in the previous section, HPMPs is part of key instruments instituted under the Montreal Protocol to phase-out ozone-depleting substances (ODS). It is, therefore, a very relevant instrument used by UNDP to contribute to the elimination of HCFCs. Overall, HPMPs are part of activities implemented by UNDP under the Montreal Protocol; it is part of UNDP's contribution to the *Green Economy*. Through partnerships with governments and the private sector, UNDP provides targeted policy advice and specialized technical assistance, training and technology transfer to adopt ozone and climate friendly technologies and best practices. It covers several sectors including manufacture (and servicing) of products in refrigeration and air-conditioning, foams, solvents, medical aerosols for asthma treatment, and agriculture. Finally, the relevance of HPMPs for UNDP can also be seen within the context of UNDP role in contributing to the implementation of SDGs. An analysis conducted in 2017[12] revealed that activities conducted under the MP – including HPMPs – have an impact on 15 of the 17 SDGs and 39 of the 169 SDG-targets.

Sub-question 1.3: *How are HPMPs relevant to national priorities of participating countries?*

46. Participating countries are all Parties to the Montreal Protocol; they ratified the Protocol and as such they are obligated to comply with the obligations set by the Treaty. The Montreal Protocol has set binding progressive phase-out obligations for developed and developing countries for all the major ozone depleting substances, including chlorofluorocarbons (CFCs), halons and less damaging transitional chemicals such as hydrochlorofluorocarbons (HCFCs). It targets 96 ozone depleting chemicals in thousands of applications across more than 240 industrial sectors. In 2016 (Kigali agreement) the MP also became responsible for setting binding progressive phase down obligations for the 18 main hydrofluorocarbons (HFCs).

47. Therefore, Article 5 countries are Parties to the Montreal Protocol and as such they are bound to a mandatory timetable for the phase-out of ozone depleting substances, including HCFCs. This timetable has been reviewed regularly, with phase-out dates accelerated in accordance with scientific understanding and technological advances. As discussed in section 2, the 54th ExCom meeting approved that countries should adopt a staged approach to the implementation of HCFC phase-out management plans (HPMPs). HPMPs became the key instrument for Parties to comply with the targets established under the MP in order to phase-out HCFCs. As a management instrument, HPMPs are, therefore, very relevant to Parties to the MP, including the 47 countries covered by this evaluation. Implementing HPMPs is the only mechanism to get financing for implementing activities seeking to phase-out HCFCs.

48. Furthermore, as discussed in section 2 above, Article 5 countries are countries with an annual consumption of less than 0.3kg of ODS per capita per annum. This list is further divided into two groups: (1) Low Volume-consuming Countries (LVCs), which are identified as countries with an annual consumption level below 360

12 Jacques Van Engel, 20 August 2017, *The Sustainable Development Goals and the Montreal Protocol*

tonnes of ODS per annum; and (2) non-LVCs, which are countries with an annual consumption level above 360 tonnes of ODS per annum. As presented in section 4, 26 countries covered by this evaluation (53%) are LVCs and 21 (47%) are non-LVCs.

49. Considering this division based on national consumption, a decision (VII/25) was taken at the 7th meeting of the MP Parties requesting the ExCom to provide specific support to Low Volume-consuming Countries (LVCs). It included the request to allocate sufficient funds for projects in LVCs to further strengthen and expand awareness and training programmes; support specialized assistance to establish regulatory and legislative measures to facilitate the phase-out of ODS; and develop an appropriate project appraisal approach reflecting the particular circumstances encountered by LVCs. According to an evaluation of the financial mechanism of the MP conducted in 2012[13], LVC countries have received roughly 10% of total MLF funds, an amount that was proportionately higher than their share of consumption (about 3% of total Article 5 ODS consumption).

50. Overall, implementation of HPMPs involves a package of technology and policy interventions for phasing out HCFCs to comply with the control targets of the MP HCFC phaseout schedule, and at the same time avoiding the introduction of high Global Warming Potential (GWP) HFC alternatives when available and economically feasible. In low-volume consuming countries (LVCs), HPMP activities are usually for:

- Policy interventions such as legislative action, implementation of a licensing/quota system, assistance to customs to control the import of ODS, etc.
- Assistance provided to the refrigeration servicing sector, including training of refrigeration servicing technicians, recovery/recycling schemes and limited assistance to the refrigeration end-user sectors (e.g. for cooling used in supermarkets, hospitals, hotels, restaurants, cold storage rooms, meat and fish processing industry, refrigerated transport, air-conditioning and chillers, etc.).

51. For larger-consuming countries, assistance to manufacturing industry is also covered:

- *Foam sector*: Enterprises producing foam products receive financial and technical assistance to convert their manufacturing processes to use low-GWP alternatives such as hydrocarbons, methyl-formate, methylal and HFOs, so they no longer need HCFCs as a blowing agent. Products can range from refrigerator cabinets, foam panels, thermo-ware, spray-foam applications, integral skin, etc.
- *Refrigeration and A/C sector*: HCFC coolant used in the manufacturing line is replaced by low-GWP alternatives such as CO2, ammonia, hydrocarbons and HFOs, and in some cases HFC-32 and HFO/HFC blends due to special situations.
- *Solvents sector*: HCFC-based machines manufactured to clean or degrease metal devices can be replaced with technologies that are ODS-free.

Sub-question 1.4: *How do HPMPs address the needs of target beneficiaries?*

52. One characteristic of these HPMPs is the strong focus on the private sector, recognizing that small and medium-sized enterprises are key stakeholders, which need to be involved in phasing out HCFCs. Based on the experience with activities to phase-out CFCs, it was found that end-users had difficulties in gaining access to appropriate alternative technologies and information on the availability assistance in the field. For instance, in Georgia, it was found that this difficulty to access alternative technologies, limited the introduction of innovative technologies into the country and diminished the competitiveness of the private sector. Compounded with the lack of skilled technicians, it restricted the capacity to implement new alternative technologies.

53. Learning from this experience, the approach for implementing HPMPs emphasized the role of enterprises. As a first step to ensure key SMEs are involved in the phasing-out of HCFCs, an inventory of enterprises needs to be done and entered into an "*Inventory of enterprises database*" no later than one month after the date of approval of the HPMP tranche and the data must be consistent with the submission. Then, HPMPs are focusing on these enterprises providing capital to replace existing technologies. For instance, in Indonesia, the Stage I HPMP selected financially sound and viable enterprises with good technical and managerial capacity and relatively higher

13 UNEP, July 2012, *Evaluation of the financial mechanism of the Montreal Protocol*.

consumption of HCFC and invested in the conversion of these enterprises, which included the conversion of four foam enterprises to low-GWP technologies with an expected phase-out of 49.9 ODP tonnes of HCFC-141b.

54. Additionally, HPMPs support regular workshops/seminars with the private sector on legal, technical and financial matters associated with the phase-out of HCFCs. They also seek to engage the private sector from the outset to foster innovation, open and develop new markets and demonstrate the potential for strategic partnerships, including the potential to achieve a greater scale of investment through the mobilization of private capital. In the case of India, discussions took place with some private sector entities under the HPMP to co-finance additional investments needed for implementing energy-efficiency enhancements in refrigeration and air conditioning equipment manufactured by enterprises and for developing an infrastructure for life-cycle management of ODS-containing products.

55. HPMPs also work with industry associations and overall, they seek to create public-private linkages as a way to promote new internationally accepted standards, practices, guidelines, new technologies, etc. but also to facilitate the transfer of technologies and knowledge to targeted enterprises. The guidelines and the highly participative process to formulate and implement a HPMP provide a flexible financing instrument that allow to address the specific needs of targeted beneficiaries.

Sub-question 1.5: *Are HPMPs internally coherent in their design?*

56. The main purpose of HPMPs is to develop country-based strategies to allow Article 5 countries to meet the reduction levels in HCFC consumption as agreed by the Parties to the Montreal Protocol in decision XIX/6. In agreeing to the accelerated phase-out schedule, the Parties to the MP were encouraged to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations. At its 54th meeting, the ExCom adopted comprehensive guidelines for preparing HPMPs, followed by a guide developed by the MLF Secretariat to assist and facilitate the process of preparing stage I HPMPs.

57. These guidelines and the process to prepare and submit a HPMP document are well established and are kept up-to-date. The guide formulated by the MLF Secretariat is updated and made available to all after each ExCom meeting where needed, to include new decision(s) related to the guidance of HPMP preparation.

58. An HPMP submission to the MLF Secretariat must include 9 sections, which are presented in table 3, before it will be considered by the ExCom for funding. The submission should also include an endorsement letter from the government of the country requesting the funding and follow a timetable to submit the HPMP document on time to be considered by the ExCom.

Table 4: HPMP Structure

• Project cover sheet
• Executive summary
• Introduction
• HCFC consumption data
• Phase-out strategy
• Project coordination and management
• Plan of action (associated with the first tranche)
• Draft agreement
• Relevant sources of information

59. The structure and the guidelines for formulating a HPMP submission are coherent and provide the necessary background information to justify the HPMP funding request. It includes a review of relevant legislation/ regulations, stakeholders, and previous ODS programme(s), all presented in the introduction section; HCFC consumption data including the distribution by sector; the HCFC phase-out strategy to meet the targets established by the MP and including a budget respecting the cost-effectiveness threshold established for each sector ($/metric kg); the management structure for implementing the HPMP including roles and responsibilities, and procedures to monitor progress; a plan of action for the first tranche including quantifiable targets; a draft agreement based on a template approved by the ExCom and including key targets, roles and responsibilities of each Party and requested funding; and the relevant documents presenting the relevant ExCom decisions.

60. In addition to guidelines for preparing a HPMP submission, guidelines for preparing tranche requests is also

available. Similar to a submission for a HPMP funding request, any tranche request must be accompanied by an endorsement letter from the government of the country requesting the funding. Additionally, a tranche request can only be made if at least 20% of the previously approved tranche has been expended.

61. The key parts of a tranche request include: (a) a tranche implementation report describing legislation and regulations revised/issues related to HCFCs during the previous tranche, HCFC consumption and production (where applicable) for all years prior to the tranche request, HCFC phase-out activities implemented versus the initial plan for the preceding tranche, and a financial report summarizing the financing of the HPMP over the previous tranche(s); (b) a verification report covering national HCFC consumption targets for all previous years; (c) a tranche implementation plan detailing activities to be implemented with their respective funding needs; and (d) possible changes to the Agreement, which would mostly be a result of revised consumption data.

62. When considering all these detailed guidelines and procedures to formulate a HPMP and feedback collected during this evaluation, the structure of these HPMPs is coherent and logical. Templates and guidelines are provided to all stakeholders to help them formulating a compliant HPMP submission. The review of the provided guidance provides an effective way to formulate realistic HPMPs. It includes a situational analysis looking at legislative aspects and the consumption data, which will be used to establish the baseline and the targets to be met by the HPMP. Then, based on this situational analysis, the HCFC phase-out strategy is developed as well as the plan of action for the first tranche of the HPMP.

63. It is also important to analyze the coherence of these HPMPs within the overall objective of the MP to phase-out ODS. Countries, as Parties to the MP, are obligated to phase-out their consumption and production of ODS according to an established timetable. All 47 countries covered by this evaluation have already phased-out their consumption and production of CFCs, and, through HPMPs, have been phasing-out their consumption and production of HCFCs. This overall process is also coherent and logical.

5.2. Key Evaluation Question 2: Effectiveness

Did countries meet the control targets established under the Stage I HPMP strategy on time?

Sub-question 2.1: *How are HPMPs effective in achieving their expected outcomes?*

64. Each HPMP submission was approved by the ExCom with a set of baseline and scheduled targets including the freeze consumption and production at baseline level by 2013, the reduction by 10% by 2015 and for those HPMPs with a longer timeframe, a reduction by 35% by 2020. It represented a total expected of HCFCs to be phased-out of 2,744 ODP tonnes per year by 2015.

65. The table below provides details on these targets for each HPMP. It includes data which was extracted from the UNEP Ozone Secretariat website (which is data reported by countries to the Ozone Secretariat) and data extracted from each agreement ratified between the MLF and the 47 countries (indicated as MP requirements in corresponding columns).

Table 5: HPMP Scheduled Targets and Actual Reductions by 2015

Country	Baseline (ozone.unep.org)	2013 (from Agreements- MP requirement freeze)	2013 (reported to ozone.unep.org)	2015 (target from Agreements - MP requirement - 10%)	2015 (reported to ozone.unep.org)	Planned Phased out by 2015 (MP requirement)	Actual Phased out by 2015 (as reported)	Actual vs. Planned	Type of ODS
Angola	16.00	15.95	15.43	14.36	13.78	1.64	2.22	**0.58**	HCFC 22
Armenia	7.00	7.00	4.54	6.30	2.34	0.70	4.66	**3.96**	HCFC-22, HCFC-141b
Bangladesh	72.60	72.65	64.89	65.39	64.18	7.21	8.42	**1.21**	HCFC 22, 141b, 142b, 123
Barbados	3.70	3.69	2.89	3.32	1.48	0.38	2.22	**1.84**	HCFC 22
Belize	2.80	2.80	2.43	2.52	2.26	0.28	0.54	**0.26**	HCFC-22, HCFC-141b
Bhutan	0.30	0.28	0.28	0.25	0.20	0.05	0.10	**0.05**	HCFC22
Brazil	1,327.30	1,327.30	1,189.25	1,194.80	1,025.81	132.50	301.49	**168.99**	HCFC22, 141b, 142b, 123, 124
Brunei Darussalam	6.10	6.10	4.27	5.49	3.57	0.61	2.53	**1.92**	HCFC22
Cambodia	15.00	15.00	9.47	13.50	11.69	1.50	3.31	**1.81**	HCFC 22
Chile	87.50	87.50	75.99	78.75	67.63	8.75	19.87	**11.12**	HCFC-22, 141b, 142b, 123, 124, 225
China (ICR)	19,269.00	19,100.00	15,761.32	17,190.00	13,485.21	2,079.00	5,783.79	**3704.79**	HCFC 22, 123, 142b
China (Nat. Coord.)	Coordination project								
China (Solvent)	-		-		-	-	-		HCFC123, 141b, 142b, 22, 225ca
Colombia	225.60	225.60	176.65	203.04	164.60	22.56	61.00	**38.44**	HCFC-22, 123, 124, 141b, 142b
Congo, DR	66.21	66.21	35.94	59.59	15.40	6.62	50.81	**44.19**	HCFC-22
Costa Rica	14.10	14.10	12.60	12.70	10.96	1.40	3.14	**1.74**	HCFC 141b, HCFC142b, HCFC22
Cuba	16.90	16.90	12.19	15.20	13.17	1.70	3.73	**2.03**	HCFC141b, HCFC22
Dominican Republic	51.20	51.20	34.78	46.08	43.39	5.12	7.81	**2.69**	HCFC-22, HCFC-141b, HCFC-123
Egypt	386.30	386.30	297.00	347.64	343.12	38.66	43.18	**4.52**	HCFC-22, 123, 141b, 142b
El Salvador	11.70	11.77	8.08	10.51	5.82	1.19	5.88	**4.69**	HCFC-22, 141b, 142b, 123, 124
Fiji	5.73	5.80	7.67	5.20	3.87	0.53	1.86	**1.33**	HCFC141b, HCFC22
Georgia	5.30	5.33	1.38	4.79	1.68	0.51	3.62	**3.11**	HCFC-22, HCFC-142b
Ghana	57.30	57.30	25.39	51.57	20.41	5.73	36.89	**31.16**	HCFC-22, HCFC-142b
Guyana	1.80	1.80	0.96	1.62	1.34	0.18	0.46	**0.28**	HCFC22
Haiti	3.63	3.60	1.95	3.24	3.25	0.39	0.38	**-0.01**	HCFC-22
India	1,608.20	1,608.20	975.94	1,447.40	992.54	160.80	615.66	**454.86**	HCFC123, 141b, 142b, 22
Indonesia	403.90	403.92	310.52	363.51	152.67	40.39	251.23	**210.84**	HCFC22, 123, 141b, 142b, 225
Iran	380.50	380.50	357.44	342.45	309.28	38.05	71.22	**33.17**	HCFC-22, HCFC-141b

Country	Baseline (ozone.unep.org)	2013 (from Agreements- MP requirement freeze)	2013 (reported to ozone.unep.org)	2015 (target from Agreements - MP requirement - 10%)	2015 (reported to ozone.unep.org)	Planned Phased out by 2015 (MP requirement)	Actual Phased out by 2015 (as reported)	Actual vs. Planned	Type of ODS
Jamaica	16.30	16.30	2.63	11.40	2.92	4.90	13.38	**8.48**	HCFC22, 141b
Kyrgyzstan	4.10	4.10	3.99	3.69	1.58	0.41	2.52	**2.11**	HCFC-22, HCFC-141b, HCFC-142b
Lebanon	73.50	73.50	72.61	66.15	65.86	7.35	7.64	**0.29**	HCFC-22, HCFC-123, HCFC-141b
Malaysia	515.80	515.18	445.83	464.18	418.50	51.62	97.30	**45.68**	HCFC22, 123, 141b, 225
Maldives	4.60	3.30	3.19	3.00	2.45	1.60	2.15	**0.55**	HCFC22
Mali	15.00	15.00	10.29	13.50	10.12	1.50	4.88	**3.38**	HCFC-22
Mauritania	20.50	20.50	20.35	18.45	18.43	2.05	2.07	**0.02**	HCFC-22
Mexico	1,148.80	1,148.80	791.35	1,033.90	660.37	114.90	488.43	**373.53**	
Moldova, Rep	1.00	1.00	0.99	0.90	0.82	0.10	0.18	**0.08**	HCFC-22
Nepal	1.10	1.10	0.66	1.00	0.55	0.10	0.55	**0.45**	HCFC22
Nigeria	344.88	398.30	334.46	358.40	247.70	- 13.52	97.18	**110.7**	HCFC-22, 141b
Panama	24.80	24.77	21.37	22.29	17.53	2.51	7.27	**4.76**	HCFC-22, 141b, 142b, 123, 124
Paraguay	18.00	18.00	16.46	16.10	15.99	1.90	2.01	**0.11**	HCFC-22, HCFC-123, HCFC-124
Peru	26.88	26.88	25.81	24.19	22.82	2.69	4.06	**1.37**	HCFC-22, 124, 141b, 142b
Saint Kitts and Nevis	0.50	0.50	0.32	0.45	0.36	0.05	0.14	**0.09**	HCFC-22
South Sudan	4.10	4.10	2.31	3.36	3.36	0.74	0.74	**0**	HCFC 22
Sri Lanka	13.90	13.90	13.37	12.68	10.31	1.22	3.59	**2.37**	HCFC-22, HCFC-141b
Swaziland	1.73	1.80	1.18	1.53	1.02	0.20	0.71	**0.51**	HCFC22, 141b
Timor Leste	0.50	0.50	0.29	0.45	0.41	0.05	0.09	**0.04**	HCFC22
Trinidad and Tobago	46.00	46.10	39.50	41.60	12.64	4.40	33.36	**28.96**	HCFC-22, 123, 124, 141b
Uruguay	23.40	23.33	15.47	21.00	15.78	2.40	7.62	**5.22**	HCFC 22, 134a, 141b
Total	**26,351**	**26,234**	**21,212**	**23,607**	**18,289**	**2,744**	**8,062**	**5,318**	

UNDP as a cooperating agency for implementation of HPMP

66. The review of this data and other key documents such as tranche requests, verification reports and several available PCRs indicate that all 49 HPMPs met their reduction target of 2015 on time and in some cases with wide margins. Therefore, based on the 2015 targets, all 47 countries are in compliance with the Montreal Protocol. According to the data compiled in the table above, together these 49 HPMPs eliminated 8,062 ODP tonnes; that is 5,318 ODP tonnes above the expected amount of HCFCs to be eliminated by 2015 (+194%). It is a highly successful outcome from these HPMPs.

67. Looking at the second column in the table from the left, which is the difference between the planned phased out by 2015 (MP requirement) and the actual phased out by 2015 (as reported), it indicates that some countries exceeded their expected 2015 target by a lot. It includes most of the large countries such as Brazil, China, India, Indonesia, Mexico in term of total exceeded ODP tonnes of HCFCs eliminated. However, it also includes many other countries when these differences are proportioned with their respective expected (planned) amount to be eliminated by 2015. It is the case of Armenia (+566%), Barbados (+484%), Congo DR (+668%), El Salvador (+394%), Georgia (+610%), Ghana (+544%), Indonesia (+522%), Kyrgyzstan (+515%), Nepal (+450%), and Trinidad and Tobago (+658%).

68. This excellent result raises the question as to why countries were able to surpass the expectations by a wide margin? The scope of this evaluation did not provide enough time and resources to explore the reason(s) why these results have exceeded the set target of -10% for 2015 (a requirement of the MP) by wide margins. Were the country baselines set too high due to a surge of imports prior to the implementation of import quotas? Could it be due to the effective implementation of quota and licensing systems, which may have curtailed imports and hence reduced consumption? These are only questions and a complete analysis would be needed to conclude on the reason(s) why the phasing-out has been so successful.

69. In the meantime, despite that countries met their 2015 targets, many activities under these HPMPs did not take place as planned. Among HPMPs that had only the 2013 and 2015 targets to achieve and to be completed by end of 2017 (19 HPMPs), only 10 PCRs were available at the time of this evaluation; though other projects may already be financially closed. The limited information on the status of each HPMP at a particular point in time rendered the analysis difficult. However, these delays in implementing HPMP activities were also observed within the tranche requests reviewed for this evaluation. These delays included investment activities and capacity development activities, despite that not much information has been available to assess the timing of their implementation.

70. Many LVCs planned to implement activities such as incentive programs, retrofit, R&R equipment purchase, etc. However, the review indicates that many were delayed and/or changed. The main reason highlighted in reports is hurdles in procuring equipment.

71. These delays were also confirmed by a desk study on the evaluation of HCFC phase-out projects in the foam sector[14] conducted in 2014. It identified several reasons for these delays including: under estimation of project duration; administrative delays related to the signature of contracts and legal agreements; complex procurement processes; hesitation by several enterprises to adopt alternative technologies; delayed site preparation to accommodate new technologies, and unavailability of or lack of regular supply of foam systems.

72. In the meantime, since these delays are not affecting the compliance with MP targets; there are not critical issues. Implementing these delayed activities are still on-going. They will still contribute to the development of national capacities, which should be useful for further phase-out activities under Stage II HPMPs and soon-to-come HFCs phasing-out activities under the Kigali agreement.

73. However, these delays in implementing investment and non-investment activities, coupled with the reducing supply of HCFCs may result in enterprises moving straight to HFC alternatives. More and more reports in this area highlight market trends moving toward the use of HFCs, especially in the RAC sector where the use of R410a

14 UNEP/OzL.Pro/ExCom/73/8.

is increasing. A recent analysis of surveys of ODS alternatives commissioned by the ExCom[15], reveals that the use of R410a has been increasing by 40% (compounded annual growth rate) during the period 2012-2015, which means that the consumption of R410a is doubling every other year. This creates significant risks as countries will meet their HCFC targets but their HFC consumptions will increase.

74. Another reason why enterprises may/or have already shifted to HFCs is the lack of alternative commercially available technologies, which is documented in some reports reviewed for this evaluation. Many LVCs such as Maldives and Bhutan have ambitious targets to reduce HCFCs within a relatively short time-frame (2020 and 2025). The lack of access to the right alternatives will make it harder for them to avoid using HFCs. It is also the case in the foam sector, which is generally driven by SMEs and which are dependent on system houses for their supply of pre-blended polyol. If the right formulations based on methyl formate, water, or HFOs are not available, these SMEs may adopt the easier option of HFC based formulations.

75. In the foam sector, larger companies moved to cyclopentane and the conversion process went relatively smooth. However mid-size enterprises have found it difficult to find a suitable alternative to HCFCs. Methyl formate has worked only in few cases, the used of water-based system has faced problems and HFOs were planned to be used but due to the lack of availability they have not been used much so far.

76. The Evaluation Team also reviewed how gender considerations were mainstreamed in the portfolio of HPMPs implemented by UNDP. It found that gender has not been considered in the full project cycle for HPMPs from the formulation stage, monitoring and reporting progress to completion reports. No information on gender was found in all project documents reviewed for this evaluation. A mid-term evaluation for the Stage I HPMP in Jamaica concluded that "*there is no indication that gender was a consideration in the design and/or execution of the Project*".

77. Furthermore, this finding was confirmed by a gender analysis commissioned by UNDP[16] in 2018. This analysis, which focused on three Stage I HPMPs (China, Nigeria and Peru), found six overarching inter-related findings: (a) structural and cultural barriers hamper gender equality in areas relevant to the Montreal Protocol; (b) women are significantly underrepresented in the refrigeration, air conditioning and foam sectors; (c) up to September 2018, gender is hardly considered in the ozone project cycle; (d) women are frequently portrayed as vulnerable; (e) gender competence among project stakeholders in areas relevant to the MP is limited; and (f) project stakeholders show commendable interest and will to address gender concerns and work towards greater gender equality.

78. On the basis of these findings, an action plan - composed of 2 parts - was formulated. Part 1 includes a set of recommendations for the three projects reviewed and which can be grouped into four main actions: organize gender training activities for stakeholders; establish collaborations with colleagues and external stakeholders working on gender equality; link project activities with wider efforts towards gender equality; and ensure that gender is considered internally, i.e. throughout the human resource processes. Part 2 is a compilation of "*things to remember and some additional advice*" such as the need to: mainstream gender into the project cycle, ensure the representation of women and their contribution to the economy; conduct advocacy and awareness raising activities; develop gender policies and strategies; and set up networks and online platforms.

Sub-question 2.2: *What type and how are alternative technologies selected?*

79. Among the portfolio of HPMPs reviewed, technology conversions happened mostly in medium and large countries; LVCs are mostly dependent on imports. Almost half HPMPs (41%) reviewed for this evaluation intervene in the PU foam sector (*see Table 6 in Annex 9 for alternative technologies selected under HPMPs implemented by UNDP*). This is a sector where it exists well proven alternatives that medium and large companies took advantage of, such as replacing HCFCs with cyclopentane and more broadly hydrocarbons (n-pantene, etc.). As several interviewees stated, this is a "*low hanging fruit*" for Stage I HPMPs and a relatively easy way to meet

15 UNEP/OzL.Pro/ExCom/80/54
16 Hannah Strohmeier, September 2018, *Gender Analysis Report - Montreal Protocol and Chemicals Unit*

the reduction target of 2015 with a few conversion projects.

80. Other technology options like methylal and methyl formate, their adoption was limited to a few non-LVCs such as Brazil, Mexico, Egypt and Nigeria. However, these technologies were not considered as realistic alternatives at the time these HPMPs were formulated (2010-2011) - except for a few demonstration projects - since these technologies were not tested well in these countries[17]. HFOs as alternate technology options were also mentioned in a few HPMPs. However, during the implementation of these HPMPs, most of them mentioned the lack of market availability of HFOs and high costs as reasons for non-adoption for commercial purposes.

81. Some HPMPs in smaller countries (LVCs) dealing with smaller size companies planned to use CP/water and similar alternatives but finally shifted to HFCs due mostly to the fact that CP/water is not a viable option for such companies. Furthermore, the review of HPMP tranche requests indicates that many companies have shifted to HFCs on their own. This is a risk for future Kigali phase-down as many companies would have moved to HFCs. As a result, a special care is needed for Stage II HPMPs to ensure that the market does not shift to HFCs for companies which aren't supported by HPMPs. Additionally, it would be important to track the market of HFCs over time under these HPMPs to monitor market trends, which is missing in Stage I HPMPs.

82. In order to help with the assessment of new technological developments for which little or no experience or data exists on technical performance and costs, UNDP supported demonstration projects in various regions and sectors since 1996. The major objectives of such types of demonstrations have been to find alternative solutions and cost-saving methods that will be used to carry out HCFC-investment activities in future years, bearing in mind the impact on the climate.

83. Some of these demonstrations include the assessment of alternative technologies in PU foam applications in Brazil and Mexico. As a result of these demonstrations, methyl formate was selected as an alternative technology in Egypt, Mexico, Nigeria, Brazil, Jamaica, Trinidad and Tobabo and Cameroon. Other demonstrations were conducted in China to convert HCFC-22/HCFC-142b technology to CO2 with methyl formate co-blowing technology in the manufacture of extruded polystyrene foam. They also tested the adoption of HFC 32 to replace HCFC 22 in the production of small-size commercial air-source chillers/heat pumps; the conversion of HCFC 22 technology to ammonia/CO_2 technology in the manufacture of two-stage refrigeration systems; and the conversion of HCFC 141b technology to iso-parafin and siloxane technology for cleaning in the manufacture of medical devices. Finally, other demonstration related to the phasing-out of HCFCs took place in Columbia, Egypt, Nigeria and Turkey.

84. Despite that there is evaluative evidence that finding alternative technologies is a global issue particularly for small LVCs, there is also evidence that alternative technologies do exist. More demonstrations are needed, and UNDP has been preparing additional projects to demonstrate climate-friendly and energy-efficient alternative technologies. However, information on existing alternative technologies is not circulating efficiently. MPU has no web-based platform when this knowledge could be shared and transferred[18]. It is recommended that more effort is spent on reviewing the need to increase knowledge sharing and data exchange with a global reach.

Sub-question 2.3: *How are risks and risks mitigation being managed?*

85. The review conducted for this evaluation indicates three main types of risks related to the implementation of HPMPs: (a) the risks that countries become in non-compliance; (b) the risks of accidents and negative effect on health associated with alternative technologies to HCFCs such as the use of flammable and toxic refrigerants; and (c) the management risks related to the implementation of HPMPs.

86. The risk of countries implemented HPMPs being in non-compliance with the MP targets is the overall most important strategic risk at the global level and the status of compliance can only be determined by the Meeting of the Parties, which is the only body empowered to assess such status. From a guidelines point of view, it is requested

17 Since then, methylal and methyl formate were adopted as alternative technologies for Stage II HPMPs.
18 It was noted by the Evaluation Team that other agencies like UNEP and GIZ have developed such tools.

that in each tranche request submitted later than its due date, monitoring data on compliance be incorporated, including an explanation of reasons for the delayed submission and an assessment of the potential risks of being in non-compliance with the MP targets. As a result, this information provides the MLF Secretariat with key monitoring data to monitor the status of compliance, which is reported regularly to the ExCom. In the meantime, the ExCom encourages implementing agencies to reach out to those countries at risk of non-compliance and identify proposals of activities to mitigate this risk.

87. It was noted by the Evaluation Team that following an ExCom decision at its 53rd meeting, UNEP conducted the first assessment of the risk of non-compliance by reviewing the project implementation delays data available at the time (2008), which were projects to phase-out CFCs (UNEP/OzL.Pro/ExCom/54/5). Despite that this assessment was without prejudice to the status of compliance determined by the meeting of the Parties, it found that the information collected through this risk assessment was extremely useful for discussions with Parties and that it could also serve as an early warning tool.

88. Regarding the risk of accidents and the potential negative effect on health, it is recognized by all Parties of the MP that when converting refrigeration and air conditioning systems to low-GWP alternatives, this risk exists. As a result, the ExCom included this risk in the guidelines to formulate HPMP submissions; however, it is also clear in all documents that this particular type of risk remains the responsibility of each country, particularly when retrofitting systems. The guidelines say that "*if the country engages in retrofitting HCFC-based refrigeration and air-conditioning equipment to flammable or toxic refrigerants and associated servicing, it does so on the understanding that they assume all associated responsibilities and risks*" (Decision 71/17). Furthermore, the decision 73/34 states that "*to proceed with retrofits that used flammable substances in equipment originally designed for non-flammable substances, it should be done only in accordance with the relevant standards and protocols*". In the meantime, the decision 72/41 invite implementing agencies to "*encourage Article 5 countries, when implementing their HPMPs, to consider the development of regulations and codes of practice, and the adoption of standards for the safe introduction of flammable and toxic refrigerants given the potential risk of accidents and negative effects on health associated with their use; and to focus on training of technicians on good practices and safe handling of refrigerants, containment, recovery and recycling and reuse of recovered refrigerants rather than retrofitting"*.

89. As a result, countries have been searching for safer alternative solutions. For instance, in addition to its HPMP to phase-out its HCFCs, Costa Rica, with the support of UNDP, developed a project to demonstrate that Ammonia/CO2 technologies can be safely deployed in the field in Latin America. The project uses a two stage Ammonia/CO2 system where a reduced charge of ammonia is expected in the primary cooling circuit. Liquid CO2 is circulated as secondary cooling, but at subcritical pressure, reducing the costs of installation and almost eliminating the associated risk with pressure. This process is designed to reduce leakage risks but, in the meantime, it requires new capacities to control, monitor and maintain these new refrigerants. As a result, the project is also supporting training activities to develop these new capacities, accompanied by the development of appropriate technical guidelines and standards.

90. Following the review of HPMPs documents, the Evaluation Team noted that that there is little emphasis on monitoring and reporting risks in these documents. Submissions for requesting funding for HPMPs do not include a particular section on risk. As discussed above, it is only when a country submits to the MLF Secretariat a tranche request later than its due date that monitoring data on compliance is requested.

91. Nevertheless, the third type of risk, that is the management risks related to the implementation of HPMPs under the responsibility of UNDP is monitored on a regular basis using the UNDP Atlas risk log. Each submission to the MLF Secretariat requesting the funding for a HPMP is the object of a mirrored project document following the UNDP project formulation template and is established between the country requesting the funding and UNDP. This template incudes a review of risks and the identification of risk mitigation measures. Additionally, it also includes a section on legal context that says that the implementing partner shall assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

92. The review of these risk logs indicates that there are mostly operational risks linked to possible implementation issues such as procurement of new equipment, availability of cost-effective solutions and completion of planned activities on time. It also includes some political, legislative and strategic risks linked to the degree of cooperation of the government to phase-out HCFCs. These risk logs include for each risk a short description, its type, impact and probability, its mitigation (counter measure) and the person or business center responsible for monitoring. These risks are monitored regularly by the HPMP implementation teams and reported to UNDP through the project reporting process established between the country and UNDP. This is a good process to monitor the implementation of HPMPs activities and assess if they are conducting on time and on budget and if there are any critical issues, which may hamper the implementation of HPMPs.

93. Overall, the review of all HPMPs indicate that each project has been in compliance with its respective established targets, which was the freeze consumption and production at baseline level by 2013 and the reduction by 10% by 2015 and that some countries are even much ahead of their accelerated phase-out schedule. However, in some countries project activities under some HPMPs are delayed (*see sub-question 2.1*). Nevertheless, the risk is being managed at the country level and implementation delays are reported to MLF Secretariat when tranche requests are submitted. The review of risk management on HPMPs reveals that any risks of non-compliance is monitored early at the country level through the management of risks linked with the implementation of activities planned in the approved HPMP.

5.3. Key Evaluation Question 3: Efficiency

To what extent are HPMPs making the best use of available human, technical, technological, financial and knowledge inputs to achieve their desired results?

Sub-question 3.1: *Did HPMPs make the best use of the MLF grants and co-financing?*

94. The financing of HPMPs by MLF grants is done according to well established guidelines to assess the cost-effectiveness of these projects. At the 16th meeting of the ExCom[19], sector and sub-sector cost-effectiveness threshold values were adopted to be applied to projects. In November 2007, a paper was prepared by the MLF Secretariat on options for assessing and defining eligible incremental costs for HCFC consumption and production phase-out activities[20], which was presented at the 53rd ExCom meeting. Further analyses took place including a document summarizing the revised analysis of relevant cost considerations surrounding the financing of HCFC phase-out[21], which was presented at the 55th ExCom meeting in July 2008.

95. After long discussions on these matters of funding HCFC phase-out plans, a decision was taken at the 60th ExCom meeting (April 2010) to determine the criteria for funding HCFC phase-out in the consumption sector in Article 5 countries (*Decision 60/44*). It states that no funding can be approved to convert HCFC-based manufacturing capacity installed after September 21, 2007 (*cut-off date*); sets principles for funding eligible incremental costs of second-stage conversion projects; defines the starting points for aggregate reductions in HCFC consumption; identify the eligible incremental costs of HCFC phase-out projects including the funding of up to a maximum of 25 per cent above the cost effectiveness threshold for projects introducing low global warming potential (GWP) alternatives.

96. It also states the cost-effectiveness threshold values used for CFC phase-out projects adopted at the 16th ExCom meeting to be used as guidelines during the development and implementation of the first stage of HPMPs. In addition, the *Decision 60/44* also sets a series of incremental costs (USD/metric Kg) in the foam sector, refrigeration and air-conditioning manufacturing sector. Regarding the refrigeration servicing sector, this same decision sets amounts of funding for HPMPs in LVCs according to their respective consumptions and also according to the planned targets in their respective HPMPs: 2013 & 2015 phase-out targets; and 2020 phase-out target. For non-LVC countries, the guidelines states that they should first address consumption in the

19 UNEP/OzL.Pro/ExCom/16/20
20 UNEP/OzL.Pro/ExCom/53/60
21 UNEP/OzL.Pro/ExCom/55/47

manufacturing sector to meet the reduction steps in 2013 and 2015. However, if they require assistance in the refrigeration servicing sector to comply with these targets, funding for these activities is calculated at US$4.50/metric kg. Some of these incremental costs are presented below:

- Incremental operating costs for projects in the foam sector is set at US $1.60/metric kg ODP for HCFC-141b and US $1.40/metric kg ODP for HCFC-142b;
- Incremental operating costs for projects in the air conditioning sub-sector is set at US $6.30/metric kg ODP;
- Incremental operating costs for projects in the commercial refrigeration sub-sector is set at US $3.80/metric kg ODP;
- LVC with a HCFC consumption between 320 and 360[22]: Funding of $198,000 (2015 target) and $630,000 (2020 target).

97. The guidelines to be used when formulating these HPMPs are detailing the above decision and are using the same incremental costs decided at the 60th ExCom meeting. The guidelines also include a clause to ensure that the last tranche for a HPMP in the refrigeration servicing sector comprises 10 per cent of the total funding and scheduled for the last year of the plan. The review indicates that there are many checks and balances in place to standardize the cost of eliminating HCFCs.

98. As a result, all HPMP submissions to the MLF Secretariat for funding need to be formulated according to the corresponding sector and sub-sector cost-effectiveness thresholds established by the ExCom. Submissions are reviewed and revised until the requested incremental costs are in line with the expected HCFCs reduction.

99. In term of actual cost effectiveness of Stage I HPMPs, a desk study[23] conducted in 2014 and reviewed by the ExCom at its 73rd meeting reveals that as of end of June 2014, the total amount of HCFCs phased out from stage I HPMPs is 3,709.1 tonnes at the cost of US $15,534,763 resulting in an overall cost effectiveness of US $4.19/kg metric.

100. Regarding co-financing, the MLF guide to prepare HPMPs provide some guidelines to countries in this area; however, it is not a requirement when submitting a HPMP for funding. These guidelines include *Decision 54/39(h)*, which states that "*countries and agencies were encouraged to explore potential financial incentives and opportunities for additional resources to maximize the environmental benefits from HPMPs*". It also includes the ExCom *Decision 74/17(b*), which encourages LVC countries to consider a report on resource mobilization for climate benefits produced by UNEP[24] when seeking additional resources for climate co-benefits during the implementation of stage I and future stages of HMPMs.

101. However, the review of documents and interviews conducted for this evaluation reveals that little emphasis is on co-financing. Despite that co-financing is part of the template to use when formulating a HPMP, most HPMP documents do not include information on co-financing, mostly due to the fact that this is not a requirement. In some cases, some information on co-financing is provided in the HPMP document such as the HPMP document from Cuba, when it is stated that the government of Cuba will provide some co-financing due its great interest in meeting its commitments under the Montreal Protocol and that enterprises involved in the PU foam sector plan will contribute with counterpart funding that amounts to US $601,933. It is also the case for the HPMP in Nigeria, which detailed a total of USD 7.825M in co-financing. However, it is rare that such information is provided. Furthermore, the review of progress reports and project completion reports indicates that no information on co-financing is provided in these reports, particularly none in project completion reports. It is just not part of the progress reporting process identified by the ExCom and MLF Secretariat.

Sub-question 3.2: *How was the role of UNDP in implementing HPMPs?*

22 This is one example. Other level of funding is set for LVCs with different consumption levels.
23 UNEP/OzL.Pro/ExCom/73/8
24 UNDP, 2014, *Financing the Climate Co-Benefits of the HCFC Phase-out - A Guide for Low Volume Consuming Countries*

102. UNDP established a dedicated Montreal Protocol Unit (MPU) based in New York in 1991 to spearhead and coordinate its efforts to support Article 5 developing countries as one of the implementing agencies of the MP-MLF. This unit is the focal point for UNDP programme related to the Montreal Protocol and as such is responsible for strategic planning, policy, programme and financial oversight for matters related to the Protocol. The MPU also reports UNDP activities to the MP-MLF Secretariat and the ExCom.

103. The MPU also includes technical teams based at UNDP Regional Centers: Bangkok (Asia-Pacific), Istanbul (Europe, Arab States, Africa), and Panama (Latin America & Caribbean). These MPU Regional Teams work with UNDP Country Offices in their regions to assist government counterparts develop projects and programmes to eliminate ODS – including Stage I HPMPs - to be funded under the MLF. The MPU central unit at headquarters coordinates these activities, produces periodic progress reports and annual business plans submitted to the MLF Secretariat and ExCom, and liaises with the Regional Bureaux at UNDP/HQ. Regarding Stage I HPMPs, as presented in Chapter 4, UNDP is the lead implementing agency for 30 HPMPs out of 49. The geographical distribution among the three regional technical teams is: 16 projects are in Asia and Pacific with a portfolio value of $111M; 14 projects are in Africa, Europe and Central Asia with a portfolio value of $15.7M; and 19 projects are in the Caribbean and Latin America with a portfolio value of $46.2M.

104. As the unit responsible for overseeing the programme related to the Montreal Protocol, the MPU provides a variety of services to support developing countries in their efforts to comply with Montreal Protocol provisions. These services include technology transfer and technical assistance, formulation and implementation of country and sector strategies, capacity building, accessing funding from different sources, and facilitating public and private partnerships. Overall, the effort of the MPU is on assisting private and public sector enterprises in their ODS elimination efforts; focusing on sector and national ODS phaseout programmes especially covering SMEs. It includes the support to Article 5 countries to formulate and implement their Stage I HPMPs.

105. Despite its relatively small size, the MPU has been implementing a large number of projects to eliminate ODS, including HCFCs. As per the *UNDP Annual Progress and Financial Report Narrative: 1991-2017* presented at the ExCom 82nd meeting in December 2018 in Montreal, Canada, UNDP has implemented almost 2,400 projects funded by the MLF during this period representing a total financing of USD 787.2 million. The total expected elimination of ODS through these projects was 67,466 ODP T/year of which 99% were phased-out by December 31, 2017.

106. The review conducted for this evaluation revealed that programmes and projects funded by the MLF undergo intense scrutiny by the MLF Secretariat and the ExCom, including a yearly assessment of the performance of each implementing agency of the Montreal Protocol. According to the *Decision 41/93* of the ExCom, the performance of each implementing agency is assessed yearly through eight weighted performance indicators in three areas: approval, implementation, and administration. For each of these indicators yearly targets are established and submitted to the ExCom. The list of indicators is presented below:

- Number of tranches approved vs. those planned
- Number of projects/activities approved vs. those planned (including project preparation activities)
- Funds disbursed
- ODS phase-out for the tranche when the next tranche is approved vs. those planned per business plans
- Project completion vs. planned in progress reports for all activities (excluding project preparation)
- The extent to which projects are financially completed 12 months after project completion
- Timely submission of project completion reports vs. those agreed
- Timely submission of progress reports and responses unless otherwise agreed

107. According to the Annual Progress Report cited above, UNDP fully met 5 out of 8 targets in 2017 for a total score of 90%. The missed targets include: 16 tranches approved vs. 23 planned; 11 projects approved vs. 15 planned; and 155.4 tonnes of ODP phased-out vs. 186.04 planned.

108. Interviews conducted during this evaluation confirm the efficiency of this relatively small implementation team; particularly when considering the volume of projects and financing to manage and administer. The few

stakeholders interviewed in the context of this evaluation, stated their appreciation for the support they get from UNDP during the formulation of these HPMPs but also through implementation and particularly the support to formulate the tranche requests.

109. The scrutiny of the implementing agencies by the ExCom was also observed at the project level. The review indicates that the entire process to formulate, approve, implement and request funds is much hands-on. There are lots of back-and-forth communications between the MLF Secretariat, MPU, UNDP Country Offices and NOUs. However, despite that these processes are strongly centralized and driven from the MLF Secretariat, stakeholders feel empowered and are in the "*driver seat*" to implement their respective projects. According to one interviewee, one of the main reasons would be that results of these projects are well measurable, tangible and can be observed in a relatively short timeframe.

110. Moreover, the review found that people involved in the implementation of HPMPs but also of other ODS phase-out projects feel part of a "select" group; it is almost like a one team including national stakeholders, UNDP country offices, the headquarters and regional MPU teams and the MLF Secretariat. They all know each other, often at the personal level, and trust each other. With the addition of clear guidelines, people involved in MP related activities are very responsive to address any communication needs. As a result, it provides an efficient process including the overseeing role of UNDP.

111. Worth mentioning is the fact that in the case of LVCs, HPMPs are generally small with limited budgets. The result is a limited availability and time commitment from staff from country offices to support the implementation of these projects, particularly NOUs. This is also compounded with the national implementation modality (NIM), that is a more hands-off approach for administering these projects. When considering that 8 HPMP projects implemented by UNDP have a budget below USD 100,000 and another group of 9 HPMPs with a budget between USD 100,000 and 300,000, the transaction costs in percentages would be higher than large projects, particularly for the formulation phase.

Sub-question 3.3: *How efficient were partnership arrangements for HPMPs?*

112. As discussed in section 5.1, HPMPs are performance-based agreement between each Article 5 country and the MLF Executive Committee, whereby agreed-upon funding tranches are released when conditions related to ODS phaseout and disbursements are met. Each HPMP is the object of a standard agreement including key targets, roles and responsibilities of each Party (country, implementing agency and MLF), requested funding and the relevant list of ExCom decisions to consider for the implementation of these HPMP.

113. These agreements are the central piece to establish partnerships between the MLF Secretariat, the implementing agency: UNDP and the country-based NOUs. They set the target of ODS to be phased-out, the conditions to finance these plans (*Funding Approval Schedule*), and various operational matters such as the need to monitor and report the progress made, the conditions to reallocate funds and the funding terms and conditions in case of non-compliance with the established targets. In the meantime, these agreements can also be amended to reflect any changes occurred after the formulation of a HPMP. It includes a possible one-time revision of targets in the case where the baseline consumption for compliance was not fully established during the formulation of the HPMP. It was also noted that any change in alternative technology, which was proposed in the project document, must be the object of a request for change with the identification of the associated incremental costs and must be approved by the ExCom.

114. As a result of these short and clear agreements (most of them are 7 to 9 pages long), the Parties involved have clear expectations, including clear responsibilities established for each Party. Related to the discussion of the sub-question 3.2 above, these arrangements certainly contribute to these efficient partnerships for implementing HPMPs.

Sub-question 3.4: *Did HPMPs utilize local capacity in implementation?*

115. The implementation of HPMPs does not include any guidelines requiring the utilization of local capacities. Often, these projects need international expertise as alternative technologies are not well developed at each state of phasing-out ODS. Most HPMPs have replaced HCFCs by HFCs. When formulating these HPMPs, some of them mentioned options such as methyl formate, HFOs, etc. but they were not really considered to be implemented, particularly at the outset of these HPMPs, which was during the period 2011-2012. At that time, these alternative technologies were not well tested. It is only now that alternatives to HCFCs are emerging as viable alternative technologies, particularly alternatives with low GWP.

116. A good example of using international expertise, is the HPMP in Malaysia. Technical assistance was provided to 4 local system houses for customizing the use of emerging low GWP alternative technologies (mainly FEA-1100, HBA-2, AFA-L1, methyl formate and methylal) to ensure the availability of cost-effective alternatives to downstream enterprises. By the end of 2014, all system houses were able to customize formulations using low GWP alternatives.

117. In the meantime, all HPMPs are implemented by country-based NOUs, which are also supported by the MLF Executive Committee through other institutional strengthening projects, which are outside the scope of this evaluation. Over the years, these units developed their capacities to phase-out ODS, including the implementation of HPMPs. There are key units in the implementation of HPMPs and they continue to develop their skills and knowledge through "on-the-job-training" when requesting a new tranche and responding to any request for additional information.

5.4. Key Evaluation Question 4: Impact

Are there indications that HPMPs have contributed to phasing-out ODS?

Sub-question 4.1: *How are HPMPs effective in achieving their long-term objectives?*

118. As discussed under the sub-question 2.1, all 47 Article 5 countries complied with their respective 2015 targets. Together, as of 2015, the 49 Stage I HPMPs contributed to the elimination of 8,062 ODP tonnes per year and more is expected for HPMPs that have a longer timeframe, including the 2020 targets. As discussed in Section 5.1, HPMPs are part of an overall strategy of the Montreal Protocol to phase-out ozone-depleting substances (ODS). As shown on the diagram, HPMPs represent the second phase in eliminating ODS, following the first phase, which focused on the phase-out of CFCs.

119. This phasing-out of 8,062 ODP tonnes is part of the overall progress made by the MP to eliminate the use of ODS, which was assessed as being 488,909 ODP tonnes as of end of December 2016. It is a major achievement, which in itself indicate the success of these projects. However, more efforts are needed. Following these Stage I HPMPs, countries have started to formulate Stage II HPMPs as follow up projects to address the following targets to phase-out HCFCs (2020, 2025, 2030 and 2040). It includes Stage II projects following Stage I projects which focus on the 2013 and 2015 targets but also Stage II projects, which will follow currently still on-going Stage I HPMPs that are expected to reach the 2020 targets.

120. Next to phasing-out HCFCs, the development of other projects started to address the targets to phase-out HFCs set by the Kigali amendment, which entered into force on January 1, 2019. The Kigali amendment categorizes Article 5 countries into two groups with different phase-down target dates. Group 1 of these countries, including the majority of Article 5 countries, will freeze the use of HFCs by 2024; Group 2, including the world's hottest countries, will freeze the use of HFCs by 2028. HFCs are man-made chemicals that are primarily used in air conditioning, refrigeration and foam insulation. They replace CFCs and HCFCs and pose no harm to the ozone layer because, unlike CFCs and HCFCs, they do not contain chlorine. However, HFCs are greenhouse gases, with

a high global warming potential (GWP), comparable to that of CFCs and HCFCs and are contributing to climate change.

121. Implementing HPMPs has been part of this continuum and strategy to eliminate ODS substances that are damaging to the ozone layer but also eliminate the replacement substances that are contributing to climate change. The implementation of HPMPs allowed Article 5 countries to learn a lot about how to eliminate HCFCs, including how to replace existing technologies with alternative ones. Overall, HPMPs have not only contributed to the phasing-out of HCFCs but also to raise skills and knowledge on ODS and improve the legislation and regulations to better monitor and eliminate damaging substances. The knowledge accumulated during this implementation period, including best practices to implement this type of project constitutes an excellent body of knowledge, which should be very useful for the implementation of follow up activities in the medium and long-term.

122. In the context of the Meeting of the Parties decision XIX/6 to accelerate the phase-out of HCFCs, a decision was taken by the ExCom (*decision 59/11*) to prioritize the phase-out of HCFCs focusing first on HCFCs with higher ODP, though taken into account national circumstances. As a result, stage I HPMPs focused on phasing-out HCFC-141b and replace them with hydrocarbons, which were well developed and accepted technologies at the time of the implementation of HPMPs. It allowed countries to meet their 2013 and 2015 reduction steps and avoided conversions, in particular, to high GWP HFCs. For instance, medium and large companies in the PU foam sector were able to take advantage of well proven alternatives such as replacing HCFCs with cyclopentane and more broadly hydrocarbons. When considering that 43% of HPMPs intervened in this sector, it has been a relatively easier way to meet the 2015 targets. In the future, it is expected that as countries are moving to Stage II HPMPs and the phasing-out of HFCs under the Kigali amendment, reaching these targets should be more complex and add pressure on the need to offer well tested and viable alternative technologies.

Sub-question 4.2: *How do HPMPs impact the local environment?*

123. The Evaluation Team found that not much information is collected on the positive and negative impacts of these HPMPs on the local environment. The entire process to formulate, implement, monitor, verify and report is much focused on the technical aspects of phasing-out ODS – HCFCs in the case of Stage I HPMPs. The entire body of knowledge accumulated through the implementation of HPMPs is much focused on explaining and documenting how to reach the targets set to eliminate HCFCs. It consists mostly in detailing how these plans will replace existing technologies that contain damaging ODS with not damaging alternative technologies. Verification reports are also a process to confirm that national targets were achieved as planned.

124. In the meantime, interviews conducted for this evaluation reveal that the efficient processes have contributed to the development of national capacities. As discussed under the sub-question 3.2, NOUs are strongly supported by UNDP, particularly by the regional teams. They feel part of an informal network, benefiting from the various exchanges. Through communications with UNDP and the MLF Secretariat, NOUs constantly learn new skills and knowledge, including on new tested alternative technologies.

125. Additionally, these HPMPs have a strong interaction with the private sector, which is the main driver in the production and consumption of HCFCs. HPMPs implemented by UNDP are mostly considered as investment projects that is they support the cost of retrofitting or replacing existing technologies with not damaging technologies. Through the process, the targeted enterprises do also acquire new skills and knowledge and the review of this projects indicate that they should contribute to raising the productivity of these enterprises and consequently their competitiveness.

126. Finally, interviewees also revealed that it is possible that these HPMPs - and other projects to phase-out ODS – may have a positive impact on employment. However, no data was found during this evaluation. The information collected during this evaluation indicates that positive effects due to the implementation of these HPMPs seem to be existing; however, no systemic reporting process is in place to capture these impacts on the local environment.

5.5. Key Evaluation Question 5: Sustainability

What is the ownership of Stage I HPMPs by governments and other partners and what is their commitments to follow up on existing and potential future control measures under the Montreal Protocol?

127. Before discussing specific questions about sustainability of HPMPs, the review of documents conducted for this evaluation revealed that the concept of sustainability is not much developed. The guides provided by the MLF Secretariat to help the formulation of HPMPs barely mentioned sustainability. No particular guidelines are given on sustainability and no section is required in the project document when submitting a request for funding a HPMP or a funding tranche request. The only reference to sustainability in these guidelines for developing a HPMP is to demonstrate the long-term sustainability of training programmes. It was also noted that in the few project completion reports reviewed, the sustainability of HPMP activities are not discussed.

Sub-question 5.1: *Are there potential financial sustainability issues?*

128. Despite that no particular strategy has been developed to ensure the sustainability of HPMP achievements, it is true that all reductions of ODS is a clear benefit for the environment. This is accomplished through the retrofitting/replacement of HCFCs. As long as enterprises, which have changed their production methods/ processes, do not return to their old practices, the benefits are there to stay over the long term.

129. The adoption of alternative technologies is also often accompanied by clear economic benefits for these enterprises, which will contribute much toward sustaining these achievements. For instance, a mid-term evaluation of the HPMP project in Jamaica found that a company that changed its process to manufacture foam for roof insulation using HCFC-141b with HFCs would not revert to its old practices due – as the enterprise said - mostly for economic reasons. The new process is cheaper and increased the profit margin for the enterprise.

130. The nature of these HPMPs is such that there is an intrinsic value in them to be financially sustainable. Once HCFCs are eliminated through investment projects, the release of these substances damaging the ozone layer is eliminated. The key point is to avoid that these enterprises revert to their old practices. In the meantime, strengthening the enabling environment to better control the manufacture and/or the import of ODS makes it more and more difficult for these enterprises to revert to old processes. Globally, HPMPs eliminate the use of HCFCs and as a result the market for such products is rapidly disappearing.

Sub-question 5.2: *Are there organizational arrangements & continuation of activities issues?*

131. Similar to the financial sustainability discussed above, there are no real organizational arrangements and continuation of activities issues linked to the implementation of HPMPs. These projects are mostly about eliminating the use of HCFCs. They consist mostly in phasing-out the use of HCFCs in the manufacturing and servicing sectors. As such, once HCFCs have been phased-out, the expected environmental impacts are achieved.

132. HPMPs have a limited lifetime. There are developed to request funding from the ExCom and their goal is to eliminate the use of HCFCs in all Article 5 countries according to an established schedule with the complete phase-out by 2030. It is also part of a long-term strategy of the Montreal Protocol to eliminate the use of ODS. HPMPs follow a first set of activities funded by the ExCom and which seek to eliminate the use of CFCs. HPMPs are also preceding soon-to-be implemented projects to eliminate the use of HFCs under the Kigali agreement. These plans are part of a continuum of activities funded by the ExCom and within the context of implementing the Montreal Protocol obligations.

Sub-question 5.3: *Is there an adequate enabling environment for sustaining HPMPs?*

133. It is expected that Article 5 countries have established HCFC control measures (licensing and quota system) through legislation and regulations at the time of their HPMP submissions or their submissions may not be approved. If this condition is not met, countries are encouraged to defer their HPMP submissions. Therefore, a

HPMP submission should include a description of ODS legislation and regulations in place, including the operational licensing and quota systems to import/export HCFCs and, if applicable the registration system of importers and exporters. It should also include policies related to the phase-out of HCFCs such as bans on import of HCFCs, HCFC equipment, and other government initiatives in response to the accelerated phase-out of HCFCs. Countries are also encouraged to develop and adopt regulations, codes of practices, and standards for alternatives to HCFCs - which are often classified with some level of flammability and/or toxicity - before they are introduced in the country.

134. In order to ensure that these conditions are met, i.e. that HCFC control measures are in place, the ExCom made a decision at the 63rd meeting to add a paragraph into all agreement between Article 5 countries and the ExCom saying "*confirmation has been received from the Government that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and that the system is capable of ensuring the country's compliance with the Montreal Protocol HCFC phase-out schedule for the duration of this agreement*" (*Decision 63/17*).

135. As per the MLF guide to prepare Stage I HPMPs, the policy component of HPMPs is to focus on capacity development for enforcement personnel. However, when formulating the overarching strategy to phase-out HCFCs, the guide includes the possibility of strengthening policy instruments that may be needed to reduce the supply and/or demand of HCFCs, such as import quotas, price controls, ban on imported HCFC-based equipment, ban on imported HCFC 141b pre-blended polyols, restrictions on high GWP non-HCFC alternatives.

136. For instance, under the HPMP Agreement 2010-2020 established between the ExCom and the government of Sri Lanka, the Cabinet of Ministers granted approval (August 22, 2012) to control the import and export and production of virgin Hydrochlorofluorocarbons (HCFCs) and HCFC blends with effect from 1 January 2013. These actions were taken in addition to the exiting legislation and regulations related to the management of ODS in Sri Lanka at the time of the formulation of the HPMP. The government also banned the import of HCFC-141b with effect on January 1, 2015. Furthermore, training of customs officers and other law enforcement authorities have been taken place periodically on WCO HS Codes 2012. The government is also looking at the development of fiscal incentives and disincentives to encourage commercial and industrial end-users to switch to alternative technologies.

137. In the case of Trinidad and Tobago, under the second tranche of their HPMP, the government amended (2013) the import and export control regulations for the import of ODS, mixtures containing ODS, and ODS-based equipment including HCFC to include refrigerant blends. It also prepared a ban on the import of pre-blended polyols containing HCFC-141b which was enforced in January 2016. At the time of the formulation of the 3rd tranche request, a compulsory labelling standard for refrigerant containers has been finalized and was pending approval by the Ministry of Environment and Water Resources. These standards were to address the use of flammable refrigerants. Under the HPMP 3rd tranche, the plan was to develop and implement: (1) a licensing and certification system for refrigeration and air-conditioning (RAC) technicians; (2) standards for safe transportation, handling and storage of refrigerants; (3) mechanisms for disposal of illegally imported of HCFC refrigerants and HCFC-based equipment; and (4) control of sales of equipment using over 5 mt of HCFCs.

138. When considering the process to fund HPMPs, countries have an adequate enabling environment. As per the *Decision 63/17*, it is a requirement, whereby each government needs to confirm that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and in compliance with the MP HCFC phase-out schedule.

Sub-question 5.4: *Will institutional and individual capacities adequate at the end of HPMPs?*

139. Considering the discussion above, institutional and individual capacities are assumed to be adequate once these HPMPs are completed. Developing capacities of individuals is a focus of these plans. Under the policy component of HPMPs the focus is to train enforcement personnel. Additionally, in the private sector, people involved with HCFCs are also trained on alternative technologies particularly with the introduction of more

flammable and toxic alternative technologies to HCFCs. Finally, as discussed at the beginning of this section, the guidelines to formulate a Stage I HPMP ask for demonstrating the long-term sustainability of training programmes.

140. Nevertheless, the review conducted for this evaluation did not find any capacity assessment demonstrating the level of capacities achieved with the support of HPMPs. The only information available in progress reports and project completion reports are the number of training events organized and the number of people trained. It is assumed that because of the training conducted with the support of HPMPs, capacities of trainees were raised and adequate. For instance, under the HPMP-solvent in China, the project completion report mentions that employees from participating enterprises attended 6 training workshops on how to prepare baseline consumption verification, implementation plan, project reports and summary, new alternatives and cleaning equipment introduction, etc., which were evaluated as satisfactory. In the case of Armenia, the HPMP supported the training of 70 customs officers and 73 refrigeration technicians, including the provision of training materials, which was also evaluated as satisfactory. In both cases, it is only assumed that because of the training delivered, capacities are now adequate. It does not demonstrate that skills and knowledge were transferred and that overall capacities of personnel were raised.

141. In the meantime, it is also true that these HPMPs have been overall successful in phasing-out HCFCs so far and one can assume that it happened with the help of skilled and knowledgeable people. However, an assessment of these capacities is recommended by the end of these plans. It would also be opportunities to collect issues, case studies, best practices, etc.

Sub-question 5.5: *Are there any social and political sustainability issues?*

142. As discussed under the sub-question 4.2, not much information is collected on the positive and negative effects following the implementation of HPMPs, including the social and political impacts. No issues in these areas have been found during this evaluation. On the social side, it can be expected that some actions to eliminate/replace HCFCs may have impacted employment; however, no information was found to support this type of impact.

143. On the political side, the impact is assumed to be limited. Once a country has ratified the MP, it is bound by a set of obligations, which need to be met to stay in compliance with the international community under the MP. Furthermore, a country can only receive funding for implementing a HPMP or any other projects to eliminate ODS if it is in compliance with the MP. As a result,

Sub-question 5.6: *Will HPMPs achievements be replicable?*

144. The review of the HPMP process with its guidelines indicates that it is a good process to support countries to eliminate their consumption and production of HCFCs. It was confirmed by few stakeholders interviewed for this evaluation, saying that the procedures, though exhaustive, are clear and accompanied by helpful guidelines. As discussed in section 5.2, HPMPs have successfully contributed to the elimination of HCFCs. Based on the experience accumulated since the decision of the ExCom to adopt a staged approach for the implementation of HCFC phase-out management plans (HPMPs) (*Decision 54/39*), a model to implement such programme has emerged.

145. This model could certainly be replicated for the next phases in eliminating ODS such as HFCs. It has been tested and over time, procedures were improved. However, despite recognizing that the overall process is good, information collected through interviews indicates that over time these procedures have tended to become more time consuming. Few interviewees mentioned that the process is being more micro-managed with the MLF Secretariat requiring more and more details. As a consequence of more information requests, pressure is increasing on the UNDP technical teams to deliver these projects on time and on budget but with the same level of resources.

146. A review of these procedures is needed before this model can be fully replicated. It should include the identification of all steps needed to formulate these projects, the procedures, the templates needed and also the

type of system to manage/administer the information related to the implementation of these projects. With a full web-based system, staff involved in implementing these projects should be able to easily access all information on projects and particularly all key documents such as project documents, agreements, tranche requests, verification reports, project completion reports, and any other documents. One example discussed with few interviewees is the project database on the GEF website[25]. It provides an easy way to access particular projects, all projects in a particular country, etc. and for each project a webpage with key data points, a timeline indicating the status of the project and the possibility to download documents related to the project.

6. LESSONS LEARNED

147. Several lessons learned are presented below. There are based on the review of projects documents, interviews with key informants and analysis of the information collected for this evaluation:

- For such global programmes, access to a body of knowledge including information on technologies, best practices, access to expertise and case studies is key as well as data exchange, technology transfers and networking mechanisms.
- Several activities conducted by this UNDP portfolio of HPMPs are done with the private sector. Over the years, the MPU unit has accumulated an extensive valuable experience of working/partnering with the private sector.
- Despite comprehensive procedures driven centrally from the MLF Secretariat, these HPMP projects enjoy a good national ownership at the country level. NOUs are in the "*driver seat*" when it comes to implement these HPMPs and are well motivated to be part of this global initiative that is to eliminate ODS and protect the ozone layer.
- HPMPs support capacity development activities but they are not monitored nor assessed, so we don't know about their true contribution to the overall objective of these plans and the phasing-out of ODS.
- A critical success factor for phasing-out ODS is the development of trusted partnerships with the private sector and customs. They need to be "front and center" in all negotiations, including the cooperation with industrial and other related associations.
- A small team working efficiently together is very productive and tends to constitute the organization memory whereby the knowledge stays with staff. However, each time a staff leaves the team, there is a risk of a loss of organizational memory and difficulties to transfer knowledge to a new staff.
- Developing capacities in the area of ODS is a "never ending" process. Government institutions, private sector enterprises, research organizations and other stakeholders involved in the management and use of ODS need to be regularly kept up-to-date with new technologies.
- The experience to implement Stage I HPMPs including skills, knowledge and implementation approaches should be very useful for the implementation of further stages to phase-out HCFCs and HFCs.
- In the context of the Meeting of the Parties decision XIX/6 to accelerate the phase-out of HCFCs, stage I HPMPs focused on phasing-out HCFC-141b and replace them with cyclopentane and more broadly hydrocarbons, which were well developed and accepted technologies by the market. It allowed countries to meet their 2013 and 2015 reduction steps and avoided conversions, in particular, to high GWP HFCs. However, reaching further targets such as -35% by 2020 and 67.5% by 2025 as well as implementing the Kigali agreement may be much more complex and difficult to achieve. It will necessitate the conversion of manufacturing processes with the introduction of low GWP alternative technologies.
- Introducing safe alternative technologies is challenging and not easily accessible, particularly for small countries. They need to be developed faster and made more readily available.

25 https://www.thegef.org/projects

- Establishing and strengthening NOUs is the foundation for implementing such programme. Without them, implementing HPMPs with ad-hoc institutions at country level would run into many institutional barriers.
- This programme is implemented with comprehensive procedures and guidelines but also with good flexibility to adapt the implementation of HPMPs to local realities.
- To succeed, these plans need to focus on the full "*chain of stakeholders*" including importers, exporters, manufacturers, service providers, suppliers, users, but also legislators, regulators and customs institutions.

Annexes

Annex 1: Terms of Reference

Evaluation Expert for UNDP's Stage I HCFC Phase-out Management Plans (HPMPs)
Bureau for Policy and Programme Support (BPPS)
United Nations Development Programme (UNDP) Headquarters

Application Type :	External Vacancy
Job Title :	Evaluation Expert for Stage I HCFC Phase-out Management Plans (HPMPs)
Category :	Chemicals
Brand :	UNDP
Application Deadline :	15 business days
Duty Station :	Home Based
Type of Contract :	Individual Consultancy
Languages Required :	English
Starting Date :	As soon as possible
Duration of Contract :	Up to 50 days, ending 30 October 2018

Background:
The United Nations Development Programme (UNDP) is one of the four Implementing Agencies (IAs) designated by the Multilateral Fund (MLF) to implement the Montreal Protocol´s Ozone Depletion Substances (ODS) phase-out projects.

UNDP's ozone and chemicals global programmes are managed by the Montreal Protocol and Chemicals Unit (MPU/Chemicals) within the Sustainable Development Cluster of the Bureau for Policy and Programme Support (BPPS) in New York, with staff also located in UNDP Regional Centers in Istanbul Panama City and Bangkok. Since 1991, UNDP has received over US $800 million in grants from the MLF, the Global Environment Facility (GEF) and bilateral donors to undertake thousands of activities related to ozone and chemicals in nearly 100 developing countries and countries with economies in transition. Please refer to this link for more information on MPU/Chemicals' activities on ozone layer protection:http://www.undp.org/content/undp/en/home/librarypage/environment-energy/ozone_and_climate/past-successes-and-future-opportunities--case-studies-from-the-u.html.

The Parties to the Montreal Protocol agreed under the Decision XIX/6 on the "Adjustment to the Montreal Protocol with regard to Annex C, Group I substances (HCFCs)" to "accelerate the phase-out of production and consumption of the hydrochlorofluorocarbons (HCFCs)", and the Article 5 (A5) countries have been requested by the MLF's Executive Committee to adopt a staged approach to the implementation of their HCFC Phase-out Management Plans (HPMP).

HPMPs are performance-based agreements between the country and the MLF Executive Committee, whereby agreed-upon funding tranches are released when conditions related to ODS phaseout and disbursements are met.

The preparation of the HPMP included the following elements:

- Assistance to determine relevant institutional, policy and legislation framework;
- Survey on HCFC consumption, use and trade;
- Development of strategies and action plans for compliance with Stage I;
- Development and finalization of HPMP, including stakeholder consultations and support; and
- Individual HCFC phase-out investment project proposals.

The implementation of the approved HPMP entails a series of activities for the execution of activities approved under the respective project documents, following the national needs identified during the phase-out preparation period.

UNDP is supporting the implementation of Stage I HPMPs in 47 countries covering both large and small ODS consumers. We are currently concluding Stage I, which entails meeting the 2013 and 2015 HCFC control measures and starting in 2016, we have initiated Stage II in most countries, which addresses the HCFC control measures through 2020 and for many countries, beyond 2020.

Evaluation Approach, Scope and Methodology:

The objective of the evaluation of Stage I HPMP design and implementation is to analyze and document the results and lessons learned from the funding received by the MLF for countries to develop national strategies to achieve the 2013 freeze and 2015 control target ("Stage I"), to provide recommendations regarding the achievement of the 2020 control target ("Stage II) as well as the upcoming hydrofluorocarbon (HFC) phasedown, and highlight opportunities for scaling up and replicating good practices. This evaluation will be conducted according to the guidance, rules and procedures established by UNDP and the Handbook on Planning, Monitoring and Evaluating for Results .

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with all relevant stakeholders. The evaluator will review all relevant sources of information, such as the UNDP project document, project reports – including Stage I HPMPs, progress reports, national strategic and legal documents, project completion reports (PCRs), MLF evaluations and any other materials that the evaluator considers useful for this evidence-based assessment.

The methodological approach of the evaluation of Stage I HPMPs is expected to include the following main elements:

- Analysis of all prepared Stage I HPMPs (47 countries' HPMPs have been approved with support from UNDP by the MLF Executive Committee) to assess their overall quality and relevance, barriers identified and scope for implementation. The analysis should also consider issues around technology selection and implementation methodologies used during Stage I HPMP implementation, reflect on how these lessons can be applied to Stage II HPMP implementation as well as the upcoming hydrofluorocarbon (HFC) phasedown, and highlight opportunities for replication and scaling up of good practices to other countries/regions.
- Stakeholder analysis through structured virtual interviews with (a) the MLF Secretariat, regarding the results, operations and management of the UNDP MLF programme; (b) government counterparts, in particular the National Ozone Unit (NOU) Officer; (c) UNDP Country Offices, who are key partners in the implementation of HPMPs; (d) UNDP Montreal Protocol/Chemicals Technical advisers based in the regions, who provide overall advice and guidance on HPMP design and implementation; (e) technical consultants that provide guidance on the development of the Stage I HPMP; and (f) other key stakeholders.
- Selected thematic analysis and lessons from across Stage I HPMPs, e.g. across key MLF sectors (foam, refrigeration, etc), technology selection drivers, geographic similarities, number of jobs created, human health impact, is also included.

The evaluator will assess the extent to which the projects are achieving impacts or progressing towards the achievement of impacts. The evaluation report must include a chapter providing a set of **conclusions**, **recommendations** and **lessons learned**. Please see Annex 1 for the expected outline of the evaluation report.

Specific Evaluation Criteria:

The five standard evaluation criteria developed by the OECD/DAC for evaluating development assistance (relevance, efficiency, effectiveness, impacts and sustainability) will be applied as outlined in below[26]:

OECD/DAC Evaluation Criteria	Definition[27]	Specific Relevance to Stage I HPMP Evaluation
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.	• Are the activities outlined in the country's national HPMP strategies relevant to address the protection of the ozone layer and the climate? • Relevance to and inclusion in national development strategies?

26 http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm
27 http://www.oecd.org/dac/evaluation/2754804.pdf

OECD/DAC Evaluation Criteria	Definition[27]	Specific Relevance to Stage I HPMP Evaluation
Efficiency	A measure of how economic resources/inputs (funds, expertise, time, etc.) are converted to results.	• Incurred transaction costs from preparing and implementing HPMPs • Comparison of UNDP implementation modalities (NIM vs DIM) • UNDP CO role In HPMP implementation • Effectiveness of MPU/Chemicals support to countries
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.	• Did countries meet the control targets established under the Stage I HPMP strategy on time? • Adequate financing for Stage I HPMP activities secured?
Impacts	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.	• Did the Stage I HPMP projects lead to any other positive or negative consequences, in particular the non-environmental effects on productivity and enterprise competitiveness as well as employment effects? • Results relating to capacity development in the government as a result of the Stage I HPMP
Sustainability	The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.	• Ownership of the Stage I HPMP and commitment to follow up by governments and other partners of existing and potential future control measures under the Montreal Protocol

Key evaluation questions and focus of the evaluation:
The preparation and implementation of the Stage I HPMP evaluation includes a number of key evaluation questions. The purpose of the evaluation questions is to reach a shared understanding of the evaluation approach and outcome.

These evaluation questions will be formulated during the evaluation preparation process, and the evaluation expert is expected to submit the evaluation questions as part of the inception report, which will be approved by the MPU/Chemicals Director. The focus of the evaluation should be:

- What were the results of the Stage I HPMPs? Quality of the Stage I HPMPs produced based on defined criteria?
- What are the main lessons learned from the Stage I HPMP process, i.e. with respect to relevance, efficiency, effectiveness, impacts, and sustainability?
- How can these lessons can be applied to Stage II HPMP implementation as well as the upcoming hydrofluorocarbon (HFC) phasedown?
- What were the factors behind technology selection in countries?
- How to replicate and scale up successful experiences (in either selected technology, implementation modality, or other good practices) to other countries/regions?

Institutional Arrangement:
The consultant will report to, seek approval/acceptance of outputs from the task team leader (MPU/Chemicals Director).

The contractor is expected to have her/his own office space, laptop and access to internet and a printer during the assignment (the cost of this facilities should be included in the financial proposals, if required).

Payment terms:
Payments will be made based on the agreed financial proposal and released upon submission of a certificate of payment request, indicating deliverables achieved and days worked to be verified and cleared for payment by the supervisor.

Composition of Evaluation Team:
The evaluation team will be composed of one evaluation expert, who will be supported by two key resource people with technical knowledge and understanding of the Montreal Protocol. The evaluation expert shall have prior experience in evaluating similar projects. The evaluation expert will be designated as the team leader and will be responsible for finalizing the report and will be supported by the two key resource people. The evaluator selected should not have participated in the project preparation and/or implementation of any projects under Stage I and II HPMPs and should not have conflict of interest with project related activities.

Competencies

- Demonstrated capacity for strategic thinking;
- Proven capacity to produce high quality qualitative research and ability to absorb, analyze and synthesize large amounts of complex information within tight deadlines;
- Demonstrated ability and willingness to work with people of different cultural, ethnic and religious background, different gender, and diverse political views.
- Demonstrated ability to communicate complex issues in a concise and clear manner
- Highly organized with strong analytical, synthesis, and research skills

Qualifications of the Successful Individual Contractor:

- At least 10 years of experience with results-based monitoring and evaluation methodologies, particularly with evaluating national strategies;
- Excellent analytical, writing, presentation, and communications skills are required.
- Knowledge of the Montreal Protocol, GEF, or Chemicals desired, and
- Experience with international organizations desired, experience with UNDP an added benefit.

Education:

- Master's degree in natural resources management, sciences, environment, climate sciences, sustainable development, international development, public policy, social sciences, economics, public administration, finance or other closely related fields.

Evaluation Deliverables and Timeline:

The evaluation team is expected to deliver the review within at most *50* working days according to the following schedule:

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluator provides clarifications on evaluation methodology that will be used and the list of key questions that will be asked during the evaluation	10 days	Submission to UNDP MPU HQ for comments and approval
Presentation	Initial Findings, review other resource people's work	15 days	Submission to UNDP MPU HQ for comments and approval
Draft Final Report	Full report, (per annexed template) with annexes	15 days	Submission to UNDP MPU HQ, reviewed and commented on by UNDP MPU RTAs
Final Report*	Revised report	Within 1 week of receiving	Submission to UNDP MPU HQ for

		UNDP comments on draft (10 days)	final approval

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

Evaluation Ethics:

Evaluation consultants will be held to the highest ethical standards. UNDP evaluations are conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluations'

Recommended Presentation of Offer:
The application is a two-step process. Failing to comply with the submission process may result in disqualifying the applications:

Step 1: Interested individual consultants must include the following documents when submitting the applications in UNDP job shop **(Please note that only 1 (one) file can be uploaded therefore please include all docs in one file)**:

- **Personal History Form (P11)**, indicating all past experience from similar projects, as well as the contact details (email and telephone number) of the Candidate and at least three (3) professional references (the template can be downloaded from this link: http://europeandcis.undp.org/files/hrforms/P11_modified_for_SCs_and_ICs.doc).
- **Brief description** of why the individual considers him/herself as the most suitable for the assignment. Indicate available start date.

Step 2: Submission of Financial Proposal
Applicants are instructed to submit their daily rate financial proposals in US Dollars for this consultancy to bpps.procurement@undp.org using the financial proposal template available here: http://procurement-notices.undp.org/view_file.cfm?doc_id=45780. The proposals should be sent via email with the following subject heading: "Financial Proposal for **Consultant, Evaluation Expert for MPU/Chemicals Programme**" by the deadline for this vacancy. Proposals to be received after the deadline may be rejected. In order to assist the requesting unit in the comparison of financial proposals, the financial proposal should be all-inclusive and include a breakdown. The term 'all-inclusive" implies that all costs (professional fees, travel related expenses, communications, utilities, consumables, insurance, etc.) that could possibly be incurred by the Contractor are already factored into the financial proposal.

Travel
Travel is not anticipated at this time but may be included at a later date as an addendum to the approved contract with costs based on UNDP travel guidelines.

Scope of Price Proposal and Schedule of Payments:

- Financial proposals must be all inclusive[28] and must be expressed on the basis of "a daily fee" in USD.
- Payment will be made upon monthly submission of a certificate of payment request, indicating outputs achieved and days worked to be verified and cleared for payment by the supervisor.

Criteria for Selection of the Best Offer:
Only those candidates that meet the minimum level of education and relevant years of experience requirements will be considered for the technical evaluation. The technical evaluation will include a desk review to select the shortlisted candidates. The technical evaluation may also include interviews with shortlisted candidate(s).

The selection of the best offer from the shortlisted candidates will be based on a Combined Scoring method – where the technical evaluation (desk review and interview) will be weighted a maximum of 70 points, and combined with the price offer which will be weighted a maximum of 30 points. The 70 points rating shall be based on how well the Offer or meets the minimum qualifications/competencies described above.

The **technical evaluation** will be based on the following criteria with the corresponding points (out of a total 70 points):

Criteria 1: Master's degree in natural resources management, sciences, environment, climate sciences, sustainable development, international development, public policy, social sciences, economics, public administration,

28 The term 'all inclusive" implies that all costs (professional fees, communications, utilities, consumables, insurance, etc.) that could possibly be incurred by the Contractor are already factored into the final amounts submitted in the proposal.

finance or other closely related fields; (10 points)

Criteria 2: At least 10 years of experience with results-based monitoring and evaluation methodologies required, experience with evaluating national strategies a plus; (30 points)

Criteria 3: Excellent analytical, writing, presentation, and communications skills are required; (10 points)

Criteria 4: Knowledge of the Montreal Protocol, GEF, or Chemicals desired; (10 points)

Criteria 5: Experience with international organizations desired, experience with UNDP an added benefit (10 points)

Only candidates obtaining a minimum of 49 (70%) points on technical evaluation will be considered for the Financial Evaluation.

Financial evaluation (maximum 30 points):
The following formula will be used to evaluate financial proposal:

$p = y (\mu/z)$, where

p = points for the financial proposal being evaluated
y = maximum number of points for the financial proposal
μ = price of the lowest priced proposal
z = price of the proposal being evaluated

Approval

This TOR is approved by: Xiaofang Zhou

Signature _____

Name and Designation _____

Date of Signing _____

TOR-Annex 1: Evaluation Report Outline

i. Opening page:
- Title of evaluation
- MLF projects covered under evaluation
- Evaluation time frame and date of evaluation report
- Region and countries included in the project
- Implementing Partner and other project partners
- Evaluation team members
- Acknowledgements

ii. Executive Summary
- Summary of conclusions, recommendations and lessons learned from Stage I HPMP design and implementation

iii. Acronyms and Abbreviations
(See: UNDP Editorial Manual[1])

1. Introduction
- Purpose of the evaluation
- Scope & Methodology
- Structure of the evaluation report

2. Description and development context
- Start and duration of Stage I HPMP implementation
- Problems that the projects sought to address
- Immediate and development objectives of the projects
- Baseline Indicators established
- Main stakeholders
- Expected Results

3. Findings
(In addition to a descriptive assessment, all criteria marked with (*) must be rated[1])

3.1 Design / Formulation
- Assumptions and Risks
- Planned stakeholder participation
- Replication approach
- UNDP comparative advantage
- Technology choices
- Linkages between project and other interventions within the sector
- Management arrangements

3.2 Implementation
- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance
- Monitoring and evaluation: design at entry and implementation (*)
- UNDP and Implementing Partner implementation / execution (*) coordination, and operational issues

3.3 Results
- Overall results (attainment of objectives)
- Relevance
- Effectiveness & Efficiency
- Sustainability
- Impact

4. Conclusions, Recommendations & Lessons

- Recommended actions to improve the design, implementation, monitoring and evaluation of Stage I HPMPs
- Actions to follow up or reinforce initial benefits from the projects
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success

5. Annexes

- ToR
- Itinerary (if travel is involved)
- List of persons interviewed
- Summary of field visits (if travel is involved)
- List of documents reviewed
- Evaluation Question Matrix
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form
- Report Clearance Form

Annex 2: Evaluation Matrix

The evaluation matrix below served as a general guide for the evaluation. It provided directions for the evaluation; particularly for the collection of relevant data. It was used as a basis for interviewing people and reviewing project documents. It also provided a basis for structuring the evaluation report as a whole.

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
Evaluation criteria: Relevance *- Are activities outlined in countries' national HPMP strategies relevant to address the protection of the ozone layer and the climate and are these strategies included in national development strategies?*				
How are these HPMPs relevant to the Montreal Protocol objectives?	▪ How do HPMPs relate to strategic priorities of the Montreal Protocol? ▪ Were MLF criteria for project identification adequate in view of actual needs?	▪ Level of coherence between objectives of HPMPs and those of the Montreal Protocol	▪ Projects documents ▪ Montreal Protocol ▪ MLF policies and strategies ▪ MLF web site	▪ Documents analyses ▪ Interviews with Ozone Secretariat, MLF and NOUs staff
How are HPMPs relevant to MLF and UNDP objectives?	▪ How do HPMPs support the objectives of MLF and UNDP in this sector?	▪ Existence of a clear relationship between HPMPs objectives and strategic objectives of MLF and of UNDP	▪ Projects documents ▪ UNDP and MLF strategies and programme	▪ Documents analyses ▪ Interviews with UNDP and MLF Staff and other partners
How are HPMPs relevant to national priorities and development objectives of participating countries?	▪ How are HPMPs included in national environmental and development objectives of participating countries? ▪ How country-driven are these HPMPs? ▪ Do HPMPs adequately take into account national realities, both in terms of institutional framework and programming, in its design and its implementation? ▪ To what extent were national partners involved in the design of these Projects? ▪ What were the main constraints with regard to integrating gender in the project cycle? Were these constraints addressed in the course of project implementation?	▪ Degree of coherence between HPMPs and national priorities, policies and strategies ▪ Degree to which HPMPs took into account gender equality targets and policies for gender equality from each participating countries ▪ Appreciation from national stakeholders with respect to adequacy of projects design and implementation to national realities and existing capacities ▪ Level of involvement of government officials and other partners into these HPMPs ▪ Coherence between needs expressed by national stakeholders and UNDP-MLF criteria	▪ Projects documents ▪ National policies, strategies and programmes ▪ Key government officials, UNDP staff and other partners	▪ Documents analyses ▪ Interviews with government officials, UNDP staff and other partners
How do HPMPs address the needs of target beneficiaries?	▪ How do HPMPs address the needs of target stakeholders/beneficiaries? ▪ Was the information disaggregated by sex? ▪ Are HPMPs inclusive of all relevant Stakeholders and addressing their needs, including vulnerable groups? ▪ How are local beneficiaries and stakeholders involved in design and implementation of these projects?	▪ Degree of involvement and inclusiveness of beneficiaries and stakeholders in design and implementation of projects ▪ Strength of the link between projects expected results and needs of target beneficiaries	▪ Beneficiaries and stakeholders ▪ Needs assessment studies ▪ Projects documents	▪ Document analysis ▪ Interviews with beneficiaries and stakeholders

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
Are projects internally coherent in their design?	▪ Is there a direct and strong link between projects expected results (log frame) and projects designs (in terms of Project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)? ▪ Is the length of projects conducive to achieve projects outcomes? ▪ To what extent are projects logic models clear among stakeholders?	▪ Level of coherence between projects expected results and projects design internal logic ▪ Level of coherence between projects design and projects implementation approach	▪ Projects documents ▪ Key projects stakeholders	▪ Documents analysis ▪ Interviews with key Stakeholders including those who were involved in the design of projects
How are HPMPs relevant in light of other donors?	▪ Do HPMPs remain relevant in terms of areas of focus and targeting key activities in the context of other donors? ▪ How do MLF-funds help to fill gaps (or give additional stimulus) that are crucial but are not covered by other donors?	▪ Degree to which projects were coherent and complementary to other donor programming in participating countries ▪ List of programs and funds in which future developments, ideas and partnerships would be eligible	▪ Other Donors' policies and programming documents ▪ Other Donor representatives ▪ Projects documents	▪ Documents analyses ▪ Interviews with other Donors
Future directions for similar Projects	▪ What lessons have been learnt and what changes could have been made to these projects in order to strengthen the alignment between these projects and the Partners' priorities and areas of focus? ▪ How could these projects better target and address priorities and development challenges of stakeholders and targeted beneficiaries?		▪ Data collected throughout evaluation	▪ Data analysis
***Evaluation criteria: Effectiveness** – Did countries meet the control targets established under the Stage I HPMP strategy on time?*				
How are HPMPs effective in achieving their expected outcomes?	▪ How are HPMPs effective in achieving their overall strategy for phasing-out HCFC consumption, regarding: o Policy instruments needed to reduce the supply and/or demand of HCFCs o Staged approach to reduce HCFC consumption to meet the HCFC phase-out targets o Proposed levels of reduction in HCFC consumption and implementation time frames o Coordination and synergies with other multilateral environmental agreements o Identification of main projects and activities required to completely phase-out HCFC consumption ▪ Which sectors of intervention (refrigeration servicing, refrigeration manufacturing, air conditioning servicing, air conditioning manufacturing, foam manufacturing) HPMPs focused on? ▪ What are the replacement products used to replace HCFCs? Why/how were they chosen (cost, availability, performance, ….)?	▪ Strategies developed in HPMPs ▪ Results in Verification Reports ▪ Progress reported in requested for tranches ▪ Change in capacity for information management: Knowledge acquisition and sharing; Effective data gathering, methods and procedures for reporting. ▪ Change in capacity for awareness raising o Stakeholder involvement and government awareness o Change in local stakeholder behavior ▪ Change in capacity in policy making and planning o Policy reform for phasing-out HCFCs o Legislation/regulation change to improve the phasing-out of HCFCs o Development of national and local strategies and plans supporting the phasing-out of HCFCs ▪ Change in capacity in implementation and enforcement o Design and implementation of risk assessments	▪ Projects documents, including verification reports, requests for tranches, project completion reports, annual progress reports, evaluations, etc. ▪ Key stakeholders including UNDP CO, NOUs, Project Teams, Representatives of Gov. and other Partners ▪ Research findings ▪ Presentation reports at Conferences	▪ Documents analysis ▪ Meetings with main Project Partners ▪ Interviews with project beneficiaries

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
	▪ Do HPMPs mainstream gender considerations into their implementation?	○ Implementation of national and local strategies and action plans through adequate institutional frameworks and their maintenance ○ Monitoring, evaluation and promotion of pilots ▪ Change in capacity in mobilizing resources ○ Leverage of resources ○ Human resources ○ Appropriate practices ○ Mobilization of advisory services ▪ Level of efforts were made to mainstream gender considerations in HPMPs ▪ Gender disaggregated data in projects documents		
How are risks and risks mitigation being managed?	▪ How well were risks and assumptions being managed? ▪ What were the quality of risk mitigation strategies developed? Were these sufficient? ▪ Were there clear strategies for risks mitigation related with long-term sustainability HPMPs? ▪ Were there unforeseen issues that negatively affected implementation and progress towards objectives of HPMPs?	▪ Completeness of risk identification and assumptions during projects planning ▪ Quality of existing information systems in place to identify emerging risks and other issues? ▪ Quality of risk mitigations strategies developed and followed	▪ Projects documents and evaluations ▪ UNDP staff, Projects Staff and projects Partners	▪ Document analysis ▪ Key Interviews with UNDP/Projects staff and key stakeholders
Future directions for similar Projects	▪ What lessons have been learnt for these HPMPs to achieve their outcomes? ▪ What changes could have been made (if any) to the design of these projects in order to improve the achievement of HPMPs' expected results? ▪ How could HPMPs be more effective in achieving their results?		▪ Data collected throughout evaluation	▪ Data analysis
Evaluation criteria: *Efficiency* *- To what extent are HPMPs making the best use of available human, technical, technological, financial and knowledge inputs to achieve their desired results?*				
To what extent are HPMPs making the best use of the MLF grants and co-financing from national and other partners?	▪ How is adaptive management used or needed to ensure efficient resource use? ▪ Are HPMPs and work plans and any changes made to them used as management tools during implementation? ▪ How efficient are projects management structures? Are they clear and coherent? ▪ Are accounting and financial systems in place adequate for projects management and be able to produce accurate and timely financial information? ▪ What is the quality and realism of work plans? ▪ What is the quality and efficiency of the M&E system in place to monitor the progress of HPMPs?	▪ Occurrence of change in projects design/ implementation approach (i.e. restructuring) when needed to improve projects efficiency ▪ Availability and quality of financial and progress reports ▪ Timeliness and adequacy of reporting provided ▪ Level of discrepancy between planned and utilized financial expenditures ▪ Planned vs. actual funds leveraged ▪ Cost in view of results achieved compared to costs of similar projects from other organizations ▪ Adequacy of projects choices in view of existing context, infrastructure and cost	▪ Projects documents and evaluations ▪ UNDP, representatives of Gov. and projects Staff ▪ Beneficiaries and projects Partners ▪ Partners websites	▪ Documents analysis ▪ Key Interviews with UNDP/Projects staff and key Stakeholders

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
	▪ Are progress reports produced accurately, timely and responded to reporting requirements including adaptive management changes? ▪ Are HPMPs implementation as cost effective as originally proposed (planned vs. actual) ▪ Is the leveraging of funds (co-financing) happening as planned? ▪ Are financial resources utilized efficiently? Could financial resources be used more efficiently? ▪ What is the rate of delivery and budget balance? ▪ How is RBM used during implementation of HPMPs? ▪ Where are the efficiency gaps and what measures are proposed to address them? ▪ What is the visibility of HPMPs (leaflets, video, news, etc.)? ▪ Are there institutionalized or informal feedback or dissemination mechanisms to ensure that findings, lessons learned and recommendations pertaining to HPMPs design and implementation effectiveness are shared among project stakeholders, UNDP and MLF Staff and other relevant organizations for ongoing adjustment and improvement of projects?	▪ Quality of RBM reporting (progress reporting, monitoring and evaluation) ▪ Existence, quality and use of M&E, feedback and dissemination mechanism to share findings, lessons learned and recommendation on effectiveness of projects design. ▪ Cost associated with delivery mechanism and management structure compare to alternatives ▪ Existence of networks, platforms, communications disseminating project achievements and lessons learned		
How was the role of UNDP in implementing these HPMPs?	▪ What were the incurred transaction costs in preparing these HPMPs? ▪ What were the modalities to implement these HPMPs (NIM or DIM)? What were their advantages and disadvantages? ▪ Was the technical and administrative support provided by UNDP MPU/Chemicals efficient? ▪ What was the role of UNDP COs?	▪ Appreciation from national stakeholders with respect to UNDP involvement in designing and implementing HPMPs ▪ Level of involvement of UNDP into the design and implementation of these HPMPs ▪ Provenance of technical expertise used by projects ▪ Type of technical expertise used by projects ▪ Web platform	▪ UNDP, Representatives of Gov. and projects Staff ▪ Beneficiaries and projects Partners ▪ Projects documents and evaluations ▪ Consultancies TORs ▪ UNDP Website	▪ Document analysis ▪ Key Interviews with UNDP, projects staff and key Stakeholders
How efficient were partnership arrangements for HPMPs?	▪ To what extent partnerships/linkages between institutions/organizations are encouraged and supported? ▪ Which partnerships/linkages are facilitated? Which one can be considered sustainable? ▪ What is the level of efficiency of cooperation and collaboration arrangements (between local actors, UNDP/MLF and relevant government entities)? ▪ Which methods are successful or not and why?	▪ Specific activities conducted to support the development of cooperative arrangements between partners, ▪ Examples of supported partnerships ▪ Evidence that particular partnerships/linkages will be sustained ▪ Types/quality of partnership cooperation methods utilized	▪ Projects documents and evaluations ▪ Projects Partners ▪ Stakeholders and Beneficiaries	▪ Documents analysis ▪ Interviews
Did HPMPs utilize local capacity in implementation?	▪ Is an appropriate balance struck between utilization of international expertise as well as local capacity? ▪ How do HPMPs take into account local capacity in design and implementation of these projects? ▪ Is there an effective collaboration with scientific institutions with competence phasing-out HCFCs?	▪ Proportion of total expertise utilized taken from Participating Countries ▪ Number/quality of analyses done to assess local capacity potential and absorptive capacity	▪ Projects documents and evaluations ▪ UNDP, project teams and projects partners ▪ Beneficiaries	▪ Documents analysis ▪ Interviews

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
Future directions for similar projects	▪ What lessons can be learnt from these projects on efficiency? ▪ How could HPMPs have more efficiently addressed their key priorities (in terms of management structures and procedures, partnerships arrangements etc.)? ▪ What changes could have been made (if any) to these projects in order to improve their efficiency?		▪ Data collected throughout evaluation	▪ Data analysis
Evaluation criteria: Impact *- Are there indications that HPMPs have contributed to phasing-out ODS?*				
How are HPMPs effective in achieving their long-term objectives?	▪ Have HPMPs been contributing to capacity development for phasing-out ODS in recipient countries? ▪ What are the types of capacities developed by HPMPs?	▪ Changes in laws and policies related to phasing-out ODS ▪ Examples of ODS awareness ▪ Changes in institutional mandates ▪ Changes in technologies used	▪ Projects documents ▪ Key Stakeholders ▪ Research findings ▪ ▪	▪ Data analysis ▪ Interviews with key stakeholders
How do HPMPs impact the local environment?	▪ What are the positive (or negative) impacts or likely impacts of HPMPs on? o Local environment o Productivity and enterprise competitiveness o Employment o Other socio-economic issues	▪ Changes in technologies used ▪ Provide specific examples of impacts at those levels, as relevant	▪ Projects documents ▪ Key Stakeholders ▪ Research findings	▪ Data analysis ▪ Interviews with key stakeholders
Future directions for similar projects	▪ How could HPMPs build on their successes and learn from their weaknesses in order to enhance the potential for impact of ongoing and future initiatives?		▪ Data collected throughout evaluation	▪ Data analysis
Evaluation criteria: Sustainability *- What is the ownership of Stage I HPMPs by governments and other partners and what is their commitments to follow up on existing and potential future control measures under the Montreal Protocol?*				
How were sustainability issues integrated in projects designs?	▪ Are sustainability issues integrated into the design and implementation of HPMPs?	▪ Evidence/Quality of sustainability strategy ▪ Evidence/Quality of steps taken to address sustainability	▪ Projects documents and evaluations ▪ UNDP, projects staff and projects Partners ▪ Beneficiaries	▪ Documents analysis ▪ Interviews
Are there potential financial sustainability issues?	▪ How do HPMPs adequately address financial and economic sustainability issues? ▪ How sustainable are recurrent costs (if any) after projects completion?	▪ Levels and sources of future financial support to be provided to relevant sectors and activities after the end of projects ▪ Evidence of commitments from international partners, governments or other stakeholders to financially support relevant sectors of activities after the end of projects ▪ Level of recurrent costs after completion of projects and funding sources for those recurrent costs	▪ Projects documents and evaluations ▪ UNDP, projects staff and projects Partners ▪ Beneficiaries	▪ Documents analysis ▪ Interviews

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
Are there organizational arrangements and continuation of activities issues?	▪ Are projects results well assimilated by organizations and their internal systems and procedures? ▪ What is the evidence that projects partners will continue their activities beyond the support of HPMPs? ▪ What degree is there of local ownership of initiatives and results? ▪ Were appropriate 'champions' being identified and/or supported?	▪ Degree to which projects activities and results have been taken over by local counterparts or institutions /organizations ▪ Level of financial support to be provided to relevant sectors and activities by in-country actors after the end of projects ▪ Number/quality of champions identified	▪ Projects documents and evaluations ▪ UNDP, projects staff and projects Partners ▪ Beneficiaries	▪ Documents analysis ▪ Interviews
Is there an adequate enabling environment for sustaining HPMPs' achievements?	▪ How are laws, policies and frameworks addressed through HPMPs, in order to address sustainability of key initiatives and reforms? ▪ Are the necessary related capacities for lawmaking and enforcement built? ▪ What is the level of political commitment to build on the results of HPMPs? ▪ What is the capacity in place in participating countries (at national, provincial and local levels) adequate to ensure sustainability of results achieved to date?	▪ Efforts to support the development of relevant laws and policies ▪ State of enforcement and law-making capacity ▪ Evidence of commitments by the political class through speeches, enactment of laws and resource allocation to priorities	▪ Projects documents and evaluations ▪ UNDP, projects staff and project Partners ▪ Beneficiaries ▪ Capacity assessments available, if any	▪ Documents analysis ▪ Interviews
Will institutional and individual capacities adequate at the end of HPMPs?	▪ Is the capacity in place at the national level adequate to ensure sustainability of results achieved to date?	▪ Elements in place in those different management functions, at appropriate levels (national and sub-national levels) in terms of adequate structures, strategies, systems, skills, incentives and interrelationships with other key actors	▪ Projects documents and evaluations ▪ UNDP, Projects staff and projects Partners ▪ Beneficiaries ▪ Capacity assessments available, if any	▪ Interviews ▪ Documentation review
Are there any social and political sustainability issues?	▪ How do HPMPs contribute to key building blocks for social and political sustainability? ▪ How do HPMPs contribute to local Stakeholders' acceptance of new practices?	▪ Example of contributions to sustainable political and social change in support of phasing out HCFCs	▪ Projects documents and evaluations ▪ UNDP, projects staff and projects Partners ▪ Beneficiaries	▪ Interviews ▪ Documentation review
Will HPMPs achievements be replicable?	▪ Are HPMPs results replicated elsewhere and/or scaled up? ▪ What are the HPMPs contribution to replication or scaling up of innovative practices or mechanisms that support phasing out HCFCs?	▪ Number/quality of replicated initiatives ▪ Number/quality of replicated innovative initiatives ▪ Volume of additional investment leveraged	▪ Other donor programming documents ▪ Beneficiaries ▪ UNDP, project staff and project Partners	▪ Documents analysis ▪ Interviews
Are there any challenges to sustainability of HPMPs?	▪ What are the main challenges that may hinder sustainability of efforts? ▪ Have any of these been addressed through project management? ▪ What could be the possible measures to further contribute to the sustainability of efforts achieved with HPMPs?	▪ Challenges in view of building blocks of sustainability as presented above ▪ Recent changes which may present new challenges to HPMPs	▪ Projects documents and evaluations ▪ Beneficiaries ▪ UNDP, project staff and project Partners	▪ Documents analysis ▪ Interviews

Sub-Questions	Research-Questions	Indicators	Sources	Data Collection Method
Future directions for similar projects	▪ Which areas/arrangements under HPMPs show the strongest potential for lasting long-term results? ▪ What are the key challenges and obstacles to the sustainability of results of HPMPs that must be directly and quickly addressed? ▪ How can the experience and good project practices influence the strategies for phasing out HCFCs? ▪ Are national decision-making institutions (Parliament, Government etc.) in participating countries ready to improve their phasing out of HCFCs?		▪ Data collected throughout evaluation	▪ Data analysis

Annex 3: Evaluation Consultant Agreement Form

Evaluators / Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage.
4. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
5. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
6. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders‟ dignity and self-worth.
7. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
8. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System

We confirm that we have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Name of Consultant:

Jean-Joseph Bellamy	***Ranojoy Basu Ray***	***Ashutosh Pandey***
Signed in: Ottawa *on* August 15, 2018	…… *on* September 21, 2018	…… *on* September 21, 2018
Signature: 	*Signature*: _____	*Signature*: _____

Annex 4: Document Review Protocol

Note: The Evaluation Team used this protocol to review project documents. It is a template that allowed the Evaluation Team to standardize the review and be able to collate globally the information collected at the country level. ***The main documents reviewed included: project documents (both PD approved by MLF and PD between UNDP and country), progress reports, verification reports, tranche requests, project completion reports.***

Criteria	Comments
List documents reviewed:	
Project Title:	
Lead Agency and other Agencies involved:	
Lead Partner in country (NOU and Ministry):	
MLF HPMP approval date	
Project Implementation modality (NIM or DIM):	
HPMP Project Dates (Start/end and Actual ending date):	
TOTAL MLF Grant (USD) (without support cost)	
UNDP MLF grant (USD) (without support cost)	
Co-financing (USD)	
What is the final total expenditures of the UNDP MLF grant	
UNDP-only Tranches (periods, budgets (no support cost), approval dates, number):	
HCFC Consumption Baseline (ODP tonnes[29] and year)[30]	
HCFC Phase-out Schedule: ODP tonnes to be reduced (and by when):	
Is it a Stage I project with a future Stage II or one HPMP project to phase out HCFCs (i.e. no Stage II)	
UNDP intervention: Servicing (1) / Manufacturing (2) / Both (3)	
Which sectors of UNDP intervention (refrigeration servicing, refrigeration manufacturing, air conditioning servicing, air conditioning manufacturing,	

29 The ozone depletion potential (ODP) of a chemical compound is the relative amount of degradation to the ozone layer it can cause, with trichlorofluoromethane (R-11 or CFC-11) being fixed at an ODP of 1.0. It was defined as a measure of destructive effects of a substance compared to a reference substance.
30 Value to come from project document; i.e. not from UNEP database.

Criteria	Comments
foam manufacturing)	
UNDP Non-investment activities and their respective MLF budgets (list main activities funded by the HPMP):	
UNDP Investment Projects, their budgets (list main investment activities funded by the HPMP):	
What type of changes were made, if any, to the original HPMP and/or the agreement with MLF submitted to MLF?	
How UNDP activities outlined in the country's national HPMP strategies are included in national development strategies?	
How is the HPMP relevant to national priorities and development objectives of your country (examples)? Is the HPMP project internally coherent in its design? Any lessons have been learnt and what changes could have been made for this project in order to strengthen the alignment between this project and the Partner's priorities and areas of focus?	
Did the country meet the control targets established under the Stage I HPMP strategy on time? If not why not?	
How is the HPMP effective in achieving its overall strategy for phasing-out HCFC consumption, regarding: o Policy instruments needed to reduce the supply and/or demand of HCFCs o Staged approach to reduce HCFC consumption to meet the HCFC phase-out targets o Proposed levels of reduction in HCFC consumption and implementation time frames o Coordination and synergies with other multilateral environmental agreements o Identification of main projects and activities required to completely phase-out HCFC consumption What is the replacement product(s) used to replace HCFCs? Why/how was(were) they selected (cost, availability, performance, ….)? Do HPMPs mainstream gender considerations into their implementation? How is risk and risk mitigation being managed? What lessons have been learnt for this HPMP to achieve their outcomes?	

Criteria	Comments
What changes could have been made (if any) to the design of this project in order to improve the achievement of the HPMP's expected results?	
To what extent does the HPMP make the best use of available human, technical, technological, financial and knowledge inputs to achieve its desired results?	
How is adaptive management used or needed to ensure efficient resource use? Is the HPMP and work plans used as management tools during implementation? How efficient are projects management structures? Are they clear and coherent? Are accounting and financial systems in place adequate for projects management and be able to produce accurate and timely financial information? What is the quality and efficiency of the M&E system in place to monitor the progress of the HPMP? Are progress reports produced accurately, timely and responded to reporting requirements? Is the implementation of the HPMP as cost effective as originally proposed (planned vs. actual) Is the leveraging of funds (co-financing) happening as planned? Are financial resources utilized efficiently? Could financial resources be used more efficiently? What is the visibility of the HPMP (leaflets, video, news, etc.)? How does the HPMP take into account local capacity in design and implementation of this project? Is there an effective collaboration with scientific institutions with competence in phasing-out HCFCs? What lessons can be learnt from this project on efficiency? What changes could have been made (if any) to this project in order to improve its efficiency?	
What are the indications that the HPMP has contributed to phasing-out ODS?	

Criteria	Comments
How is the HPMP effective in achieving its long-term objectives? o Contribution to capacity development for phasing-out ODS in recipient country? o Types of capacities developed by the HPMP How does the HPMP impact the local environment, productivity and enterprise competitiveness, employment and other socio-economic issues? How could HPMPs build on their successes and learn from their weaknesses in order to enhance the potential for impact of ongoing and future initiatives?	
What is the ownership of the Stage I HPMP by government and other partners and what is their commitments to follow up on existing and potential future control measures under the Montreal Protocol?	
How were sustainability issues integrated in the project design? Are there potential financial sustainability issues? Are there organizational arrangements and continuation of activities issues? Is there an adequate enabling environment for sustaining the achievements of the HPMP? Are institutional and individual capacities adequate at the end of the HPMP? Are there any social and political sustainability issues? Will achievements of the HPMP be replicable? Are there any challenges to sustainability of the HPMP? How can the experience and good project practices influence the strategies for phasing out HCFCs?	
Any particular points (stories) from the documents which could be of interest for this evaluation	

Annex 5: List of Documents Reviewed

Environment Canada, March 2013, *Evaluation of Environment Canada's Activities in Support of the Montreal Protocol and Multilateral Fund*

ExCom, April 7-11, 2008, *Status on Implementation of Delayed Projects and Prospects of Article 5 Countries in Achieving Compliance with the next Control Measures of the Montreal Protocol*

ExCom, April 17, 2014, *Overview of Approved HCFC Demonstration Projects and Options for Additional Projects to Demonstrate Climate-Fiendly and Energy-Efficient Alternative Technologies to HCFCs*

ExCom, December 1, 2016, *Draft Monitoring and Evaluation Work Programme for 2017*

ExCom, July 14-18, 2008, *Revised Analysis of Relevant Cost Considerations Surrounding the Financing of HCFC Phase-out*

ExCom, June 12, 2017, *Overall Analysis of the Results of ODS Alternatives Surveys as Submitted to the 79th Meeting*

ExCom, June 13, 2017, *Progress Report of UNDP as at 31 December 2016*

ExCom, March 6, 2017, *Available Information on HFC Consumption and Production in Article 5 Countries*

ExCom, March 7, 2008, *Draft Guidelines for the Preparation of HCFC Phase-out Management Plans Incorporating HCFC Surveys*

ExCom, May 18-22, 2015, *Status Reports and Reports on Projects with Specific Reporting Requirements*

ExCom, May 23, 2018, *Country Programme Data and Prospects for Compliance*

ExCom, November 16-20, 2015, *Desk Study on the Evaluation of HCFC Phase-out Projects in the Refrigeration and Air-Conditioning Manufacturing Sector*

ExCom, November 17, 2018, *Desk Study for the Evaluation of HCFC Phase-out Management Plan Preparation Activities to Assist with the Implementation of the Kigali Amendment*

ExCom, November 28, 2016, *Final Report on the Evaluation of HCFC Phase-out Projects in the Refrigeration and Air-Conditioning Manufacturing Sector*

ExCom, October 17, 2014, *Desk Study on the Evaluation of HCFC Phase-out Projects in the Foam Sector*

ExCom, October 19, 2009, *Overview of Issues Identified during Project Review*

ExCom, October 27, 2017, *Overall Analysis of the Results of ODS Alternatives*

ExCom, *UNDP 2019 Business Plan Narrative (82nd ExCome meeting)*

ExCom, *UNDP Annual Progress and Financial Report Narrative: 1991-2017 (82nd ExCom meeting)*

ICF, July 2012, *Evaluation of the Financial Mechanism of the Montreal Protocol*

Legislative Council Secretariat, *Information Note:L Montreal Protocol on Substances that Deplete the Ozone Layer*

MLF, August 20, 2018, *Guide for Preparation of Stage I of HCFC Phase-out Management Plans (HPMPs) (Updated, August 2018)*

MLF, August 20, 2018, *Guide for the Presentation of Tranches of HCFC Phase-out Management Plans (Updated, August 2018)*

MLF, February 27, 2018, *Guide for the Presentation of Tranches of HCFC Production Sector Phase-out Management Plans*

MLF, February 28, 2018, *Guide for the Submission of Stand-Alone Investment Projects Pursuants to Decision 78/3(g)*

MLF, GEF, UNDP, *Past Successes and Future Opportunities: Case Studies from the UNDP Portfolio and Innovative Approachers to Cooling without Warming*

MLF, March 20, 2018, *Revised Operational Guidelines for Progress and Financial Reporting*

MLF, *MLF Inventory Database (81st ExCom meeting)*

MLF Secretariat, *HCFC Phase-out Management Plans and HCFC Production Phase-out Management Plans (as at June 2018)*

MLF Secretariat, *Phase-out Plans and Projects (as at June 2018)*

MLF Secretariat, *Policies, Procedures, Guidelines and Criteria (as at November 2017)*

The World Bank, April 1995, *The Availability of Hydrocarbons for ODS Phaseout in Developing Countries*

UN, July 19, 2016, *The UNDP Evaluation Policy*

UN, October 17, 2017, *UNDP Strategic Plan, 2018-2021*

UNDP, 2007, *20 Years of Success: Montreal Protocol on Substances data Deplete the Ozone Layer*

UNDP, 2009, *Handbook on Planning, Monitoring and Evaluating for Development Results*

UNDP, *2018 Business Plan and Programme Strategy (draft)*

UNDP, *2019-2021 Business Plan*

UNDP, March 2012, *Low Cost Options for the Use of Hydrocarbons in the Manufacture of Polyrethane Foams*

UNDP, MLF, GEF, *Protecting the Ozone Layer and Reducting Global Warming: Results, Case Studies and Lessons Learned from UNDP's Montreal Protocol Programme*

UNDP, October 2010, *Methyl Formate as Blowing Agent in the Manufacture of Polyurethane Foam Systems*

UNDP, *The Sustainable Development Goals (SDGs) and the Montreal Protocol on Substances that Deplete the Ozone Layer*

UNDP-PMU, October 2018, *Gender Analysis and Action Plan for Montreal Protocol Projects in China, Peru and Nigeria*

UNEG, March 2008, *UNEG Code of Conduct for Evaluation in the UN System*

UNEG, March 2008, *UNEG Ethical Guidelines for Evaluation*

UNEP, May 22, 2012, *Evaluation of the Financial Mechanism of the Montreal Protocol: Executive Summary*

UNEP, February 17, 2017, *Frequently Asked Questions Relating to the Kigali Agreement to the Montreal Protocol*

UNEP, *OzonAction Fact Sheet: The Kigali Agreement to the Montreal Protocol: HCFC Phase-down*

UNEP-Ozone Secretariat, 2016, *Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer*

_____, *Decisions Adopted by the Nineteenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*

_____, *Members of the Executive Committee (1991-2018)*

_____, *The Montreal Protocol on Substances that Deplete the Ozone Layer*

_____, *The Sustainable Development Goals (SDGs) and the Montreal Protocol*

Website Consulted

multilateralfund.org: *downloaded/reviewed numerous documents related to the 49 Stage I HPMPs implemented by UNDP such as project documents, progress reports/tranche requests, verification reports, etc.*

undp.org

unenvironment.org/ozonaction/

ozone.unep.org

MPU Database: *downloaded/reviewed all documents related to the 49 Stage I HPMPs implemented by UNDP*

https://www.youtube.com/watch?v=WaPONIQ_vEo&feature=youtu.be

https://www.youtube.com/user/UNDPMPU/videos

http://enb.iisd.org/ozone/mop30/

http://conf.montreal-protocol.org/meeting/mop/mop30/presentations/Side%20events%20presentations/Side%20event%20on%20private%20sector%205%20Nov%202018.pdf

https://eia-global.org/initiatives/country-transitions

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Annex 6: Interview Protocol

Note: This is a guide for the Evaluation Team and a simplified version of the evaluation matrix. Not all questions were asked to each interviewee; it was a reminder for the interviewers about the type of information required to complete the evaluation exercise and a guide to prepare the semi-structured interviews.

I. RELEVANCE - *Are activities outlined in countries' national HPMP strategies relevant to address the protection of the ozone layer and the climate and are these strategies included in national development strategies?*

I.1. How are these HPMPs relevant to the Montreal Protocol objectives?
I.2. How are HPMPs relevant to MLF and UNDP objectives?
I.3. How are HPMPs relevant to national priorities and development objectives of participating countries?
I.4. How do HPMPs address the needs of target beneficiaries?
I.5. Are projects internally coherent in their design?
I.6. How are HPMPs relevant in light of other donors?

Future directions for similar projects

I.7. What lessons have been learnt and what changes could have been made to these projects in order to strengthen the alignment between these projects and the Partners' priorities and areas of focus?
I.8. How could these projects better target and address priorities and development challenges of stakeholders and targeted beneficiaries?

II. EFFECTIVENESS – *Did countries meet the control targets established under the Stage I HPMP strategy on time?*

II.1. How are HPMPs effective in achieving their overall strategy for phasing-out HCFC consumption, regarding:
- Policy instruments needed to reduce the supply and/or demand of HCFCs
- Staged approach to reduce HCFC consumption to meet the HCFC phase-out targets
- Proposed levels of reduction in HCFC consumption and implementation time frames
- Coordination and synergies with other multilateral environmental agreements
- Identification of main projects and activities required to completely phase-out HCFC consumption

II.2. Which sectors of intervention (refrigeration servicing, refrigeration manufacturing, air conditioning servicing, air conditioning manufacturing, foam manufacturing) the HPMP focused on?
II.3. What is the replacement product(s) used to replace HCFCs? Why/how was(were) they selected (cost, availability, performance, …..)?
II.4. Do HPMPs mainstream gender considerations into their implementation?
II.5. How is risk and risk mitigation being managed?

Future directions for similar projects

II.6. What lessons have been learnt for these HPMPs to achieve their outcomes?
II.7. What changes could have been made (if any) to the design of these projects in order to improve the achievement of HPMPs' expected results?
II.8. How could HPMPs be more effective in achieving their results?

III. EFFICIENCY - *To what extent are HPMPs making the best use of available human, technical, technological, financial and knowledge inputs to achieve their desired results?*

III.1. How is adaptive management used or needed to ensure efficient resource use?
III.2. Are HPMPs and work plans used as management tools during implementation?
III.3. How efficient are projects management structures? Are they clear and coherent?
III.4. Are accounting and financial systems in place adequate for projects management and be able to produce accurate and timely financial information?
III.5. What is the quality and efficiency of the M&E system in place to monitor the progress of HPMPs?
III.6. Are progress reports produced accurately, timely and responded to reporting requirements?

III.7. Are HPMPs implementation as cost effective as originally proposed (planned vs. actual)
III.8. Is the leveraging of funds (co-financing) happening as planned?
III.9. Are financial resources utilized efficiently? Could financial resources be used more efficiently?
III.10. What is the rate of delivery and budget balance?
III.11. How is RBM used during implementation of HPMPs?
III.12. What is the visibility of HPMPs (leaflets, video, news, etc.)?
III.13. Are there institutionalized or informal feedback or dissemination mechanisms to ensure that findings, lessons learned and recommendations pertaining to HPMPs design and implementation effectiveness are shared among project stakeholders, UNDP and MLF Staff and other relevant organizations for ongoing adjustment and improvement of projects?
III.14. What were the incurred transaction costs in preparing these HPMPs?
III.15. What were advantages and disadvantages of NIM or DIM modalities to implement these HPMPs?
III.16. Was the technical and administrative support provided by UNDP MPU/Chemicals efficient?
III.17. What was the role of UNDP COs?
III.18. Which partnerships/linkages are facilitated? Which one can be considered sustainable?
III.19. What is the level of efficiency of cooperation and collaboration arrangements (between local actors, UNDP/MLF and relevant government entities)?
III.20. Is an appropriate balance struck between utilization of international expertise and local capacity?
III.21. How do HPMPs take into account local capacity in design and implementation of these projects?
III.22. Is there an effective collaboration with scientific institutions with competence phasing-out HCFCs?

Future directions for the project

III.23. What lessons can be learnt from these projects on efficiency?
III.24. How could HPMPs have more efficiently addressed their key priorities (in terms of management structures and procedures, partnerships arrangements etc.)?
III.25. What changes could have been made (if any) to these projects in order to improve their efficiency?

IV. IMPACT - *Are there indications that HPMPs have contributed to phasing-out ODS?*

IV.1. How are HPMPs effective in achieving their long-term objectives?
- Contribution to capacity development for phasing-out ODS in recipient countries?
- Types of capacities developed by HPMPs

IV.2. How do HPMPs impact the local environment, productivity and enterprise competitiveness, employment and other socio-economic issues?

Future directions for the project

IV.3. How could HPMPs build on their successes and learn from their weaknesses in order to enhance the potential for impact of ongoing and future initiatives?

V. SUSTAINABILITY - *What is the ownership of Stage I HPMPs by governments and other partners and what is their commitments to follow up on existing and potential future control measures under the Montreal Protocol?*

IV.4. How were sustainability issues integrated in projects designs?
IV.5. Are there potential financial sustainability issues?
IV.6. Are there organizational arrangements and continuation of activities issues?
IV.7. Is there an adequate enabling environment for sustaining HPMPs' achievements?
IV.8. Will institutional and individual capacities adequate at the end of HPMPs?
IV.9. Are there any social and political sustainability issues?
IV.10. Will HPMPs achievements be replicable?
IV.11. Are there any challenges to sustainability of HPMPs?

Future directions for the project

IV.12. Which areas/arrangements under HPMPs show the strongest potential for lasting long-term results?

IV.13. What are the key challenges and obstacles to the sustainability of results of HPMPs that must be directly and quickly addressed?
IV.14. How can the experience and good project practices influence the strategies for phasing out HCFCs?
IV.15. Are national decision-making institutions (Parliament, Government etc.) in participating countries ready to improve their phasing out of HCFCs?

Annex 7: Short List of Interview Questions

- How was the Stage I HPMP relevant to national priorities and development objectives of your country?
- How did HPMP address the needs of target beneficiaries?
- How is HPMP relevant in light of other donors?

- How could these projects better target and address priorities and development challenges of stakeholders and targeted beneficiaries?

- How was the Stage I HPMP effective in achieving its strategy for phasing-out HCFC consumption?
- Which sectors of intervention (refrigeration servicing, refrigeration manufacturing, air conditioning servicing, air conditioning manufacturing, foam manufacturing) the HPMP focused on?
- What is the replacement product(s) used to replace HCFCs? Why/how was(were) they selected (cost, availability, performance, …..)?

- To what extent did the Stage I HPMP make the best use of available human, technical, technological, financial and knowledge inputs to achieve its desired results?
- Are financial resources utilized efficiently? Could financial resources be used more efficiently?
- What is the visibility of HPMPs (leaflets, video, news, etc.)?
- Was the technical and administrative support provided by UNDP MPU/Chemicals efficient?
- What was the role of UNDP COs?

- Are there indications that HPMP have contributed to phasing-out ODS?
    - Types of capacities developed by the HPMP

- How could HPMP build on their successes and learn from their weaknesses in order to enhance the potential for impact of ongoing and future initiatives?

- Are there potential financial sustainability issues?
- Is there an adequate enabling environment for sustaining HPMPs' achievements?
- Will institutional and individual capacities adequate at the end of HPMPs?
- Are there any challenges to sustainability of HPMPs?

Annex 8: List of People Interviewed

Date	Name	Institution
Asia-Pacific region (Bangkok)		
Oct. 30th	Ms. Christine Wellington Moore	UNDP
Nov. 2nd	Mr. William Kwan	UNDP
Nov. 15th	Mr. Anshu Kumar	UNDP
Oct. 31st	Ms. Manisha Sanghani	UNDP
Oct. 31st	Mr. Anderson Alves	UNDP
Nov. 20th	Mr. Pak Sokharavuth	NOU (Cambodia)
Dec. 6th	Dr. Yun Hong	UNDP-CO (China)
Dec. 17th	Ms. Gao Lingyun	NOU (China)
Dec. 20th	Mr. Yogesh Gounder	NOU (Fiji)
LAC region (Panama)		
Nov. 29th	Mr. Kasper Koefoed	UNDP
Nov. 14th	Ms. Paloma Somohano	UNDP
Dec. 13th	Ms. Sharona Napier	UNDP-CO
Africa/Europe & CIS region (Istanbul)		
Nov. 6th	Mr. Maksim Surkov	UNDP
Oct. 30th	Mr. Etienne Gonin	UNDP
Nov. 21st	Mr. Kumar Kylychev	UNDP-CO
Nov. 22nd	Mr. Mars Amanaliev	NOU (Kyrgyzstan)
Dec. 14th	Mr. Nestan Khuntsaria	UNDP-CO (Georgia)
MPU Global (New York)		
Oct. 31st	Ms. Xiaofang Zhou	UNDP
Oct. 26th & Nov. 15th	Mr. Ajiniyaz Reimov	UNDP
Oct 30th	Ms. Monica Gaba Kapadia	UNDP
Oct 29th	Ms. Loise Nganga	UNDP
MLF		
Nov. 20th	Mr. Eduardo Ganem	MLF
Nov. 26th	Mr. Balaji Natarajan	MLF
Nov. 27th	Mr. Alejandro Ramirez Pabon	MLF

Interviewed 24 people (8 women and 16 men)

Annex 9: Alternative Technologies Selected under HPMPs Implemented by UNDP

Table 6: Alternative Technologies Selected under HPMPs Implemented by UNDP

Country	Foam Manufacturing Sector	Refrigerator Manufacturing Sector	AC Manufacturing Sector	Servicing
Angola				Refrigeration Servicing Sector activities
Armenia	HCFC-141b blended polyol to cyclopentane - CANCELLED	SAGA - R-22 to R-290 in refrigeration but was CANCELLED		Recovery equipment and tools for good management of HCFCs supplied.
Bangladesh	Cyclopentane to replace 141b			
Barbados				RAC service sector activities
Belize				RAC service sector activities
Bhutan				RAC service sector activities
Brazil	Hydrocarbons, Methylal, Methyl Formate, Methyl Chloride			RAC service sector activities
Brunei Darussalam				Refrigeration Servicing Sector activities
Cambodia				RAC service sector activities
Chile	Conversion projects will be taken up in HPMP Stage II			Recycling centers and tools for management of HCFCs. Phase out of HCFC-141b used as solvent in the RAC sector. Technical assistance the supermarket sector featuring demonstration of low GWP and high energy-efficiency technologies
China (ICR)			Technology conversion in 18 enterprises (30 equipment lines and 4 compressor lines) to new technologies such as R-32, R-410A, Ammonia and HGC-134a	
China (Solvent)	Solvent sector project: 7 shifted from HCFC 225ca/cb to KC-6; rest to Hydrocarbons			
Colombia	Conversion projects will be taken up in HPMP Stage II			Strengthening the current five reclaiming centers and creation of five refrigeration storage centers. Phase out of HCFC-141b and HCFC-22 used as solvent for electronics, aerosols, silicon coating of needles, and in the RAC sector.

Country	Foam Manufacturing Sector	Refrigerator Manufacturing Sector	AC Manufacturing Sector	Servicing
Congo, DR				Recycling centers and tools for management of HCFCs.
Costa Rica	Cyclopentane to replace 141b	Demo for CO2/ammonia-based Ref in super market		RAC service sector activities
Cuba	Cyclopentane/water to replace 141b base pre-blended polyol			RAC service sector activities
Dominican Republic	Conversion of 13 companies from HCFC-141b to Methyl Formate and Cyclopentane	Conversion from HCFC-141b to Cyclopentane		Recycling centers and tools for management of HCFCs.
Egypt	Conversion of continuous insulation foam line from HCFC141b polyol to pentane & Conversion of discontinuous block line from HCFC141b polyol to cyclopentane			
El Salvador	Manufactures polyurethane sandwich panels with HCFC-141b used as a blowing agent replaced with pre-blended hydrocarbons (HC). Hecasa and Profilaxis replaced HCFC-141b used as a blowing agent with methyl formate (MF) in pre-blended polyol systems			Recycling centers and tools for management of HCFCs.
Fiji				RAC service sector activities
Georgia				Recycling centers and tools for management of HCFCs. HCFC-142b used in the solvent sector (dry cleaning) converted to either perchloroethylene or trichloroethylene (exact detail not known)
Ghana				Incentive Payment to replace or permanently retrofit the existing refrigeration equipment to use a refrigerant that is not an Ozone Depleting Substance (e.g. R134a or R404A, R507, R290, R600, R600a, Ammonia, etc.).
Guyana				RAC service sector activities
Haiti				Provision of tools and equipment to technicians to facilitate refrigerant recovery and reuse
India	15 foam enterprises converted to cyclopentane, and tested methyl format and HFOs			

Country	Foam Manufacturing Sector	Refrigerator Manufacturing Sector	AC Manufacturing Sector	Servicing
Indonesia		In commercial ref sector- 15 out of 27 shifted to HFC-32 as refrigerant and cyclopentane as blowing agent for foam. Remaining 12 Ref companies decided to move to high GWP alternatives without MLF funding.	AC- shifted to R-32; Ref R-32; but 16 AC and 12 Ref companies decided to move to high GWP alternatives without MLF funding (R410A)	RAC service sector activities
Iran	Conversion of system house to pre-blended aliphatic blowing agents (Methyl Formate, Methylal, etc.) CANCELLED		Mehr Asl - R-22 to R-410a for domestic a/c Conversion of system house to pre-blended aliphatic blowing agents (Methyl Formate, Methylal, etc.) CANCELLED	
Jamaica	Spray foam shifted to methyl formate			RAC service sector activities
Kyrgyzstan				Recycling centers and tools for management of HCFCs.
Lebanon	Dalal Steel - Conversion of HCFC141b in foam for sandwich polyurethane foam panels to cyclopentane.		Lematics - Conversion of domestic air-conditioning from HCFC-22 to R-410a	
Malaysia	13 plants moved to cyclopentane, and tested methyl formate, methylal, HFOs and water			RAC service sector activities
Maldives				RAC service sector activities
Mali				RAC service sector activities
Mauritania				RAC service sector activities
Mexico	PU foam conversion project, HCFC-141b to hydrocarbons (cyclopentane), methyl formate, HFC and HFOs			RAC service sector activities
Moldova, Rep				RAC service sector activities
Nepal				RAC service sector activities
Nigeria	Methyl formate, methylal and water	Refrigerant-grade hydrocarbons: HFC-410a, 407c,	Refrigerant-grade hydrocarbons: HFC-410a	RAC: Control system for products with HCFCs

Country	Foam Manufacturing Sector	Refrigerator Manufacturing Sector	AC Manufacturing Sector	Servicing
		134a, 404a		
Panama				Recycling centers and tools for management of HCFCs. Phase-out of HCFC-141b in flushing and cleaning of circuits during servicing using nitrogen.
Paraguay				Recycling centers and tools for management of HCFCs.
Peru				Recycling centers and tools for management of HCFCs. Distribution to technical schools of equipment to recycle HCFC based cleaning agents used for flushing during servicing.
Saint Kitts and Nevis				Provision of tools and equipment including storage cylinders, recovery machines, conversion kits, safety equipment for handling hydrocarbon refrigerants etc.
South Sudan				RAC service sector activities
Sri Lanka				Training on air-conditioning equipment assemblers
Swaziland	PU foam conversion project, HCFC-141b to cyclopentane			
Timor Leste				RAC service sector activities
Trinidad and Tobago	Methyl formate			Training of technicians in safe handling of flammable and toxic refrigerants: R-410a, HFC-134a
Uruguay				Training on servicing practices and alternative refrigerants such as HFOs

Annex 10: Audit Trail

The audit trail is presented in a separate file.

Annex 11: Evaluation Report Clearance Form

EVALUATION REPORT CLEARANCE FORM

Evaluation Report Reviewed and Cleared by

UNDP MPU

Name: _____

Signature: _____ Date: _____

UNDP

Name: _____

Signature: _____ Date: _____