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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eightieth Meeting
Montreal, 13-17 November 2017

WORLD BANK'S WORK PROGRAMME AMENDMENTS FOR 2017

Pre-session documents of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol are without prejudice to any decision that the Executive Committee might take following issuance of the document.

COMMENTS AND RECOMMENDATION OF THE FUND SECRETARIAT

1. The World Bank is requesting approval from the Executive Committee of US \$820,000, plus agency support costs of US \$72,400 for its 2017 work programme amendments listed in Table 1. The submission is attached to the present document.

Table 1: The World Bank's work programme amendments for 2017

Country	Activity/Project	Amount requested (US \$)	Amount recommended (US \$)
SECTION A: ACTIVITIES RECOMMENDED FOR INDIVIDUAL CONSIDERATION			
A1: Technical assistance for enabling activities (decision 79/46)			
Malaysia	Enabling activities for HFC phase-down	250,000	*
Philippines (the)	Enabling activities for HFC phase-down	250,000	*
Thailand	Enabling activities for HFC phase-down	250,000	*
Subtotal for A1		750,000	*
Agency support costs (9 per cent for project preparation)		67,500	*
Total for A1		817,500	*
A2: Project preparation for HFC-related projects (decisions 78/3(g) and 79/45)			
Thailand	Project preparation for conversion from HFC to HFO-based or other low-GWP alternatives in the production of commercial refrigeration equipment at Pattana Intercool and System Forms Co., Ltd.	40,000	
Agency support costs (7 per cent for project preparation)		2,800	
Total for A2		42,800	
A3: Project preparation for demonstration projects for HFC-23 by-product mitigation or conversion (decision 79/47)			
China	Preparation of a technology demonstration project for HFC-23 by-product conversion at Shandong Dongyue Chemical Co. Ltd.	30,000	*
Agency support costs (7 per cent for project preparation)		2,100	*
Total for A3		32,100	*
Grand total (A1, A2, A3)		892,400	*

*For individual consideration

SECTION A: ACTIVITIES RECOMMENDED FOR INDIVIDUAL CONSIDERATION

A1: Technical assistance for enabling activities (decision 79/46)

Background

2. In line with decision 79/46,¹ the World Bank submitted funding requests for the implementation of enabling activities in the three Article 5 countries listed in Table 1. The detailed proposals are contained in Annexes 2 to 4 to the World Bank's submission.

¹ The Executive Committee decided *inter alia* to approve enabling activities on the basis that countries would be allowed the flexibility to undertake a range of activities to fulfil their initial obligations in line with the Kigali Amendment; enabling activities could consist of, but were not limited to, activities to: facilitate and support the early ratification of the Kigali Amendment; initiating supporting institutional arrangements; the review of licensing systems; data reporting on HFCs; and demonstration of non-investment activities.

3. The enabling activities submitted by the three countries consist of the following elements:
- (a) Assessment of existing regulations pertaining to the ozone and climate protection to identify options to strengthen the existing policy and regulatory framework to control and monitor import, export, and use of HFCs;
 - (b) Review and update existing ODS licensing and quota systems to cover HFCs, and to adapt the existing Harmonized System (HS) of Custom Codes for tracking import/export of HFCs and HFC blends;
 - (c) Explore synergies among various Government's agencies involved in ozone and climate protection matters to coordinate their efforts to control and monitor HFCs, and to report HFC consumption and emissions to the relevant global environmental treaties;
 - (d) Review the results of the ODS alternatives surveys (Philippines and Thailand) or undertake a survey of HFC consumption (Malaysia), to analyze and forecast the HFC consumption baseline, and compile alternative technologies for respective sectors; and
 - (e) Develop a draft strategy highlighting different HFC phase-down scenarios to proceed with the ratification and compliance of the Kigali Amendment.

Secretariat's comment

4. To facilitate the preparation and submission of requests for enabling activities, the Secretariat prepared a Guide for the submission of enabling activities for HFC phase-down and presented to bilateral and implementing agencies at the Inter-agency coordination meeting.² The Secretariat notes that the requests for enabling activities submitted by the World Bank followed the guide.

5. The Governments of Germany and Italy (as bilateral agencies), and the four implementing agencies, all submitted requests for funding for enabling activities, on behalf of 59 Article 5 countries, in line with decision 79/46. In sub-paragraph (e) of the decision, the Committee decided that requests for enabling activities submitted to the 80th meeting would be funded to the extent possible from additional voluntary contributions provided by non-Article 5 Parties. To facilitate the review and discussion by Committee members, and given the funding modality agreed in decision 79/46(e), the Secretariat has included a list of all the requests for enabling activities submitted to the 80th meeting, indicating funding levels and agencies involved, in the document on the Overview of issues identified during project review.³

6. The Secretariat reviewed the requests for enabling activities and concluded that they fulfilled all the requirements of decision 79/46, as noted below:

- (a) The World Bank submitted endorsement letters from the Governments of the three Article 5 countries indicating their intent to make best efforts to ratify the Kigali Amendment as early as possible;
- (b) The three project proposals included detailed descriptions of each of the enabling activities, institutional arrangements, cost breakdown and the schedule for implementation;
- (c) All of the proposals will be implemented in 18 months.

² Montreal, 5-7 September 2017. Bilateral and implementing agencies appreciated the development of the guide.

³ UNEP/OzL.Pro/ExCom/80/22.

Secretariat's recommendation

7. The Executive Committee may wish to consider the requests for enabling activities for HFC phase-down for the three Article countries listed in Table 1 above, in the context of its discussion of the proposals for HFC-related projects described in the document on Overview of issues identified during project review.

A2: Project preparation for HFC-related projects (decisions 78/3 (g) and 79/45)

Project description

8. The World Bank submitted a request for project preparation for the conversion of HFC to low-GWP refrigerant in the manufacturing of commercial refrigeration equipment for two enterprises in Thailand: Pattana Intercool and System Forms, listed in Table 1 above. Details of the project preparation request is contained in Annex 5 to the World Bank's submission.

Secretariat's comments

9. The Government of Germany (as bilateral agency), and three implementing agencies, also submitted requests for funding for preparation of HFC phase-out investment projects in the consumption sector in ten Article 5 countries, and four (fully developed) investment projects for the phase-out of HFC-134a in Argentina,⁴ Bangladesh,⁵ Colombia⁶ and Mexico,⁷ in line with decisions 78/3⁸ and 79/45⁹. The Executive Committee would need to consider all the HFC-related projects proposals submitted to the 80th meeting, noting the criteria for their selection (i.e., technology being proposed, the replicability and the geographic distribution of the proposals) and their funding modality (i.e., to the extent possible, from additional voluntary contributions provided by non-Article 5 Parties, after giving priority to enabling activities¹⁰). To facilitate the review and discussion by Committee members, the Secretariat has included a list of all the HFC-related project proposals submitted to the 80th meeting, indicating a brief description, technology selected, funding levels and agencies involved, in the document on the Overview of issues identified during project review.

10. With regard to the request for project preparation for two HFC phase-out projects in Thailand, the Secretariat noted that the submission fulfilled all the requirements of decisions 78/3 and 79/45, and were consistent with relevant decisions related to project preparation funding.

⁴ UNEP/OzL.Pro/ExCom/80/30.

⁵ UNEP/OzL.Pro/ExCom/80/32.

⁶ UNEP/OzL.Pro/ExCom/80/38.

⁷ UNEP/OL.Pro/ExCom/80/45.

⁸ The Executive Committee decided *inter alia* to consider approving a limited number of HFC-related projects in the manufacturing sector only, to allow the Committee to gain experience in the incremental capital and operating costs that might be associated with phasing down HFCs, on the understanding: that any country that submitted a project should have ratified the Kigali Amendment or submitted a formal letter indicating the government's intention to ratify the Amendment; that no further funding would be available until the instrument of ratification had been deposited at the United Nations in New York; and that any amount of HFC reduced as a result of the project would be deducted from the starting point.

⁹ The Executive Committee *inter alia* reiterated decision 78/3(g) and decided the following criteria for considering proposals for HFC-related projects: the projects should be in individual enterprises deciding to convert to mature technologies, should have broad replicability to the country or region or sector, and should take into account geographic distribution; projects must be fully implemented by no more than two years; project completion reports should be comprehensive with detailed information on the eligible incremental capital costs, incremental operating costs, any possible savings incurred during the conversion and relevant factors that facilitated implementation.

¹⁰ Decision 79/45(d).

Secretariat's recommendation

11. The Executive Committee may wish to consider the requests for project preparation for conversion from HFC to HFO-based or other low-GWP alternatives in the production of commercial refrigeration equipment at Pattana Intercool and System Forms Co. Ltd. listed in Table 1 above, in the context of its discussion of the proposals for HFC-related projects described in the document on Overview of issues identified during project review.

A3: Project preparation for demonstration projects for HFC-23 by-product mitigation or conversion (decision 79/47)Project description

12. In line with decision 79/47(g),¹¹ the World Bank submitted a funding request to prepare a demonstration project for HFC-23 by-product conversion at Shandong Dongyue Chemical Co. Ltd., in China, listed in Table 1 above. Details of the project preparation request is contained in Annex 1 to the World Bank's submission.

Secretariat's comments

13. The Secretariat noted that the request for project preparation for of a technology demonstration project for HFC-23 by-product conversion was consistent with relevant decisions related to project preparation funding.

14. The Secretariat requested further information related to the scale of the conversion, the number of lines to be covered, and the estimated overall cost of the resulting project proposal; however, the World Bank indicated that such information would only be known during the preparation of the demonstration project, which could be submitted as early as the 81st meeting.

15. The Secretariat is seeking the advice of the Executive Committee on the funding source for this request, noting that in decision 79/47(g) funding requests for demonstration projects for HFC-23 emissions controls were to be submitted to the 81st meeting, and that the additional voluntary contributions provided by non-Article 5 Parties, were for enabling activities (as a priority) followed by HFC-related investment projects in the consumption sector.

Secretariat's recommendation

16. The Executive Committee may wish to consider the request for funding the preparation of a technology demonstration project for HFC-23 by-product conversion at Shandong Dongyue Chemical Co. Ltd., in China in light of the Secretariat's comments.

¹¹ The Executive Committee *inter alia* invited implementing agencies to submit to the 81st meeting proposals for feasible technology demonstration for HFC-23 by-product mitigation or conversion technologies with the potential for cost-effective, environmentally sustainable conversion of HFC-23.

2017 BUSINESS PLAN
WORK PROGRAM AMENDMENT



WORLD BANK GROUP

WORLD BANK IMPLEMENTED
MONTREAL PROTOCOL OPERATIONS

Presented to the
80th Meeting of the Executive Committee
of the Multilateral Fund

Revised
4 October 2017

WORK PROGRAM FOR WORLD-BANK IMPLEMENTED MONTREAL PROTOCOL OPERATIONS

1. This proposed work program amendment for Bank-Implemented Montreal Protocol Operations is prepared on the basis of the 2017-2019 World Bank Business Plan which was approved by the Executive Committee at its 77th meeting.
2. The 2017-2019 World Bank Business Plan consists of investment and non-investment activities to assist Article 5 partner countries to meet their HCFC reduction target, the 2020 35% reduction. The Business Plan includes, in addition to deliverables associated with previously approved and new investment activities, requests to extend support for implementation of existing institutional strengthening projects in 2 countries.
3. As part of the 2017-2019 Business Plan, the World Bank has submitted stage II of the HPMP for Argentina, China, Indonesia, Jordan, the Philippines, and Vietnam; and stage II of the HPPMP for China. Stage II of the HPMP for Thailand is being prepared and will be submitted in 2018.
4. In addition, this work program amendment includes activities for HFC-related projects in response to decisions undertaken at the 79th Meeting of the Executive Committee, in particular, decisions 79/45, 79/46, and 79/47.

2017 Work Program – ExCom 80 Amendment

5. The proposed 2017 Work Program Amendment being submitted for consideration at the 80th Meeting of the Executive Committee, includes funding requests for Agency Core Unit Costs, one preparation activity for feasible technology demonstration for HFC-23 by-product conversion technologies for China, one preparation activity for demonstration/stand-alone investment projects for commercial refrigerator manufacturers in Thailand, and three HFC enabling activities, outlined in Table 1 below. Explanation on the preparation activities and HFC enabling activities are described in annexes below.

*Table 1: Funding Requests Submitted for Consideration
by the 80th Meeting of the Executive Committee*

Country	Request (US\$)	Support Costs (US\$)	Duration	Description	Supporting document
China	30,000	2,100	1 year	Preparation of technology demonstration project for HFC-23 by-product conversion at Shandong Dongyue Chemical Co. Ltd.	Annex 1
Malaysia	250,000	17,500	1.5 years	Enabling activities for HFC phase-down	Annex 2
Philippines	250,000	17,500	1.5 years	Enabling activities for HFC phase-down	Annex 3
Thailand	250,000	17,500	1.5 years	Enabling activities for HFC phase-down	Annex 4
Thailand	40,000	2,800	1 year	Project preparation for conversion from HFC to HFO-based or other low-GWP alternatives in the production of commercial refrigeration equipment at Pattana Intercool and System Forms Co., Ltd.	Annex 5
Global	0	1,735,000	1 year	Agency Core Unit Costs	
Total	820,000	1,792,400			

Annex 1: Request for project preparation for feasible technology demonstration of HFC-23 by-product conversion technologies at Shandong Dongyue Chemical Co. Ltd for China

1. The Government of China has requested the Bank to prepare a technology demonstration of HFC-23 by-product conversion technology at Shandong Dongyue Chemical Co. Ltd. which is one of the largest HCFC-22 producers in China. This request is in response to Decision 79/47 inviting implementing agencies to submit to the 81st meeting proposals for feasible technology demonstration for HFC-23 by-product mitigation or conversion technologies with the potential for cost-effective, environmentally sustainable conversion of HFC-23.
2. Preparation activities will include technical assessment as well as financial analyses of various HFC-23 conversion technologies in comparison to HFC-23 destruction and by-product mitigation. The assessment will include review and evaluation of technical feasibility of various HFC-23 conversion technologies, determination of the capital cost of investment and recurrent costs (i.e., operating costs) of each option, and price and market for converted chemicals. Comparison of these costs for various technologies will be made in order to identify the most cost-effective option for the Multilateral Fund while taking into account specific needs of the enterprise.
3. The Bank is requesting \$30,000 to prepare project proposal for submission to the 81st ExCom meeting. At the time of project submission to the 81st ExCom, the proposal will identify the selected HFC-23 conversion technology and provide information on the set up of the facility, costs, and HFC-23 conversion capacity.
4. The estimated breakdown of preparation cost is shown in table below.

ACTIVITIES	COST (US \$)
International Expert	\$20,000
International Travel	\$8,500
Domestic Travel	\$1,500
Total	\$30,000

Annex 2: HFC Enabling Activities for Malaysia

Background

The Government of Malaysia is fully committed to the Montreal Protocol (MP) and the Climate Change Convention. It acceded to both the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer in August 1989. As of 1 January 2010, Malaysia has fulfilled its commitment to phase out consumption of all controlled substances with the exception of hydrochlorofluorocarbons (HCFCs).

Various chemical and physical properties of HFCs and other alternatives make them suitable refrigerants and blowing agents. They also have several other industrial application-friendly properties like superior solvent abilities for which they're extensively used in various applications like fire-extinguishers, aerosols etc.

Malaysia has not yet undertaken the non-ODS alternatives survey though it is expected their main HFC consumption will be used as refrigerants for air-conditioning and refrigeration systems. Malaysia has the highest percentage of car ownership among ASEAN countries. Almost all passenger cars and trucks are equipped with mobile air-conditioners where hydrofluorocarbons (HFC) is used as refrigerant. In addition, the market penetration of residential air-conditioners is also the highest among ASEAN countries. Currently, more than 90% of the households in Malaysia are installed with air-conditioners. Major refrigerants used in air-conditioners are either hydrochlorofluorocarbon (HCFC) or HFC. These refrigerants have global warming potential (GWP) more than thousand times of carbon dioxide. HFC phase-down which is the objective of the Kigali Amendment is therefore relevant to the future economic development of Malaysia.

Since Malaysia had not embarked in any HFC survey and the current import/export control system did not have any provisions for tracking the flow of each specific HFC, Malaysia is requesting an additional support for conducting HFC survey in accordance with decision 74/53. This activity will be done in parallel with the initial HFC enabling activities.

Objectives

The main objective for the proposed enabling activities is to enable Malaysia to proceed with the ratification of the Kigali Amendment and make recommendations for policy and regulatory actions that would enable Malaysia to be in compliance with the initial HFC phase-down obligations under the Amendment.

Proposed approach and activities

The proposed approach includes the following:

- (i) An assessment of existing domestic regulations pertaining to the ozone and climate protection in order to identify potential options to strengthen existing policy and regulatory framework to effectively control and monitor import, export, and use of HFCs. One of the primary systems of controls on ODS is the Application Import Permit System (AP System), which is administered by the Ministry of International Trade and Industry (MITI). Since its introduction in 1994 under the Prohibition of Import (Amendment No. 4) Order, 1994 of the Customs Act, 1967, all importers of the listed ODS must obtain an import permit issued by MITI. The total quantity of any of these substances that can be imported in any year is set by MITI in consultation with DOE. The amount is reduced each year in line with the Montreal Protocol obligations.
- (ii) Capacity building for DOE, MITI, Customs Department, and others in order to strengthen their capacity to extend existing licensing and quota systems for ozone depleting substances under the AP system to cover HFCs, and to adapt existing Harmonized System (HS) of Custom Codes for tracking import/export of HFCs and HFC blends.
- (iii) Exploring synergy among various government agencies involved in ozone and climate protection

with an aim to coordinate their efforts to control and monitor HFCs and to report HFC consumption and emissions to the relevant global environmental treaties (i.e. UNFCCC and Montreal Protocol).

- (iv) Conduct Malaysia HFC survey¹² and analyze to forecast the baseline HFC consumption level (average consumption between 2020 and 2022) and consumption beyond 2022 based on business as usual through intensive consultation with government, industry and NGOs. The HFC consumption projection would then be compared with the maximum level allowed by the Kigali Amendment. This would provide guidance for the Government of Malaysia with regard to timing and compliance concerns.
- (v) Based on the forecasted baseline HFC consumption and use, a list of alternative technologies for respective sectors will be developed. Consultations with stakeholders to determine appropriate alternative technologies for the Malaysia context would be carried out. All alternative technologies that are currently commercially available as well as emerging technologies and expected timeframe for these technologies would become commercially available should be considered.
- (vi) Develop a draft strategy highlighting different phase-down scenarios for Malaysia to proceed with ratification and to be in compliance with short-term, medium-term, and long-term commitments with the Kigali Amendment. The strategy should include recommendations for policy and regulatory actions to enable Malaysia to proceed with the ratification and those that would enable Malaysia to be in compliance with the Amendment. In addition, the strategy should provide comprehensive analyses for Malaysia's technology pathway for complying with the Amendment.

Impact on HCFC phase-out projects implementation

The implementation of the enabling activities would not delay implementation of HCFC phase-out projects in Malaysia.

¹² Separate funding requested in accordance with decision 74/53

Proposed activities, implementation plan, and budgets¹³

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
1. National consultation workshop (Kick-off)	WB/NOU	Industry/legislators	Jan-18	Jan-18	10,000	Workshop conducted – workshop summary report	Introduction to Kigali Amendment
2. Review existing regulations to control and monitor import and export of HFCs and HFC-blends	WB/NOU	Legislators	Feb-18	Jun-18	10,000	Report with recommendations	Revision of regulations to enable control and monitor import and export of HFCs and HFC-blends
3. Training workshops for customs officers/DIW/importers/exporters	NOU/ customs department	Industry/legislators	Jan-19	Jun-19	30,000	Workshop conducted – workshop report	Capacity building of national stakeholders
4. Review ODS alternative survey, analysis and forecast baseline HFC consumption	WB/NOU	Industry/legislators	Jul-18	Aug-18	20,000	Model for forecast HFC consumption	Improve capacity to analyse HFC phase-down scenarios
5. Industry consultation workshops	WB/NOU	Industry (MAC, domestic refrigerator, Residential AC, solvent, fire fighting)	Jul-18	Mar-19	50,000	Workshop conducted – workshop report	Identification of potential technology pathway for each sector
6. Review of lower-GWP alternatives in each sector including assessment of commercial availability of alternatives and components	WB/NOU	Industry	Jun-18	Dec-18	30,000	Technical reports for each sector	

¹³ Indicative list and cost which can be subjected to change as deemed necessary

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
7. Development of phase-down scenarios, technology pathway, and draft strategy	WB/NOU	Industry/legislators	Jan-19	Apr-19	50,000	Draft strategy with recommendations for policy and regulatory actions to enable compliance	
8. National consultation workshop (draft strategy)	WB/NOU	Industry/legislators	Mar-19	Apr-19	10,000	Workshop conducted – workshop summary report	
9. Information dissemination on the Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	10,000		Information package
10. Public consultation for ratification of Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	20,000	National consultation report	Initial process before ratification of Kigali Amendment
11. National consultation workshop (ratification)	NOU	Parliament/legislators	May-19	Jun-19	10,000		Support by members of Parliament on the ratification bill
Total					250,000		

Institutional arrangements

Brief background of relevant agencies that will be involved in HFC enabling activities is summarized as follow:

- 1) Malaysia established the Ozone Protection Unit within the Department of Environment (DOE) to respond to mandates of the Montreal Protocol. The Ozone Protection Unit (OPU) within the Air Division of the Department of Environment, plays a lead role in the Government's sustained efforts to phase-out ODS in the country.
- 2) The OPU is also the Secretariat to the National Steering Committee (NSC) for the Protection of Ozone Layer that serves as an advisory body to the Government to provide strategic and policy guidance for implementation of the Montreal Protocol. The Chair of the NSC is the Secretary General of the Ministry of Natural Resources and Environment. There are various working groups for the implementation of Montreal Protocol in Malaysia and the OPU acts as their coordinating body.
- 3) Ministry of International Trade and Industry (MITI) administers the Application Import Permit System (AP System) which is one of the primary systems of controls on ODS. MITI, in consultation with DOW, set the import quota of ODS that can be imported in any year. The amount is reduced each year in line with the Montreal Protocol obligations.

Annex 3: HFC Enabling Activities for Philippines

Background

The Philippines is fully committed to the Montreal Protocol (MP). It signed the Protocol on September 14, 1988 and ratified both the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer in July 1991. As of 1 January 2010, the Philippines has fulfilled its commitment to phase out consumption of all controlled substances with the exception of hydrochlorofluorocarbons (HCFCs).

Various chemical and physical properties of HFCs and other alternatives make them suitable refrigerants and blowing agents. They also have several other industrial application-friendly properties like superior solvent abilities for which they're extensively used in various applications like fire-extinguishers, aerosols etc.

The main consumption of HFCs in the Philippines has been observed in the refrigeration and air-conditioning applications such as: unitary air-conditioning, chiller, domestic refrigerator, commercial and industrial refrigeration, transportation refrigeration. There are also HFC consumption in other sectors including: aerosol, fire fighting, foam, and solvent.

Preliminary results of ODS alternatives survey shows major import of HFCs in 2015 as summarized in table below.

HFC	Import (mt)
HFC-134a	1,064
R-410A	312
R-404A	170
R-507	30
R-407C	27
HFC-236fa	24
Other HFCs ¹⁴	12
Total	1,639

Objectives

The main objective for the proposed enabling activities is to enable Philippines to proceed with the ratification of the Kigali Amendment and make recommendations for policy and regulatory actions that would enable Philippines to be in compliance with the initial HFC phase-down obligations under the Amendment.

Proposed approach and activities

The proposed approach includes the following:

- (i) An assessment of existing domestic regulations pertaining to the ozone and climate protection in order to identify potential options to strengthen existing policy and regulatory framework to effectively control and monitor import, export, and use of HFCs. These regulations include: the Republic Act #6969, known as the "Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990" regulates, restricts, or prohibits the importation, manufacture, processing, sale, distribution, use, and disposal of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment; Chemical Control Orders (CCO); and Memorandum Circular No. 2005-03.
- (ii) Capacity building for DENR-EMB, POD, BOC, and others in order to strengthen their capacity

¹⁴ Include HFCs and HFC-blends with quantity less than 20 MT.

to extend existing licensing and quota systems for ozone depleting substances to cover HFCs, and to adapt existing Harmonized System (HS) of Custom Codes for tracking import/export of HFCs and HFC blends.

- (iii) Exploring synergy among various government agencies involved in ozone and climate protection with an aim to coordinate their efforts to control and monitor HFCs and to report HFC consumption and emissions to the relevant global environmental treaties (i.e. UNFCCC and Montreal Protocol).
- (iv) Review Philippines ODS alternatives survey and analyze to forecast the baseline HFC consumption level (average consumption between 2020 and 2022) and consumption beyond 2022 based on business as usual through intensive consultation with government, industry and NGOs. The HFC consumption projection would then be compared with the maximum level allowed by the Kigali Amendment. This would provide guidance for the Government of Philippines with regard to timing and compliance concerns.
- (v) Based on the forecasted baseline HFC consumption and use, a list of alternative technologies for respective sectors will be developed. Consultations with stakeholders to determine appropriate alternative technologies for the Philippines context would be carried out. All alternative technologies that are currently commercially available as well as emerging technologies and expected timeframe for these technologies would become commercially available should be considered.
- (vi) Develop a draft strategy highlighting different phase-down scenarios for Philippines to proceed with ratification and to be in compliance with short-term, medium-term, and long-term commitments with the Kigali Amendment. The strategy should include recommendations for policy and regulatory actions to enable Philippines to proceed with the ratification and those that would enable Philippines to be in compliance with the Amendment. In addition, the strategy should provide comprehensive analyses for Philippines' technology pathway for complying with the Amendment.

Impact on HCFC phase-out projects implementation

The implementation of the enabling activities is not expected to delay implementation of stage II of the HCFC phase-out management plan in Philippines¹⁵.

¹⁵ Stage II HPMP of Philippines is being considered at the 80th ExCom.

Proposed activities, implementation plan, and budgets¹⁶

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
12. National consultation workshop (Kick-off)	WB/NOU	Industry/legislators	Jan-18	Jan-18	10,000	Workshop conducted – workshop summary report	Introduction to Kigali Amendment
13. Review existing regulations to control and monitor import and export of HFCs and HFC-blends	WB/NOU	Legislators	Feb-18	Jun-18	10,000	Report with recommendations	Revision of regulations to enable control and monitor import and export of HFCs and HFC-blends
14. Training workshops for customs officers/DIW/importers/exporters	NOU/ customs department	Industry/legislators	Jan-19	Jun-19	30,000	Workshop conducted – workshop report	Capacity building of national stakeholders
15. Review ODS alternative survey, analysis and forecast baseline HFC consumption	WB/NOU	Industry/legislators	Jul-18	Aug-18	20,000	Model for forecast HFC consumption	Improve capacity to analyse HFC phase-down scenarios
16. Industry consultation workshops	WB/NOU	Industry (MAC, domestic refrigerator, Residential AC, solvent, fire fighting)	Jul-18	Mar-19	50,000	Workshop conducted – workshop report	Identification of potential technology pathway for each sector
17. Review of lower-GWP alternatives in each sector including assessment of commercial availability of alternatives and components	WB/NOU	Industry	Jun-18	Dec-18	30,000	Technical reports for each sector	

¹⁶ Indicative list and cost which can be subjected to change as deemed necessary

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
18. Development of phase-down scenarios, technology pathway, and draft strategy	WB/NOU	Industry/legislators	Jan-19	Apr-19	50,000	Draft strategy with recommendations for policy and regulatory actions to enable compliance	
19. National consultation workshop (draft strategy)	WB/NOU	Industry/legislators	Mar-19	Apr-19	10,000	Workshop conducted – workshop summary report	
20. Information dissemination on the Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	10,000		Information package
21. Public consultation for ratification of Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	20,000	National consultation report	Initial process before ratification of Kigali Amendment
22. National consultation workshop (ratification)	NOU	Senate/Office of the President	May-19	Jun-19	10,000		Support by members of Senate and Office of the President on the ratification bill
Total					250,000		

Institutional arrangements

Brief background of relevant agencies that will be involved in HFC enabling activities is summarized as follow:

- 1) **Environmental Management Bureau (EMB):** the **Department of the Environment and Natural Resources (DENR)**' **EMB** acts as the focal point for the implementation of the Montreal Protocol in the Philippines. Under Department Administrative Order No. 2003-43, the **Philippine Ozone Desk (POD)** was created in 1994 to facilitate and coordinate ODS phase-out projects and policies for overall implementation of Montreal Protocol obligations.
- 2) **Project Management Unit (PMU):** PMU was also created in 2014 to spearhead HCFC phase-out activities and to carry out the work programs of HPMP Stage I and its subsequent implementation. The HPMP-PMU remains as the focal office in the preparation and implementation of HPMP Stage II and ensures proper coordination with all concerned stakeholders including donor agencies.
- 3) **Bureau of Customs (BOC):** BOC is responsible for implement/enforce relevant rules and regulations related to the import, export, transport, processing, storage, possession or sale of ODS and its alternatives. BOC designated the Environmental Protection Unit (EPU) under the Office of the Deputy Commissioner for Intelligence and Enforcement Group (IEG) to be in-charge in the implementation of the agreement and act as the official liaison to DENR-EMB through the POD.
- 4) Other actors taking part in the institutional framework for Montreal Protocol implementation are DENR-EMB and its Regional Offices, Department of Trade and Industry (DTI) and its Fair Trade Enforcement Bureau, Technical Education and Skills Development Authority (TESDA) at the Department of Labor and Employment, and Local Government Units-LGUs under the Department of Interior and Local Government and its Business Permits and Licensing Offices.

Annex 4: HFC Enabling Activities for Thailand

Background

The Government of Thailand is fully committed to the Montreal Protocol and the Climate Change Convention. In particular, substances controlled by the Montreal Protocol are widely used as refrigerants for air-conditioning and refrigeration systems. Thailand is one of the largest manufacturing hubs in Southeast Asia given its central location and market access for the 600-million consumers in the ASEAN Economic Community (AEC) and supported by relatively good infrastructure and business environment. Thailand is the second largest residential air-conditioning manufacturing base in East Asia with annual output of 17 million units in 2016. Major refrigerants used in air-conditioners are either hydrochlorofluorocarbon (HCFC) or hydrofluorocarbon (HFC). Its automotive industry is the largest in Southeast Asia and 12th largest in the world with an annual output of nearly 2 million vehicles in 2015. Almost all passenger cars and trucks are equipped with mobile air-conditioners where HFC is used as refrigerant. Thailand also produces 5-6 million units of domestic refrigerator of which about 2 million units were sold in domestic market and the rest in export markets. These refrigerants have global warming potential (GWP) more than thousand times of carbon dioxide. HFC phase-down which is the objective of the Kigali Amendment is therefore relevant to the future economic development of Thailand.

Preliminary results of ODS alternatives survey shows major import of HFCs in 2015 as summarized in table below.

HFC	Import (mt)
R-410A	9,289
HFC-134a	4,505
HFC-32	1,148
R-404A	347
HFC-152a	112
R-407C	111
Other HFCs ¹⁷	155
Total	15,667

Objectives

The main objective for the proposed enabling activities is to enable Thailand to proceed with the ratification of the Kigali Amendment and make recommendations for policy and regulatory actions that would enable Thailand to be in compliance with the initial HFC phase-down obligations under the Amendment.

Proposed approach and activities

The proposed approach includes the following:

- (i) An assessment of existing domestic regulations pertaining to the ozone and climate protection in order to identify potential options to strengthen existing policy and regulatory framework to effectively control and monitor import, export, and use of HFCs.
- (ii) Capacity building for Department of Industrial Works, Customs Department, and others in order to strengthen their capacity to extend existing licensing and quota systems for ozone depleting substances to cover HFCs, and to adapt existing Harmonized System (HS) of Custom Codes for

¹⁷ Include HFCs and HFC-blends with quantity less than 100 MT.

tracking import/export of HFCs and HFC blends.

- (iii) Exploring synergy among various government agencies involved in ozone and climate protection with an aim to coordinate their efforts to control and monitor HFCs and to report HFC consumption and emissions to the relevant global environmental treaties (i.e. UNFCCC and Montreal Protocol).
- (iv) Review Thailand ODS alternatives survey and analyze to forecast the baseline HFC consumption level (average consumption between 2020 and 2022) and consumption beyond 2022 based on business as usual through intensive consultation with government, industry and NGOs. The HFC consumption projection would then be compared with the maximum level allowed by the Kigali Amendment. This would provide guidance for the Government of Thailand with regard to timing and compliance concerns.
- (v) Based on the forecasted baseline HFC consumption and use, a list of alternative technologies for respective sectors will be developed. Consultations with stakeholders to determine appropriate alternative technologies for the Thailand context would be carried out. All alternative technologies that are currently commercially available as well as emerging technologies and expected timeframe for these technologies would become commercially available should be considered.
- (vi) Develop a draft strategy highlighting different phase-down scenarios for Thailand to proceed with ratification and to be in compliance with short-term, medium-term, and long-term commitments with the Kigali Amendment. The strategy should include recommendations for policy and regulatory actions to enable Thailand to proceed with the ratification and those that would enable Thailand to be in compliance with the Amendment. In addition, the strategy should provide comprehensive analyses for Thailand's technology pathway for complying with the Amendment.

Impact on HCFC phase-out projects implementation

The implementation of the enabling activities would not delay implementation of HCFC phase-out projects in Thailand.

Proposed activities, implementation plan, and budgets¹⁸

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
1. National consultation workshop (Kick-off)	WB/NOU	Industry/legislators	Jan-18	Jan-18	10,000	Workshop conducted – workshop summary report	Introduction to Kigali Amendment
2. Review existing regulations to control and monitor import and export of HFCs and HFC-blends	WB/NOU	Legislators	Feb-18	Jun-18	10,000	Report with recommendations	Revision of regulations to enable control and monitor import and export of HFCs and HFC-blends
3. Training workshops for customs officers/DIW/importers/exporters	NOU/ customs department	Industry/legislators	Jan-19	Jun-19	30,000	Workshop conducted – workshop report	Capacity building of national stakeholders
4. Review ODS alternative survey, analysis and forecast baseline HFC consumption	WB/NOU	Industry/legislators	Jul-18	Aug-18	20,000	Model for forecast HFC consumption	Improve capacity to analyse HFC phase-down scenarios
5. Industry consultation workshops	WB/NOU	Industry (MAC, domestic refrigerator, Residential AC, solvent, fire fighting)	Jul-18	Mar-19	50,000	Workshop conducted – workshop report	Identification of potential technology pathway for each sector
6. Review of lower-GWP alternatives in each sector including assessment of commercial availability of alternatives and components	WB/NOU	Industry	Jun-18	Dec-18	30,000	Technical reports for each sector	

¹⁸ Indicative list and cost which can be subjected to change as deemed necessary

Activities	Responsible entity	Target group	Start date	Date of completion	Tentative Budget (US \$)	Milestones	Expected outputs
7. Development of phase-down scenarios, technology pathway, and draft strategy	WB/NOU	Industry/legislators	Jan-19	Apr-19	50,000	Draft strategy with recommendations for policy and regulatory actions to enable compliance	
8. National consultation workshop (draft strategy)	WB/NOU	Industry/legislators	Mar-19	Apr-19	10,000	Workshop conducted – workshop summary report	
9. Information dissemination on the Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	10,000		Information package
10. Public consultation for ratification of Kigali Amendment	NOU	Public/industry / legislators	Apr-19	May-19	20,000	National consultation report	Initial process before ratification of Kigali Amendment
11. National consultation workshop (ratification)	NOU	Parliament/legislators	May-19	Jun-19	10,000		Support by members of Parliament on the ratification bill
Total					250,000		

Institutional arrangements

Brief background of relevant agencies that will be involved in HFC enabling activities is summarized as follow:

- 5) **Ministry of Finance (MOF):** MOF is the designated focal point for World Bank projects in Thailand. All grant agreements between Thailand and the World Bank are signed by MOF on behalf of Thailand. Moreover, the Customs Department under the MOF has a vital role in monitoring imports and exports of HCFC. The Customs Department has worked with the Department of Industrial Works for more than a decade in controlling imports and exports of CFCs. It has recently extended its cooperation with the Department of Industrial Works to cover imports and exports of HCFCs.
- 6) **Ministry of Industry (MOI):** MOI is the designated agency for the implementation of the Montreal Protocol. It is also in charge of the development and implementation of national industrial policies and regulations including the Hazardous Substances Act and the Factory Act. These framework laws are employed for controlling import, transport, storage, use, and final disposal of ODS.
- 7) **Department of Industrial Works (DIW):** MOI has appointed DIW to serve as the national focal point for the implementation of the Montreal Protocol. DIW is tasked with enforcement of the Hazardous Substances and Factory Acts. DIW houses the key units including NOU and the PMU which are responsible for the implementation of MLF funded activities.
- 8) **Treaties and International Strategies Bureau (TISB):** TISB is a bureau under DIW with a mandate for developing industrial strategies in relation to global environment treaties. Its responsibilities under the project include: determining overall annual import quotas of HCFCs, verifying annual HCFC consumption, reconciling import data from the Customs Department and data recorded by the Hazardous Substances Control Bureau (HSCB) and other activities required by the Montreal Protocol. TISB will be supported by the National Ozone Unit, which has been funded by the MLF for the last 21 years, and DIW-PMU.
- 9) **Hazardous Substances Control Bureau (HSCB):** HSCB is a bureau under DIW, which has the legal mandate to issue import permits for all hazardous substances. For HCFC control, HSCB is responsible for allocating the overall annual import quotas as determined by TISB to each importer and for issuing import/export permits to eligible importers/exporters. HSCB will also be in charge of monitoring actual imports/exports made by importers/exporters and recording the actual import/export quantities reported by all importers/exporters. The data collected by HSCB and import records maintained by Customs Department will be used by TISB to conduct independent verification of annual consumption as required by the agreement between the Executive Committee of the Multilateral Fund.
- 10) **National Ozone Unit (NOU):** The NOU was established in 1992 within DIW. Its main responsibility is to ensure Thailand's compliance with its obligations under the Montreal Protocol especially monitoring import/export of ODSs, implementing import quota system of ODSs and liaising with other government agencies including the Customs Department to ensure the effective control of the borders to preempt any illegal shipments of ODS in and out of the country. Moreover, the NOU is also tasked to comply with Article 7 data reporting requirements and submit Progress Reports on the

Implementation of the Country Program on an annual basis, carry out public awareness activities, information exchange with stakeholders in the country, including both public and private sectors, and stakeholders in other Article 5 countries within the region and participate in all international meetings related to the Montreal Protocol.

- 11) **DIW Project Management Unit (DIW-PMU):** The DIW-PMU will be responsible for day to day operations including overseeing the implementation of technical assistance activities. DIW-PMU will review and determine the eligibility of the enterprise for sub-project financing following criteria established by the MLF and agreed to by the Bank and provide advice to beneficiary enterprises in preparing their subproject proposals. In addition, DIW-PMU will assist DIW in putting into place both overarching regulations and sector specific regulations and policies and engaging with the Foam Association and Air-Conditioning and Refrigeration Industry Club of the Federation of Thai Industries to ensure full cooperation of the industry in reducing its consumption of HCFCs and inform the industry of financial and technical assistance available from the Project. DIW-PMU will also be responsible for reporting requirements as detailed in the Project Implementation Manual.
- 12) **Customs Department:** Customs Department is responsible to check import of any banned substances into the country and keep a track of all controlled substances as notified by the government entered through or departed from port or check point. In order to proceed with import/export clearance, the importer/exporter is required to furnish Customs Department with the original import/export permit and approved import/export declaration form from DIW.

Annex 5: Request for project preparation for conversion of HFC to lower-GWP refrigerant at Pattana Intercool and System Forms.

1. The Government of Thailand has requested the Bank to prepare an investment project for conversion from HFC to HFO-based alternatives in the manufacturing of commercial refrigeration equipment at Pattana Intercool Co., Ltd. And System Forms Co., Ltd. in response to Decision 79/45.
2. Pattana Intercool and System forms are manufacturers of commercial refrigeration equipment for restaurants, supermarkets, convenience stores, etc. They produce a variety of commercial refrigeration equipment for low and medium temperature applications. The two companies consumed approximately 35 MT of HFC-134a and small quantity of R-404A and R-507.
3. The Bank is requesting \$40,000 to prepare project proposal for submission to the 81st ExCom meeting. At the time of project submission, the proposal will identify the selected mature technology and confirm the quantities of HFCs that will be phased out.
4. The estimated breakdown of preparation cost is shown in table below.

ACTIVITIES	COST (US \$)
International Expert	\$22,000
National Consultant	5,000
International Travel	\$10,000
Domestic Travel	\$3,000
Total	\$40,000