PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: 85057

Project Name	Thailand HCFC Phaseout Project (Phase I)
Region	EAST ASIA AND PACIFIC
Country	Thailand
Sector(s)	Other industry (90%), Central Government Administration (10%)
Theme(s)	Pollution management and environmental Health (50%), Environmental Policies and Institutions (50%)
Lending Instrument	Investment Project Financing (OTF Grant)
Project ID	P115761
Borrower(s)	Ministry of Finance
Implementing Agency	Department of Industrial Works (DIW)
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	10 February-2014
Date PID Approved/Disclosed	
Estimated Date of RVP Approval	31-March-2014
Decision	
Other Decision	

I. Project Context

Country Context

1. Thailand is a large importer of hydrofluorocarbons (HCFCs), with a total of 16,890 metric tonnes of HCFCs imported in 2010. Over the last five years, six different types of HCFCs were imported for use in the foam, air-conditioning and refrigeration, servicing and solvents sectors. However, as is the case in most Article 5 countries, the two HCFCs most predominantly in use are HCFC-22 and HCFC-141b (more than 90% of the total HCFCs imported). Thailand has no production capacity for any HCFCs controlled by the Montreal Protocol (MP).

2. The impact of the phase-out on Thailand's economy has the potential to be significant; particularly since HCFC consumption is closely linked to the country's important export-oriented, manufacturing base of electronics, air-conditioners, and refrigeration. Thailand is one of the largest manufacturers and exporters of residential air-conditioners (more than 10 million units a year) and this sector alone consumed more than 12,000 metric tonnes of HCFCs in 2010.

3. Because Thailand has an export-oriented economy and is sensitive to external market forces, it has, in fact, already phased out HCFC141b on its own in domestic refrigeration and eliminated a large part of HCFC-22 in cold storage. However, for other sectors, technological, economic and financial barriers have kept Thailand, particularly the local small-and-medium scale industries, from transitioning to the latest technologies, where available. This is a significant challenge to the Government of Thailand's ability to comply with the 2013, 2015 and 2018 Montreal Protocol obligations.

Sectoral and Institutional Context

4. Thailand received funding from the Multilateral Fund for the Implementation of the Montreal Protocol (MLF) to prepare an HCFC Phase-out Management Plan (HPMP), which provides a detailed picture of HCFC consumption and uses by substance and product. The HPMP also presents patterns of growth and identifies priority sectors to receive MLF funding in order for Thailand to achieve its reduction targets for Stage 1 (2013, 2015, and 2018).

Table 2: Montreal Protocol (MP) Obligations for Thailand

	Consumption Reduction Targets	Consumption Limit (ODP tons)	
		MP Requirements	As per Agreement between Thailand and ExCom (HPMP Phase I)
2013	Freeze at baseline level (2009-2010 average)	927.6	927.6
2015	Reduction to 90% of the baseline	834.8	834.84
2018	Interim reduction step as per the agreement between Thailand and Executive Committee	834.8	788.46[1]
2020	Reduction to 65% of the baseline	602.9	
2025	Reduction to 32.5% of the baseline	301.5	
2030	Reduction to 2.5% of baseline[2]	23.2	
2040	Complete phase-out of HCFCs	0	

5. The HPMP reveals that Thailand's sector distribution of HCFC use is concentrated in manufacturing foam products and air-conditioning and refrigeration equipment, and for servicing installed equipment. Consumption of HCFC-141b and HCFC-225 as solvents exists at a much smaller scale, as does HCFC-123 for installation and for servicing of large commercial air-conditioning systems. There was sporadic, low-level consumption of HCFC-224 and HCFC-142b across the last five years.

[1] Additional requirement of the Executive Committee of the Multilateral Fund as part of the Agreement for the HCFC Phase-out Project between Thailand and the Executive Committee to reduce HCFC consumption by 15% of the baseline by 2018.

[2] Per the MP, the annual consumption averaged over the ten years from 2030 to 2040 should not exceed 2.5% of the baseline and this quantity is allowed only for the purpose of servicing the remaining fleet of HCFC-dependent equipment

Table 3: HCFC Consumption in Thailand: 2006-2012**

	2006	2007	2008	2009	2010	2011*	2012	Baseline
Consumption (ODP tonnes)	869.6	873.0	900.5	826.6	1028.5	811.3	1154.6	927.6

Note: Baseline consumption level is the average consumption from 2009 -2010.
*Consumption for 2011 is significantly lower due to slow down in production due to the flood.

6. To meet the Phase I reduction targets in Table 2, Thailand is required to reduce its HCFC consumption from 1,155 ozone depleting potential (ODP) tonnes in 2012 to 788.46 ODP tonnes (85% of the baseline consumption) by 2018. This represents a reduction of 366 ODP tonnes. To achieve these targets, Thailand will employ a strategy to control the supply of HCFCs via: (i) its import quota system; (ii) reduce the demand for HCFCs through project financed technical assistance and investments for beneficiary enterprises to convert to non-HCFC; and (iii) implementing policy and regulatory measures to restrict the use of HCFCs in the key HCFC consuming sectors. The annual import quota consistent with the targets shown in Table 2 has already been implemented since January 2013.

7. The two key HCFC consuming sectors to be addressed under this Project are the foam and air conditioning sectors. The foam sector, which uses HCFC-141b – the HCFC with the highest ODP, provides the greatest phase-out coverage needed and has less technological hurdles in comparison to other sectors, with the exception of spray foam where alternatives are limited. The air-conditioning sector provides the greatest opportunity not only for reducing HCFC consumption, but also for avoiding carbon dioxide (CO_2) emissions because of the large potential gains in energy efficiency when converting from HCFC-22.

8. On the policy side, by 2015, the Government of Thailand will ban the use of HCFC-141b in all foam applications, except spray foam where alternatives are not available. Moreover, the Government of Thailand has decided to impose a ban on manufacturing HCFC-22 based air-conditioners for the domestic market in 2017 in order to reduce the HCFC demand and to catalyze change to more energy-efficient technologies while meeting MP targets. A dominant alternative technology, in fact, exists, R-410A; however, due to the high global warming potential (GWP) of R-410A this chemical could be subject to international control in the near future. Most Thai-owned air-conditioner manufacturers decided to adopt HFC-32 which has lower GWP and this technology is being deployed in Japan, China, India and Indonesia. The decision of the Thai-owned air-conditioner manufacturers has led to subsequent decisions of the multinational companies to also introduce HFC-32 air-conditioners, to replace their HCFC-22 and HFC-410A products, in the Thai market.

9. While the investment interventions in the foam and air-conditioning manufacturing sectors financed by this Project will contribute to the direct phase-out of 209 ODP tonnes, an additional phase-out of 157.22 ODP tonnes will be attributed to reduced demand for HCFCs in the servicing sector due to early introduction of new non-HCFC products, and HCFC phase-out from multinational companies whose phase-out is not eligible for financing from the Multilateral Fund.

II. Project Development Objective(s)/Global Environmental Objective(s)

Project Development Objective(s)

10. The Project Development Objective (PDO) is to reduce HCFC consumption in the air-conditioning and foam sectors in order to contribute to Thailand's efforts to meet its HCFC consumption phase-out obligations under the first phase of the program (2014-2018).

11. The Project will be the first in a Series of Projects (SOP) whose overarching objective is to contribute to Thailand's efforts to reduce its HCFC consumption in accordance with the Montreal Protocol phase-out schedule leading to a complete phase-out by 2040.

III. Project Description

Component Name

Investment in HCFC Consumption Reduction

Comments (optional)

Provide financing to air conditioning and foam sectors to convert to non-HCFC based technology in order to contribute towards meeting Thailand's obligations under the First Phase of HPMP

Component Name

Technical Assistance

Comments (optional)

Covers Technical assistance to be provided to AC and foam sectors to build capacity in the country on the use/maintenance of the new technology; Development of training programs for the servicing sector for inclusion in the curricula of technical/vocational schools;

Component Name

Project Management

Comments (optional)

Will support activities to strengthen the institutional capacity of PMUs for project implementation through Consultant's Service, Goods, Non-Consulting Services, Training, Workshops including the provision of Incremental Operating Costs

Component Name

Strengthening of the National Ozone Unit

Comments (optional)

Will support activities to strengthen the institutional capacity of NOU through Consultant's Service, Goods, Non-Consulting Services, Training, Workshops including the provision of Incremental Operating Costs

IV. Financing (in USD Million)

Total Project Cost:	33.82	Total Bank Financing:	
Financing Gap:	0.00		
Financing Source			**Amount**
Borrower			9.91
International Bank for Reconstruction and Development			
Ozones Project Trust Fund (OTF)			23.92
Total			33.82

V. Implementation

A. Institutional and Implementation Arrangements

12. The Government of Thailand appointed the Ministry of Industry as the responsible agency for the implementation of the Montreal Protocol and its amendments. The Department of Industrial Works (DIW), under the Ministry of Industry was, in turn, designated as the national focal point and implementing agency for this project. DIW will oversee project implementation and coordination particularly among government agencies and the industry. DIW will be responsible for providing technical input for engagement of consultants for some technical assistance activities including the Project Management Unit (PMU). Qualified consultants will be hired to support DIW with overall coordination of the project. The PMU will be housed in DIW and will undertake all day-to-day functions of the Project. DIW-PMU will serve as implementing agency and will manage grant funds for Components 2 (a) – (c), 3 (a), 3 (b) and 4 of the Project.

13. In addition, DIW houses the National Ozone Unit whose main responsibility is to ensure the country's compliance with its obligations under the Montreal Protocol. The Treaties and International Strategies Bureau (TISB) is responsible for determining the overall import quotas for HCFCs. The Hazardous Substances Control Bureau (HSCB) is responsible for allocating the overall annual import quotas issued by TISB to each importer. HSCB is also responsible for monitoring actual imports/exports made by importers/exporters and reporting back to TISB as part of its facilitation role for reporting under Article 7 data and the consumption verification to be conducted by the Project. The import/export of HCFC is also enforced by the Customs Bureau to ensure that only HCFC shipment with license issued by HSBC is allowed for import/export. These agencies will provide a system of check and balance to ensure effective control of the imports/exports of HCFC.

14. The Government Savings Bank (GSB) will be responsible for activities under Components 1, 2 (d), 2 (e), and 3 (c) of the Project. GSB is currently the financial agent for the previous ODS Phaseout Project. The same unit of GSB managing the ODS Phaseout Project, the Environment Conservation and Protection Unit, will be strengthened in order to effectively support the implementation of the new project DIW and GSB will be responsible for

submission of financial reports and for appointing an external auditor as required by the Bank.

15. The Ministry of Finance (MOF) will enter into a US$23.92 million grant agreement with the World Bank. The implementation of Thailand Phase I HPMP will start in early 2014 to ensure full compliance with phase-out obligations and desired project impacts attributed to interventions from the project. Upon receipt of grant proceeds, MOF, DIW and GSB will enter into subsidiary agreements, which describe their roles and responsibilities under the project.

16. Enterprises will submit their subproject proposals to request grant funds for the conversion to GSB with a copy to DIW-PMU. DIW-PMU will determine the eligibility of the enterprises based on their establishment date and compliance with MLF criteria. Once eligibility is confirmed, GSB-PMU will review the subproject proposals and supporting documents, verify HCFC consumption, appraise and confirm the technical and financial feasibility of the proposals and recommend the appropriate level of funding. GSB will enter into sub-grant agreements with the beneficiary enterprises and will be responsible for monitoring and reporting implementation progress of sub-grant activities.

17. A Project Implementation Manual (PIM) has been prepared to provide guidance on day to day operations. The guidance covers funding and eligibility criteria, procedures and arrangements for implementing the Project, including procurement, financial management, reporting, sub-grant processing, verification and payment mechanisms, and monitoring and evaluation.

18. Technical assistance activities will be undertaken under the oversight of DIW-PMU or GSB-PMU which may partner with various government agencies such as the Thailand Industrial Standards Institute (TISI), Department of Skills Development (DSD), Office of Vocational Education Commission (OVEC); Bangkok Metropolitan Administration (BMA), Department of Public Works and Town and Country Planning and the Department of Alternative Energy Development and Efficiency (DEDE), and etc. The Federation of Thai Industries will provide technical information on the technology options to the relevant industry, enterprises and DIW. It will also provide coordination functions to assist its members to conduct HCFC phase-out under the Project.

B. Results Monitoring and Evaluation

19. **Monitoring and Evaluation.** The key to the success of the project lies mainly in an effective monitoring system that will ensure full compliance of all beneficiaries with agreed project milestones. DIW will closely monitor HCFC imports and exports, if any, against the allowable quotas within the calendar year.

20. **Reporting Framework.** The reporting framework for the project will be at three levels:

(a) **Overall Program Reporting Level** – The Bank will be responsible for submitting overall program reports on behalf of Thailand as defined in the agreement between Thailand and the MLF Executive Committee (ExCom). With the assistance of

DIW, the Bank will submit the consumption verification reports to the ExCom on behalf of Thailand to confirm its compliance with the agreed targets for 2013 – 2017 on an annual basis. The consumption verification will be conducted by independent technical auditors engaged by DIW.

(b) **Project Reporting Level** – Two sets of project level reporting will carried out under the project:

(i) Financial reports which include semi-annual interim unaudited financial reports (IFRs) to be submitted to the Bank by February 15 and August 15 of each calendar year; and annual audited financial reports of the project designated accounts prepared by independent qualified financial auditors and submitted to the Bank by June 30 on a calendar year basis; and

(ii) Implementation reports which include annual work programs, which detail achievements of the previous year, a complete overview of activities of all project components to be carried out within the following calendar year including annual budgets and proposed fund allocation for each activity, and disbursement progress; semi-annual progress reports prepared based on the format agreed to by the Bank, which should be available to the Bank by February 15 and August 15 of each calendar year; the HPMP project completion report for the Project describing expenditures incurred by the Project, major experience and lessons learned, overall achievement of the Project, implementation of disposal plans, beneficiaries' satisfaction, performance of DIW, GSB, and the Bank, six months after the closing date of the grant agreement and other reports as required by the ExCom.

DIW and GSB will each prepare their respective financial reports and semi-annual progress reports. The annual work program and HPMP project completion reports will be prepared by DIW with input from GSB.

(c) **Subproject Reporting Level** – Subproject appraisal reports and completion reports will be prepared by GSB in close cooperation with beneficiaries. In addition, DIW will prepare institutional strengthening, renewal and terminal reports in accordance with the ExCom's requirements.

C. Sustainability

21. To ensure sustainability of project outcomes, DIW, through its Hazardous Substances Act will impose HCFC import quotas on foam and air conditioning sectors. Adherence to these quotas will be monitored closely, the level of phase out verified periodically and quotas adjusted accordingly in order to comply with its HCFC phaseout targets. DIW will liaise and coordinate with the Customs Department in monitoring consumption. This is similar to the system employed under the Chlorofluorocarbon (CFC) Phase-out Project.

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04		X
Forests OP/BP 4.36		X
Pest Management OP 4.09		X
Physical Cultural Resources OP/BP 4.11		X
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12		X
Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Comments (optional)

VII. Contact point

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