Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: 99098-TH

PROJECT PAPER

FOR

SMALL RETF GRANT

(US$3.0 MILLION EQUIVALENT)

TO THE

KINGDOM OF THAILAND

FOR A

PARTNERSHIP FOR MARKET READINESS

August 31, 2015

Environment & Natural Resources Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of September 15, 2014)

Currency Unit: US Dollar

USD 1.00 = THB 32.27

THB 1.00 = USD 0.031

ROYAL THAI GOVERNMENT - FISCAL YEAR
October 1 – September 30

ABBREVIATIONS AND ACRONYMS

AEDP	Alternative Energy Development Plan
CAS	Country Assistance Strategy
CDM	Clean Development Mechanism
CDM-DNA	CDM Designated National Authority
CEETI	City Energy Efficiency Transformation Initiative
CER	Certified Emission Reduction
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DEDE	Department of Alternative Energy Development and Efficiency
DF&Bs	Designated Factories and Buildings
EE	Energy Efficiency
EEDP	Energy Efficiency Development Plan
EGAT	Electricity Generating Authority of Thailand
ENCON Act	Energy Conservation Promotion Act
EPC	Energy Performance Certificate
ETS	Emission Trading Scheme
FM	Financial Management
FPO	Fiscal Policy Office
GHG	Greenhouse Gas
KP	Kyoto Protocol
kWh	Kilowatt-hour
KTOE	Kilo-tons of Oil Equivalent
LCC	Low Carbon City
LED	Light-emitting Diode
MEA	Metropolitan Electricity Authority
MOEN	Ministry of Energy
MOF	Ministry of Finance
MONRE	Ministry of Natural Resources and Environment
MRP	Market Readiness Proposal
MRV	Monitoring, Reporting and Verification
NAMAs	Nationally Appropriate Mitigation Actions
NCCC	National Committee on Climate Change Policy

NESDB	National Economic and Social Development Board
NESDP	National Economic and Social Development Plan
OAG	Office of Auditor General
ONEP	Office of Natural Resources and Environmental Policy and Planning
PA	Partnership Assembly
PDD	Project Design Document
PDMO	Public Debt Management Office
PDO	Project Development Objective
PEA	Provincial Electricity Authority
PMU	Project Management Unit
PMR	Partnership for Market Readiness
PRE	Personnel Responsible for Energy
RE	Renewable Energy
RES	Renewable Energy Sources
RTG	Royal Thai Government
SEC	Specific Energy Consumption
SNC	Second National Communication
T-VER	Thailand Voluntary Emission Reduction Program
TA	Technical Assistance
tCO_2e	Ton of Carbon Dioxide equivalent
TGO	Thailand Greenhouse Gas Management Organization (Public Organization)
toe	Ton of Oil Equivalent
TRACE	Tool for Rapid Assessment of City Energy
UNFCCC	United Nations Framework Convention on Climate Change

Regional Vice President:	Axel van Trotsenburg
Country Director:	Ulrich Zachau
Senior Global Practice Director:	Paula Caballero
Director:	Bilal H. Rahill
Practice Manager:	Iain Shuker
Task Team Leader:	Waraporn Hirunwatsiri

The Kingdom of Thailand
Partnership for Market Readiness

TABLE OF CONTENTS

Page

DATA SHEET

The Kingdom of Thailand

Partnership for Market Readiness

Small RETF Grant Project Paper

East Asia and Pacific Region

GENDR

Basic Information

Date:	August 31, 2015	Sectors:	General Energy Sector (50%), General Industry and Trade Sector (50%)
Country Director:	Ulrich Zachau	Themes:	Climate Change (100%)
Practice Manager:	Iain Shuker	EA Category:	B
Project ID:	P128965		
Instrument:	Investment Project Financing		
Team Leader(s):	Waraporn Hirunwatsiri		

Recipient: Kingdom of Thailand

Executing Agency: Thailand Greenhouse Gas Management Organization (TGO)

Contact:	Ms. Prasertsuk Chamornmarn	Title:	Executive Director
Telephone No.:	(66) 2-141-9805	Email:	sertsuk@tgo.or.th

Project Implementation Period: Start Date: October 1, 2015 End Date: December 31, 2018

Expected Effectiveness Date: October 1, 2015

Expected Closing Date: December 31, 2018

Project Financing Data(US$M)

[ ]	Loan	[x]	Grant	[]	Other
[ ]	Credit	[ ]	Guarantee		

For Loans/Credits/Others

Total Project Cost :	5.79	Total Bank Financing :	3.0
Total Co-financing :	2.79	Financing Gap :	0

Financing Source	Amount(US$M)
BORROWER/RECIPIENT	2.79
IBRD	
IDA: New	
IDA: Recommitted	
Others – PMR Grant	3.0
Financing Gap	
Total	5.79

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018					
Annual	0.04	1.31	1.32	0.33					
Cumulative	0.04	1.35	2.67	3.00[1]					

Project Development Objective(s)

The PDO is to provide selected technical and analytical support to Thailand that informs policy decisions to develop readiness of market-based instruments to reduce greenhouse gas (GHG) emissions in Thailand.

Components

Component Name	Cost (USD Millions)
Component 1: Preparation of key market components of the Energy Performance Certificate (EPC) Scheme	1.6
Component 2: Development of Local GHG Abatement Plans and a study on pricing mechanism of LCC Program	0.7
Component 3: Policy recommendations on legal framework to establish the Emission Trading Scheme (ETS)	0.4
Component 4: Project management	0.3

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [x]
Does the project require any exceptions from Bank policies?	Yes [ ]	No [x]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy exception sought from the Board?	Yes [ ]	No [x]
Does the project meet the Regional criteria for readiness for implementation?	Yes [x]	No [ ]

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 Waters OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

Legal Covenants

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (a)	x	N/A	At all times during the implementation of the Project

[1] The disbursement will reach a peak in the third year, while that of the MRP does at the second year. So, there might be some change in the plan.

Description of Covenant

The Recipient shall vest in TGO the overall responsibility for the implementation of the Project, and shall maintain, at all times during the implementation of the Project, staff and resources for such purpose, satisfactory to the World Bank.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (b)	X	N/A	At all times during the implementation of the Project

Description of Covenant

The Recipient shall ensure that TGO maintains the PMR Steering Committee, which shall be responsible for overseeing the implementation of the Project, including providing recommendations for developing market-based, carbon market and other mechanisms to support GHG mitigation, appointing working groups to support the work of the PMR Steering Committee, and reporting on the progress of Project implementation to the Board of TGO.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (c)	X	N/A	At all times during the implementation of the Project

Description of Covenant

The Recipient shall, to facilitate the implementation of Part 1 of the Project, ensure that TGO carries out its obligations under the MOU and in accordance with terms and conditions acceptable to the World Bank. In the case of any conflict between the provisions of the MOU and the provisions of this Agreement, the provisions of this Agreement shall prevail.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (d)	X	Not later than thirty (30) days from the Agreement effectiveness	Once

Description of Covenant

The Recipient shall, no later than thirty (30) days from the effectiveness of Grant Agreement, establish a Project Management Unit (PMU) for the overall management of the project. The Executive Director and the Director of the TGO's Review and Monitoring Office shall be appointed as the Project Director and Project Manager, respectively, and will be responsible for the overall organization, including procurement and financial management, and daily operation as well as coordination with other relevant stakeholders, ministries, and agencies.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (e)	X	Not later than thirty (30) days from the Agreement effectiveness	Once

Description of Covenant

The Recipient shall, no later than thirty (30) days from the effectiveness of Grant Agreement, establish technical working groups for each of the Parts 1, 2 and 3 of the Project to serve as think tank for respective Parts of the Project. Each technical working group shall comprise representatives of relevant line agencies and other public and private stakeholders.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.03 Institutional and other arrangements (f)	X	N/A	At all times during the implementation of the Project

Description of Covenant

The Recipient shall ensure that the terms of reference for any consultancies related to studies and technical assistance under this Agreement and the product thereof such as the GHG abatement plan and the GHG abatement plan guidelines referred to in Section 2.01(b) of this Agreement, shall duly incorporate the requirements of the World Bank Safeguard Policies then in force, as applied to any consultations, information gathering and advice conveyed through such studies, technical assistance and/or capacity building activities, and such terms of reference shall be satisfactory to the World Bank following its review thereof.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.06 Financial Management (b)	X	Not later than forty-five (45) days after the end of each six months	Semi-annually

Description of Covenant

The Recipient shall ensure that interim unaudited financial reports for the Project are prepared and furnished to the World Bank as part of the Project Report not later than forty-five (45) days after the end of each six months, covering such six months, in form and substance satisfactory to the World Bank.

Name	Recurrent	Due Date	Frequency
Article II Project Execution 2.06 Financial Management (c)	X	Not later than six (6) months after the end of such period	Annually

Description of Covenant

The Recipient shall have its Financial Statements audited in accordance with the provisions of Section 2.07(b) of the Standard Conditions. Each such audit of the Financial Statements shall cover the period of one fiscal year of TGO. The audited Financial Statements for each such period shall be furnished to the World Bank not later than six (6) months after the end of such period.

Team Composition

Bank Staff

Name	Title	Specialization	Unit	UPI
Waraporn Hirunwatsiri	Senior Environmental Specialist	TTL/Environmental Specialist	GENDR	274260
Taisei Matsuki	Senior Carbon Finance Specialist	PMR Secretariat	GCCCF	279690
Xueman Wang	Senior Carbon Finance Specialist	PMR Secretariat	GCCCF	268851
Pamornrat Tansanguanwong	Senior Social Development Specialist	Social Development Specialist	GSURR	187396
Rutu Dave	Energy Specialist	Energy Specialist	GEEDR	331679
Marcus Lee	Urban Economist	Urban Specialist	GSURR	332275
Chutima Lowattanakarn	Team Assistant	Team Assistant	EACTF	341000
Sirirat Sirijaraswong	Procurement Specialist	Procurement Specialist	GGODR	21155
Malarak Souksavat	Financial Management Analyst	Financial Management Analyst	GGODR	157956

Non Bank Staff

Name	Title	Office Phone	City
Wasittee Udchachone	Environmental Specialist	+66 818550152	Bangkok
Nontaya Krairiksh	Carbon Finance Analyst	+66 851122193	Bangkok
Pajnapa Peamsilpakulchorn	Energy Economist	+66 914796659	Bangkok

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Thailand	Bangkok	Thailand	x		

I. STRATEGIC CONTEXT

A. Country Context

1. Thai economy has grown at an average rate of 5−6 percent over the past decade largely driven by the manufacturing and tourism services. The impressive performance of the Thai economy is a result of strong economic fundamentals, coupled with a sound mix of macroeconomic policy. The major economic structural change took place during 1990s, when the size of agricultural sector declined to 12 percent of GDP, while the size of the manufacturing sector significantly increased to 31 percent of GDP, compared to 15 percent during 1950s. Despite the government's efforts to increase the share of the service sector, the economic structure has not improved much. On the contrary, over the last decade, the economic structure is characterized by the more rapid growth of manufacturing compared to the service sector which explained the rising energy intensity in Thailand. Thailand's sustained economic growth has contributed to dramatic poverty reduction, but inequality and sustainability remain key development challenges.

2. **Thai economy is growing on a high-carbon growth path.** Thailand emits a significant amount of greenhouse gas (GHG). According to the latest data from the U.S. Energy Information Administration in 2010, Thailand emitted 278.49 million tons of CO_2 in 2010. Thailand was the 22nd largest CO_2 emitter in the world in 2010 (not including land-use change and forest (LUCF)) and 5th largest in the East Asia and Pacific region (after China, Japan, the Republic of Korea, and Indonesia). Its CO_2 emissions per capita were 4.156 metric tons per person, which was the 78th largest CO_2 emissions per capita in the world in 2010 and 6th largest in the region.[2] Moreover, its carbon intensity was 1,121 tCO_{2e}/million USD which was the 47th largest in the world in 2010 and the 6th largest in the region. Thailand's energy intensity was relatively high at 17.8 MJ/USD while the share of non-fossil fuels in the power mix was relatively low at 8.1% compared to well-performing countries (20% - 90%). Future economic growth will further drive energy demand and emissions. The key challenge for the country is to shift towards a low-carbon growth path.

3. **Thailand's development agenda has shifted towards green growth and low-carbon economy**. The 11th National Economic and Social Development Plan (NESDP), which is the core plan of Thailand's public policies, adopted Green Growth and Low-Carbon Development as part of its strategy for balanced and inclusive growth. The Plan identified climate change as one of the significant challenges that Thailand will encounter during the implementation of the Plan (2012-2016) and called for a more rigorous policy response to address climate change. It stressed the importance of environmental management, improving energy efficiency, and low-carbon growth path for cities as the key ingredients to move towards green growth. The NESDP also highlighted the role of local authorities as the key driving units for low-carbon development.

[2] Climate Analysis Indicators Tool (CAIT) 2.0. Washington, DC: World Resources Institute

B. Sectoral and Institutional Context

4. **GHG emission was forecasted to continue to grow with the energy sector being the largest emitter.** According to its Second National Communication (SNC), Thailand emitted 281 $MtCO_2e$/yr, with effective reduction of 52 $MtCO_2e$ due to carbon sinks' absorption effects, resulting in a net balance of 229 $MtCO_2e$/yr. The energy sector represented the most important source, with about 70% of the total amount, followed by agriculture and livestock, industrial sector, and waste. The energy sector remained the largest GHG emitter from 2000-2009. During this period, the GHG emissions from all sectors increased at the annual rate of 3.9% while the energy sector grew at a slightly faster rate at 4.3%. It was projected that during 2010-2050, in the business-as-usual case, the total amount of GHG emissions will reach 1,331 $MtCO_2e$/yr. The energy sector will continue to represent the most important source of GHG emissions contributing 76% of the total emissions during 2010-2050, followed by the agricultural, industrial and waste management sector. Given the historical profile as well as the projected future trajectory of GHG emission, the energy sector is the national priority for mitigation efforts. The sector also represents the major abatement potential of GHG emission reduction.

5. Although Thailand is a Non-Annex I country with no obligation for implementing measures to reduce GHG emission, it has considered climate change as one of the key national priorities. The RTG signed the UNFCCC in 1992 and ratified the Convention in 1994 as a Non-Annex I country. The government has prepared the Climate Change Master Plan of Thailand (2014-2050) which was approved by the Board of National Committee on Climate Change Policy (NCCC) chaired by the Prime Minister. The Master Plan provides a policy framework for integrated policies and action plans relating to climate change with a vision to move the country towards sustainable low-carbon society by 2050. Moreover, Thailand has submitted the Nationally Appropriate Mitigation Actions (NAMAs) plan. Thailand's National NAMA proposes actions in the energy and transportation sectors to reduce emissions between 7 to 20 percent below projections for 2020. Thailand has been active in the Clean Development Mechanism (CDM) market. As of September 2014, the total amounts of 151 projects have been registered, with an expected annual CER generation capacity valued at 7,247,019 tCO_2e[3].

6. **Energy policies set ambitious targets to increase the share of renewable energy and improve energy efficiency to enhance energy security and mitigate GHG emissions.** Two key policies in the energy sector which will have significant impact on GHG mitigation are the 20-year Energy Efficiency Development Plan 2011-2030 (EEDP) and the 10-year Alternative Energy Development Plan 2012-2021 (AEDP). The EEDP sets a target to reduce energy intensity by 25% in 2030 compared with that in 2010 (equivalent to 23.5% of final energy consumption in 2030 or savings of 38,200 ktoe). The highest savings will be contributed by the industrial sector (42%) followed by transportation (40%), large commercial buildings (9%) and small commercial and residential buildings (9%). The AEDP aims to increase renewable energy (RE) share from various renewable sources for power generation and fuel consumption to 25% of final energy consumption in 2021. Currently, renewable energy is largely on track to meet the

[3]From this amount of registered projects, 54% are renewable energy generation projects using biogas, while 18% are renewable energy generation projects from biomass. The remaining 28% of projects comprise energy generation through Renewable Energy Sources (RES) (such as hydro, solar or wind), energy efficiency, methane recovery and capture from organic waste and nitrous oxide reduction projects.

AEDP target. However, the EEDP is facing more challenges and the progress in meeting the target still lag behind the AEDP.

7. **Low-carbon city or green city initiative is one of the key strategic focuses under the Green Growth strategy.** In the past few years, low-carbon city aspiration has led key agencies including the National Economic and Social Development Board (NESDB), the Thailand Greenhouse Gas Management Organization (TGO) under the Ministry of Natural Resources and Environment (MONRE), and the Ministry of Energy (MOEN) to take various efforts to develop national policy framework and pilot low-carbon city projects in selected municipalities. Lack of solid databases at the local level (municipal and provincial levels) on GHG inventory and knowledge about how to pursue low-carbon development of local municipalities are key barriers in the implementation of low-carbon city. Recognizing this, TGO started the initiative to help local municipalities develop GHG inventory and identify potential GHG mitigation measures in 3 pilot municipalities (Chiangrai, Lampang and Nongsamrong[4]). TGO plans to expand the support to more municipalities in the next phase.

8. **Given slow progress in the development of global carbon market post-Kyoto Protocol, there is increasing attention internationally to focus the climate change mitigation efforts on the domestic level.** It is well-recognized that GHG emissions can be reduced most cost-effectively through "market-based" approaches that put a price on carbon. Global carbon market is fragmented and the climate change mitigation measures will be implemented more and more at the domestic level in coming years. Several market-based instruments and carbon pricing initiatives have been introduced in various countries, particularly in the Non-Annex I parties under the UNFCCC, for example, the pilot Emission Trading Scheme (ETS) in China, the domestic ETS in South Korea, etc. (Reviews of the Tokyo and China ETS schemes are presented in Annex 2.) As the RTG is studying several policy options (market- and non-market-based mechanisms) to reduce emissions and their suitability to apply in the context of Thailand[5], a domestic ETS is also one of the policy options that the RTG seeks to learn more from these international experiences.

9. **Thailand is studying the potential to establish a comprehensive domestic carbon market.** The long-term vision of the future domestic carbon market will comprise of the voluntary scheme (T-VER) and may include the mandatory scheme (ETS). It should be noted that Thailand, without any international and domestic obligatory reduction targets, has no legislation requiring national GHG emission reduction. It is recognized that most market-based mechanisms in place or being planned involve a staged approach, allowing for the gradual introduction of a scheme with consecutive compliance periods or using piloting approaches. Thailand shares this view and plans to establish and operate the voluntary market-based schemes aiming to build capacity and readiness components for Thailand to be ready for the mandatory scheme in the future.

[4] The three municipalities are Chiangrai Municipality in Chiangrai province, Lampang Municipality in Lampang province and Nongsamrong Municipality in Udonthani province.

[5] It is recognized that each policy option has pros and cons and different sector may require different policy response. For example, the Emission Trading Scheme (ETS) may be well suited to a certain sector while other fiscal instruments or command-and-control such as carbon tax and vehicle fuel consumption standard may be better suited to a different sector like transport.

10. **For the voluntary market, Thailand has gained significant experiences with several current and planned activities.** In addition to the country's involvement in the international carbon market, TGO initiated the Thailand Voluntary Emission Reduction Program, or the so-called "T-VER", in October 2013 as a domestic carbon offset program using "baseline and credit" approach. The T-VER methodologies are derived from CDM and J-VER methodologies.[6] However, although trading infrastructure and MRV system are in place, inadequate demand (voluntary buyers) and supply are still barriers in the full development of voluntary market. Additional support is needed to develop low-carbon investment projects and encourage participation from both public and private players.

11. **For the mandatory scheme, the ETS is still in the study stage.** Since 2010, TGO initiated the Thailand Voluntary Emission Trading Scheme (Thailand V-ETS) which is a voluntary cap-and-trade scheme. The objective of the Thailand V-ETS is to learn how to manage domestic emission trading scheme/carbon offsetting program. The Thailand-V-ETS is still in the research stage (Further details on Thailand V-ETS is provided in Annex 2). Thailand still needs to conduct further studies on key components of ETS to inform policy decisions, build capacity, prepare readiness components as well as build consensus for any mandatory scheme in the future.

C. Higher Level Objectives to which the Project Contributes

12. **The Project will support the second prong of "Improving Competitiveness, and Inclusive and Sustainable Development" in the Interim Strategy Note 2011 (**Report No. 48799-TH**).** As stated in the Note, climate change must be viewed as a central issue related to Thailand's development. Thailand places 22nd among the World's largest GHG emitters, and is highly vulnerable to climate change impacts. Direct impacts result not only from gradual changes in temperature and sea level, but also from increased climate variability and extremes, including more intense floods, droughts, and storms. The risks—including physical threats to capital investments, potential economic underperformance and the possibility that projects will indirectly contribute to rising vulnerability—are also closely linked with the competitiveness agenda. The PMR activities will help the country implement mitigation effort, which is identified as an area of engagement under Cluster III: Infrastructure and Climate Change.

13. **The Project is fully aligned with the corporate strategy on climate change and will directly and indirectly contribute to the Bank's twin goals of poverty reduction and shared prosperity.** It is well recognized that climate change "poses an economic issue that has the potential to put prosperity out of the reach of millions of people"[7] and that it is a "systematic risk to long-term economic growth and stability"[8]. Developing nations and poor people will be most vulnerable to the impact of climate change. In Thailand, the impact started to be felt in the 2011 flood which resulted in US$ 46.5 billion damages with over 13 million people affected. Helping the country tackle climate change in a sustainable and systematic manner will indirectly serve the

[6] Under this program, there is no limitation for size of a project. Gas coverage under the T-VER program comprises of CO_2, CH_4, and N_2O. The program was launched in October 2013 and there are now 12 registered projects as of February 2015.
[7] Jim Yong Kim, President, World Bank Group, quoted in the article on "Planning and Financing Low-Carbon, Livable Cities", dated September 25, 2013.
[8] Rachael Kyte, Vice President and Special Envoy on Climate Change, World Bank Group, quoted in the article on "World Bank warrior spearheading the fight against climate change", dated November 6, 2013.

Bank's mission by ensuring that shared prosperity and poverty reduction achieved in the last few decades will not be reversed. The project will directly contribute to shared prosperity by addressing regional disparities in economic development and public spending between Bangkok and areas outside of Bangkok which have long characterized inequality in Thailand. The project will do this by building technical capacity in climate change planning and implementation for medium- and small-sized municipalities across Thailand. The two programs in the PMR will contribute to green growth by potentially unleashing over US$1 billion in green investment and create approximately 200,000 green jobs[9].

14. **WB has comparative advantage in domestic market-based mechanism**. The Bank has a strong advantage in carbon pricing with its active involvement in several carbon funds and markets. The Bank has also developed expertise in economic and market-based instruments as well as crosscutting policy support on climate change. Carbon pricing was also identified by the Bank as one of the key solutions to implement cost-effective emission reduction options. The Bank also has developed in-depth sectoral knowledge in the energy and urban sector from past engagement and ongoing analytical works in Thailand. The key recommendations from the study *Thailand Clean Energy for Green Low-Carbon Growth* (2011, World Bank) - which suggested the government to shift from voluntary input-based energy conservation promotion regime to mandatory regime with committed targets and performance-based incentives - also informed the design of the MRP.

15. **The PMR has synergy with other WB operations in Thailand.** TGO is also working with the Bank on using the Tool for Rapid Assessment of City Energy (TRACE) as part of the City Energy Efficiency Transformation Initiative (CEETI) to build capacities of local governments in integrating energy efficiency into the core of city planning. Given that energy is the key emitter of greenhouse gas in Thai cities, the CEETI initiative is being undertaken in linkage with the broader PMR project. The Tool has been piloted in two cities, the Bangkok Metropolitan and Lampang Municipality. Results from running the TRACE model were disseminated to the city senior management and the wider stakeholders in October 2014. The findings from the TRACE tool will feed into the LCC component of the PMR by identifying key abatement potentials, and key implementation issues in implementing abatement measures for Thai municipalities in general, and highlight opportunity for institutional reform in key mitigation areas for cities such as street lighting, buildings energy efficiency, and waste management.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

16. The PDO is to provide selected technical and analytical support to Thailand that informs policy decisions to develop readiness of market-based instruments to reduce greenhouse gas (GHG) emissions in Thailand.

[9] *Conceptual Design of Energy Performance Certificate (EPC) Scheme for Thailand*, prepared by ICF International, September 2013.

Project Beneficiaries

17. The main project beneficiary is TGO under MONRE which is the lead agency for carbon market policy and the designated implementing agency for PMR. Other direct beneficiaries include stakeholders which will be involved in the project activities including the Department of Alternative Energy Development and Efficiency (DEDE), National Municipal League of Thailand, Designated Factories and Buildings (DF&Bs) owners, city administrators, energy auditors and verifiers, consultants, and etc. The project will also benefit broader Ministries and government agencies which are responsible for relevant policies such as green growth (NESDB), green fiscal measures (Fiscal Policy Office (FPO) under the Ministry of Finance (MOF)), climate change (MONRE), energy efficiency (MOEN), and low-carbon city development (Department of Local Administration (DOLA) under the Ministry of Interior). The public will also benefit from the increased awareness and knowledge on climate change and carbon market through stakeholder consultations and policy debate.

PDO Level Results Indicators

18. PDO level results indicators are:

i. Submission of the core EPC readiness components (target setting methodology and MRV system) for DEDE's policy consideration.
ii. Local GHG Abatement Plans for 24 cities submitted to city management to inform city's priority abatement projects.
iii. Submission of the policy recommendation on legal framework to establish the ETS for TGO Board's consideration.

III. PROJECT DESCRIPTION

19. The project will comprise of four components. Component 1, 2 and 3 will each support a different domestic carbon market scheme which will together contribute to the overall future domestic carbon market development in Thailand. Component 4 will finance project management and technical support to TGO.

A. Project Components

20. **Component 1: Preparation of key market components of the Energy Performance Certificate (EPC) Scheme.** The voluntary EPC scheme, which already has legal framework in terms of energy reporting system to support its implementation under the Energy Conservation Promotion Act, is proposed in the MRP to be first launched so that the country can learn more about various elements of market-based mechanism. The proposed EPC scheme is a voluntary target-and-reward scheme [10] targeting the energy intensive industrial units and commercial buildings (i.e. DF&Bs), the major GHG emitters, which are already regulated under the Energy Conservation Promotion Act. The proposed EPC scheme will cover seven industrial sectors and four types of commercial buildings. This component will provide technical assistance to support

[10]The over-performers will be rewarded by public sink fund who will buy back surplus allowances at a guaranteed price; however, the under-performers will not be penalized.

the preparation phase of the EPC scheme. This phase would focus on the detailed assessment of the various preparedness levels, identify and bridge the gaps, and stakeholder consultations. The PMR support will complement the government's other planned activities to implement EPC. The PMR support will focus on data readiness, target setting methodology for different industrial sectors and buildings, development of MRV system, assessment of laws and regulations and modifications required to implement EPC, and an analytical study on performance-based incentive and pricing mechanism for EPC (e.g. pricing of surplus allowances to be bought back by public sink fund, potential source of fund, financial, legal and administrative structure of the fund). These core components of EPC scheme can later be transferred to prepare the ETS. (Further details on the technical design of the EPC scheme are provided in Annex 2.)

21. **Component 2: Development of Local GHG Abatement Plans and a study on pricing mechanism for the Low Carbon City (LCC) Program.** This component will provide support to 24 local municipalities to develop a Local GHG Abatement Plan which will be used to guide mitigation actions and low-carbon investment, from which carbon credits can be generated for trading under the LCC program in the existing domestic voluntary carbon market (T-VER). The GHG Abatement Plan Guidelines that can be used as the country's guideline to develop Local GHG Abatement Plan for other municipalities will be developed based on the existing Thai City Carbon Footprint (CCF) Guidelines and experiences that will be gained from the development of these 24 Local GHG Abatement Plans during the project implementation. The PMR will also support the study on pricing mechanism for LCC Program and provide recommendations on other fiscal or financial incentives that the RTG can adopt to create the demand for credits in the domestic voluntary carbon market.[11] The PMR project is expected to assist the municipalities identify mitigation actions and potential low-carbon investment projects to increase the supply of low-carbon projects in domestic voluntary market. A Project Design Document (PDD) for the selected mitigation action will be developed for each participating municipality with the support from TGO. Potential activities for an LCC include solar rooftop projects, conversion of street lighting and/or municipality's building lighting to LED, promotion of non-motorized vehicles (e.g. bicycles), electric cars, etc. If the mandatory system is in place in the future, the voluntary scheme will also play a role as offsetting scheme where credits can be used for compliance purposes in the ETS. (Further details on the technical design of the LCC Program are provided in Annex 2.)

22. **Component 3: Policy recommendations on a legal framework to establish the ETS.** This component will complement RTG's ongoing and planned activities on assessing the applicability of ETS in Thailand. TGO is now conducting an impact assessment on macroeconomics of establishing an ETS. In addition, TGO also has a plan to pilot test some of the key elements of an ETS system in the TGO's Thailand-V-ETS to further inform the policy process. The PMR will specifically support the legal aspects of the overall ETS assessment. The legal framework is a crucial basis for any mandatory scheme to be adopted in the future as Thailand currently has no legal requirement for GHG reporting. The PMR will provide a policy study to review international experiences on a legal and institutional framework required for establishing an ETS, existing domestic laws which are related to the future establishment of an ETS, and provide recommendations on a suitable legal framework and other related regulations and administrative rules together with institutional arrangements for establishing an ETS in

[11] Once ETS is established and LCC evolves into offsetting market, then prices will be determined by buyers in the ETS.

Thailand. In parallel with this work, TGO will use the national budget for technical assessment and preparation of other elements of the ETS design (e.g. defining the scope, setting cap and target, etc.).

23. **Component 4: Project management.** This component will support the daily project management activities as well as provide technical support to TGO. It will support hiring of individual consultants to assist TGO on project coordination and management, technical support, procurement, and financial management to comply with the Bank's guidelines and procedures. It will also support incremental operating cost and organize workshops and training related to project implementation.

B. Project Financing

Instrument

24. **The PMR is a grant-based, capacity building multi-donor trust fund** that provides funding and technical assistance for the collective innovation and piloting of market-based instruments for greenhouse gas emissions reduction. As of April 2014, total committed contributions are about US$127 million[12]. The PMR consists of 13 contributing countries that provide financial support to the PMR trust fund (Australia, Denmark, EC, Finland, Germany, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States), and 17 implementing countries that receive PMR funding and technical assistance (Brazil, Chile, China, Colombia, Costa Rica, India, Indonesia, Jordan, Mexico, Morocco, Peru, South Africa, Thailand, Tunisia, Turkey, Ukraine, and Vietnam). In addition, technical partners (Kazakhstan, California, and Quebec) and observer countries, multilateral development banks, UN organizations, and experts participate in the PMR as observers and contribute to its assembly meetings and workshops. The PMR provides a platform for technical discussions on market instruments, fostering South-South exchange, facilitating collective innovation for pilot efforts and harnessing financial flows for implementation and scale up. Decisions in the PMR, including criteria for and allocation of funding are made by the Partnership Assembly (consisting of both the PMR Contributing and Implementing Country Participants).

25. **The Project funds will be channeled through a recipient-executed trust fund under the PMR global multi-donor trust fund**. Thailand joined the PMR in January 2011 and was awarded a preparation grant of US$350,000 in May 2011. The grant agreement for the recipient executed grant for the preparation phase was approved by the Cabinet in January 2013. The agreement was signed in March 2013 between the Bank, the Ministry of Finance and TGO. The draft Market Readiness Proposal (MRP) was presented at the Seventh Meeting of the Partnership Assembly (PA7) in October 2013. The final MRP was presented at the Eighth Meeting of the Partnership Assembly (PA8) in Mexico City in early March 2014. The resolution on the allocation of US$3 million to Thailand for implementation phase was approved at the PA8.[13]A new grant agreement for the implementation phase will be negotiated and signed between the Bank, the Ministry of Finance and TGO. The project implementation period will be four years.

[12] Total received contributions are US$106.5 million. Not all contributions are made in U.S. dollars. This total is based on an estimated exchange rate. The exact exchange rate will vary depending on the date at which commitments are transferred to the World Bank.

[13]More information on the Thai MRP and the project design is available at http://www.thepmr.org/country/thailand-0.

Project Cost and Financing

26. Project cost by component is presented in the table below[14]:

Table 1: Project Cost and Trust Fund Financing (US$)

Project Components	Project cost	Grant Financing	% Financing
Component 1: Preparation of key market components of the Energy Performance Certificate (EPC) Scheme	3,040,000	1,600,000	53%
Component 2: Development of Local GHG Abatement Plans and a study on pricing mechanism for LCC Program	1,950,000	700,000	36%
Component 3: Policy recommendation on legal framework to establish the ETS	400,000	400,000	100%
Component 4: Project management	400,000	300,000	75%
Total Baseline Costs	5,790,000	3,000,000	52%
Physical contingencies	-	-	
Price contingencies	-	-	
Total Project Costs	5,790,000	3,000,000	52%
Interest During Implementation	-	-	
Front-End Fees	-	-	
Total Financing Required	5,790,000	3,000,000	

C. Other relevant donor funded projects

27. **Donor funded activities on climate change will complement PMR activities**. Currently, TGO is implementing Thailand's Low Emission Capacity Building (LECB) Project funded by the European Union (EU), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Australian Government. The goal of this project is to build capacities for the development of Nationally Appropriate Mitigation Actions (NAMAs) in selected industrial sectors and systematize the GHG inventory in the sectors of Transport and Waste. This project will be implemented in close connection with the preparation of the Third National Communication and the Biennial Update Report which are both required from Parties not included in Annex I to the UNFCCC. The program period is 2013-2015. During 2013-2016, JICA also supports TGO in Capacity Development on Climate Change Mitigation/Adaptation in the Southeast Asia Region Project. The overall goal is to establish the Climate Change International Technical and Training Center (CITC) which will be acknowledged as a training center of climate change in the ASEAN region and function as networking platform. Additionally, Thailand will receive financial support from the Global Environment Facility (GEF) Cycle 5 to implement the "Achieving Low Carbon Cities through Local Sustainable Urban Systems Management in Thailand" project during 2015-2018. There are no overlaps between other donor funded projects and PMR activities.

[14] The budget was estimated according to the local context. During the course of project preparation, the budget will be estimated in more details and adjusted as appropriate.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

28. **TGO under the MONRE was designated as the implementing agency**. TGO is an autonomous governmental organization under MONRE. Its Board of Directors comprises of several executive officers from MONRE, MOEN and Ministry of Transport. It was established with a specific purpose as an implementing agency on GHG emission reductions in Thailand. It serves as a joint assistant secretariat together with the Office of Natural Resources and Environmental Policy and Planning (ONEP) to the NCCC chaired by the Prime Minister[15]. TGO is an officially CDM Designated National Authority (CDM-DNA) which holds an authority to approve CDM projects at national level. TGO also acts as the national information clearing house of greenhouse gas and technical focal point on greenhouse gas management. TGO has been active in the carbon market and has worked closely with government agencies and international organizations to establish a domestic voluntary carbon market, formulate various GHG emission reduction policies and mechanisms, and build capacity of the government agencies and private sector on GHG management. Given its mandate and the organizational structure, TGO is well positioned to implement the PMR activities and engage various stakeholders in consultations and implementation.

29. **TGO had established the PMR Steering Committee, which is a cross-ministerial committee comprising of representatives at senior level, to oversee the PMR project implementation**. The members of the PMR Steering Committee include officials from 15 key agencies, such as NESDB, DEDE, PDMO, FPO, National Municipal League of Thailand, Metropolitan Electricity Authority (MEA), Provincial Electricity Authority (PEA), Electricity Generating Authority of Thailand (EGAT) and DOLA. DEDE, which is the agency responsible for energy promotion, energy conservation regulation, energy sources provision, alternative development of integrated energy uses and energy technology dissemination, will be an implementing partner of the EPC component. The Memorandum of Understanding (MOU) has been signed between DEDE and the TGO to provide a mutual agreement in cooperating and implementing the EPC scheme together.

30. **TGO will set up a Project Management Unit (PMU) for overall project management and three Technical Working Groups to serve as technical advisor for each component.** TGO will appoint the Executive Director and the Director of Review and Monitoring Office to be a project director and a project manager, respectively, to be in charge for overall organization, management, and daily operation as well as to coordinate with other relevant stakeholders, Ministries, and agencies. The EPC, LCC and Legal Framework Technical Working Groups will also be established to serve as a think tank for each of the three components. Each Technical Working Group will be equipped with relevant line agencies and other public and private stakeholders. (Further details on implementation arrangement are provided in Annex 4).

[15] Regulation of Prime Minister's Office on Climate Change (B.E. 2550, 2552, 2554, 2556)

B. Results Monitoring and Evaluation

31. **The World Bank team and PMR Secretariat will provide implementation support for the execution of the PMR grant and implementation of activities to ensure achievement of the PDO.** Project monitoring and evaluation will include the following:

a. *Project Results Framework:* PDO and Intermediate Results Indicators as contained in Annex 1.

b. *Project Progress Reports and Financial Statements:* Implementing Country Participants will provide project progress reports together with the project's Interim Unaudited Financial Report (IFR) on the implementation of the project bi-annually. The progress report and the IFR are to be submitted to the Bank no later than 45 days after each period. The period for the purpose of the financial reporting is from October 1 to September 30. The goal of the project progress report is to ensure timely support and feedback from the Bank on the activities outlined in the Grant Agreement.

c. *Completion Report*: Implementing Country Participants are required to prepare a completion report to ensure objectives outlined in the MRP and the Grant Agreement are met and there is a plan for their sustainable continuation.

d. *PMR Country Updates*: Implementing Countries will update the progress of activities in the MRP and Grant Agreement once a year at the PMR Partnership Assembly meetings on the progress of their implementation phase activities. PMR PA meetings occur a minimum of two times per year. The purpose of these updates is to inform the PA and also seek feedback from the PA.

C. Sustainability

32. **The project's sustainability lies in capacities built in core climate change and energy policies agencies and the use of project's output to progress the development of domestic carbon market schemes.** Given a clear policy framework (on climate change, energy efficiency and low-carbon city), strong commitment of the agencies involved, and the fact that PMR complement key technical gaps of the government's own long-term plan (in developing domestic carbon market and achieving long-term energy efficiency target), the results of the project will be used by policy makers to further refine and develop a domestic carbon market scheme and market-based energy efficiency policy measures which are most suitable in the Thai context. For a low-carbon city, the development of the Local GHG Abatement Plan Guidelines will help replicate the impact of the project beyond 24 municipalities covered in the project.

V. KEY RISKS AND EXPLANATION

A. Systematic Operations Risk-rating Tool

Risk category	Rating
1. Political and Governance	Low

2. Macroeconomic	Low
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Low
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Moderate
7. Environment and Social	Low
8. Stakeholders	Moderate
9. Other	N/A
OVERALL	Moderate

B. Overall Risk Rating Explanation

33. *Overall risk rating of the project is moderate*. The core activities are technical assistance focusing on the preparation of market-based instruments to serve national priorities in energy efficiency and low-carbon city development which are well-anchored in Thailand's climate change strategy and national development plans. The TGO under MONRE was mandated by the Cabinet to work on a market-based mechanism for mitigation. TGO has built a strong working relationship with other key implementing partners particularly DEDE during the preparation phase.

34. **Sector Strategies and Policies.** The project has one substantial risk that is unclear sector strategies in terms of adopting market-based instruments which may impact the sustainability of the project results over time. For EPC, due to unclear sector strategies in the energy sector to fully adopt market-based instrument, EPC scheme may not progress towards trading stage. For LCC, there is a clear strategy at the national level (NESDB, Ministry of Interior) but lack of clear strategies and policy support at the municipal level may result in lack of implementation in abatement activities although plans are in place. The project will mitigate these risks in three ways: (i) build technical capacity of DEDE and the municipalities which are the decision units of EPC and LCC; (ii) design incentives program to enhance attractiveness of the market-based instrument; and (iii) conduct cost-benefit analysis of EPC scheme to evaluate whether EPC is the most economically viable policy option to reduce emissions and achieve energy savings which can be used to inform Ministry of Energy's policy decision.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

35. **The project provides knowledge and technical capacity which will help inform RTG's policy design and decision to cost-effectively reduce GHG emissions in the Thai context.** Outputs of the project will include technical preparation, analytical studies, plans, and policy recommendations. The nature of the project does not allow for direct estimation of costs and benefits. However, the project will generate economic benefits through two channels. First, the project will generate direct benefits by creating new economic activities and employment in

the areas of energy audit services, verification services, and consulting services. Second, economic benefits will be derived from the project's contribution to the future set-up of the EPC and LCC scheme which will lead towards more effective policy instruments to achieve national energy efficiency targets and climate change mitigation.

36. **The key benefits of the EPC scheme and the LCC program will be energy consumption reduction and avoided GHG emissions**. The preliminary assessment of benefits of each scheme is discussed here. For the EPC scheme, the benefits are energy savings in the DF&Bs in the sub-sectors covered in the scheme. It is estimated that with 100% participation (2,192 DF&Bs), estimated energy savings will be 1,385 KTOE. In addition, it is expected that when the EPC is implemented, there will be investment to implement energy efficiency measures. These investments mainly involve operations & maintenance, energy management systems, retrofits and equipment upgrades, etc. and normally have a payback period of less than 4 years. It is estimated that at 100% participation rate, the EPC scheme will generate total investment of US$ 1,931 million. Besides direct benefits of energy and associated GHG savings, other indirect benefits will also be obtained, such as the environmental quality improvement and contribution to the GDP through investment and employment opportunities. For the LCC program, according to the preliminary results, the GHG abatement potential of the LCC program would exceed 8.6 million tCO_{2e}. (A more detailed cost-benefit analysis will be further studied during project implementation.)

B. Technical

37. **TGO has technical background in market-based mechanisms but deeper technical expertise will need to be strengthened to implement the project**. Market-based mechanism in Thailand is in a very early stage of development and technical expertise and experiences with key components of market-based instruments from setting up baseline data, target setting methodology, MRV, etc. are still lacking in all actors including government staff, private sector, verifiers, auditors, consultants, etc. PMR funding is aimed at addressing such technical gaps and knowledge transfer from the engagement of international experts will be key focus in all PMR-funded activities. International experts are expected to work closely with TGO staff and related agencies to ensure technical aspects of the projects are sound and in line with international practices. International experts will also provide on-the-job training as well as formal training or capacity building activities to TGO and related agencies staff. In addition, the Bank task team will provide close implementation support to TGO in cooperation with the PMR Secretariat.

C. Financial Management

38. **The financial management risk is assessed as Moderate**. The financial management arrangements put in place for this project are the same used for the preparation phase and are deemed acceptable and meet the minimum requirements of OP/BP 10.00. However to further strengthen the FM arrangements, additional actions have been proposed for implementation by TGO which include: (i) recruitment of one qualified FM consultant within three months of project effectiveness; (ii) review and revise the exiting FM Manual (part of the Operating Manual) for Bank's acceptance before negotiation; (iii) Once project is effective, TGO to inform the Office of the Auditor General to agree on the audit work plan with audit Terms of Reference

acceptable to the Bank; (iv) all finance staff are to be trained concerning the Bank's financial management requirement and disbursement policies and procedures; (v) agree on the format of the IFR before negotiation.

D. Procurement

39. **TGO will be the implementing agency and will be responsible for all procurement activities of the Project**. An established PMU in TGO will facilitate all day-to-day functions as required by the project. The proposed project is a follow-up project following the PMR preparation phase, i.e., PMR Phase I Project, and TGO will essentially keep the same institutional arrangement. The same technical team who worked with the Phase I Project will continue working with the proposed project. However, with the increasing procurement activities, TGO proposed and the Bank supported to assign an Assistant Technical Officer to be responsible for the project procurement. Measures were agreed between TGO and the World Bank to enhance the capacity of TGO and to mitigate potential procurement risks during project implementation (see details in Annex 4). Procurement activities of TGO for the initial 18 months of the project have been prepared and documented in a procurement plan, which has been agreed with the Bank during appraisal.

E. Environmental (including Safeguards)

40. **The project is categorized as Category B**. It will be solely on technical assistance activities. The PMR support will not include physical investment, piloting activities nor investment plan/feasibility study. The project, however, will support the preparation of local GHG Abatement Plans of participating municipalities and the preparation of Project Design Document (PDD) for each participating municipality based on their Abatement Plans. It is anticipated that the project will lead to long term positive impacts on the environment particularly on GHG emission reduction and energy consumption reduction. The project activities are likely to have minimal or no adverse impacts, although the PDD may lead to the preparation and implementation of projects in the future that may have environment and social impacts downstream, when these are implemented. A safeguard policy on Environmental Assessment (OP/BP 4.01) is triggered. However, no separate safeguards instrument is required for this TA project. The key TORs will be reviewed by the Bank, e g., preparation of local GHG Abatement Plans to ensure that appropriate safeguards measures, including environment and social screening criteria, are incorporated in relevant studies and the development of Abatement Plan Guidelines. The project will screen the PDDs based on these Guidelines for environment and social impacts, identify policies triggered and appropriate safeguard instruments to be prepared for each project as part of preparing their feasibility studies and detailed engineering designs in the future outside this project.

F. Social (including Safeguards)

41. **Social impact is not anticipated from conducting project activities which focus on providing technical assistance and analytical works for EPC preparation and future ETS policy design with no physical investment and piloting activities**. With regards to gender, GHG Abatement Plan and PDDs in most urban areas often concern about the pollution risks

from emissions from urban transport or other heavy industries which men and women may have different view on the acceptability of pollution impacts caused by these emissions. Women may have more concerns towards emissions from heavy traffic near schools, for example. In the case of this project, experience of local GHG Abatement Plan covers activities such as solar rooftop, street and building lighting and promotion of non-motorized vehicles. Although limited or no social impact is anticipated from conducting these activities, it is important to recognize that men and women may still have different perspectives on these GHG activities and their mitigation actions. Stakeholder consultations during the project implementation especially for the development of Local GHG Abatement Plan and PDD for 24 municipalities (Component 2), would need to take this issue adequately into account. The Bank will also work with the counterpart to ensure that gender aspects and social safeguards related issues would be incorporated in relevant project activities and products. The Integrated Safeguards Data Sheet (ISDS) at the Appraisal stage was originally approved and disclosed by Infoshop on November 27, 2014. The updated ISDS was disclosed on February 23, 2015.

Annex 1: Results Framework and Monitoring

Project Development Objective (PDO):
The PDO is to provide selected technical and analytical support to Thailand that informs policy decisions to develop readiness of market-based instruments to reduce greenhouse gas (GHG) emissions in Thailand.

PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR4	End Target				
Indicator One: Submission of 2 core EPC readiness components (target setting methodology and MRV system) for DEDE's policy consideration	☒	Number	0	0	0	2	2	2	Annually	TGO/DEDE Progress Report	TGO/DEDE	
Indicator Two: Local GHG Abatement Plans for 24 cities submitted to city management to inform city's priority abatement projects	☒	Number	0	0	0	24	24	24	Annually	TGO Progress Report	TGO	
Indicator Three: Submission of the legal framework recommendations to establish ETS for TGO Board's consideration	☒	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO Progress Report	TGO	
INTERMEDIATE RESULTS												
Intermediate Result (Component One):												
Intermediate Result indicator One: Assessment of the DF&Bs energy management and SEC for 11 sectors updated	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO/DEDE Progress Report	TGO/DEDE	
Intermediate Result indicator Two: Energy data of selected D F&Bs verified	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO/DEDE Progress Report	TGO/DEDE	

Intermediate Result indicator Three: Legal framework for EPC scheme recommended	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO/DEDE Progress Report	TGO/DEDE	
Intermediate Result indicator Four: Pricing mechanism for EPC unit recommended	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO/DEDE Progress Report	TGO/DEDE	
Intermediate Result (Component Two):												
Intermediate Result indicator One: Local GHG Abatement Guidelines developed	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO Progress Report	TGO	
Intermediate Result indicator Two: Pricing mechanism for LCC unit and incentives for buyers recommended	☐	Yes/No	No	No	No	Yes	Yes	Yes	Annually	TGO Progress Report	TGO	
Intermediate Result (Component Three):												
Intermediate Result indicator One: Legal framework to establish ETS recommended	☒	Yes/No	No	No	No	No	Yes	Yes	Annually	TGO Progress Report	TGO	

***Please indicate whether the indicator is a Core Sector Indicator (see further http://coreindicators)**
****Target values should be entered for the years data will be available, not necessarily annually**

Annex 2: Technical Background of Thailand MRP Design

1. Examples of International Development on ETS

Tokyo

Tokyo's emission trading system (ETS) began operating in April 2010, and was the world's first city-level cap-and-trade program targeting energy-related carbon dioxide. The program covers more than 1,300 facilities in the city that consume fuels, heat, and electricity totalling more than 1,500 kilo litres of crude oil-equivalent per year that.

In March 2014, the Tokyo Metropolitan Government (TMG) announced that with the third year of the program's operation, a 22 percent reduction in emissions (compared to base-year emissions) had been achieved, with over 92 percent of facilities achieving reductions in excess of their obligations. TMG has also entered into an agreement with Saitama Prefecture to link the ETSs of the two jurisdictions, where participating facilities can trade credits across the boundary between Tokyo and Saitama.

A number of lessons can be drawn that would be of relevance to any city considering an ETS of its own:

- Data and reporting: The rich data available in Tokyo (and Saitama) began with the mandatory reporting program in the years prior to the design and implementation of the ETS. Such data is essential to designing an ETS, and to ensure robust monitoring, reporting and verification (MRV) throughout.

- Flexibility: Tokyo's ETS provides participating facilities with some degree of flexibility, such as with the selection of the base year for emissions. The special provisions for calculating emissions following the 2011 earthquake also provided facilities the opportunity to avoid being penalized by the consequences of that natural disaster.

- Predictability: Flexibility notwithstanding, Tokyo's ETS operates within a clear and predictable, rules-based framework. TMG has provided a framework for long-term goal setting by indicating the estimated emissions reductions that would be required in the second compliance period. This in turn enables participating facilities to plan and execute their emissions reduction activities well in advance, taking the long-term view and planning for investment as necessary.

(Source: Adapted from World Bank. 2013. Tokyo's Emissions Trading System – A Review of its Operation since 2010. Directions in Urban Development series.)

China

Based on China's 12th Five Year Plan (2011-2015), pilot sub-national ETSs is to be implemented by 2014, and will build up to a national ETS after 2016. The pilot sub-national locations include five cities (Beijing, Chongqing, Shanghai, Shenzhen, and Tianjin) and two

provinces (Hubei and Guangdong). In 2012, the pilot cities submitted emission caps, plans for allocation of allowances, and detailed implementation plans to the National Development and Reform Commission (NDRC), which funds and coordinates these pilots.

Beijing's program covers enterprises or institutions with 10,000 tons CO2 or greater annually. These facilities tend to be power and heat supply, manufacturing enterprises, and some larger commercial buildings. The program covers direct emissions from energy combustion as well as process emissions (e.g., from cement production), as well as indirect emissions from electricity consumption, and allows offsets from the CDM and potentially other offsets.

Shanghai's program will cover industrial facilities emitting more than 20,000 tons CO2 annually (direct or indirect) and commercial buildings and ports with emissions over 10,000 tons CO2 annually. The largest emitters in the program are iron and steel plants, chemical plants, and power generation. The program is expected to cover roughly half of Shanghai's emissions.

(Source: Adapted from World Bank. 2014. Climate Change Action Planning in C40 Cities in East Asia. Workshop Proceedings.)

2. Overview of Thailand's Current Domestic Carbon Market

Thailand Voluntary Emission Reduction Program

Thailand Voluntary Emission Reduction Program, or the so called "T-VER", is domestic GHG crediting mechanism in Thailand. It is a project-based program like the Clean Development Mechanism (CDM) of the UNFCCC but with simpler methodologies, less transaction cost, and a creditable MRV system. TGO has studied and developed the MRV system, T-VER general guideline, and registry system to set up operational guidelines and manage greenhouse gas reduction projects under the T-VER program.

T-VER program is a domestic carbon offset program using "baseline and credit" approach to calculate GHG emission reduction from an emission reduction project. Under this program, there is no limitation for size of a project and small projects can be bundled and registered as a single project. Gas coverage under the T-VER program comprises of CO_2, CH_4, and N_2O.

It is important to note that the projects under the Low Carbon City Program (LCC), developed by municipalities and communities, would also apply under T-VER for generating the carbon credits (LCC-TVERs).

Currently, the MRV system for T-VER has been developed follow CDM Methodology concept.

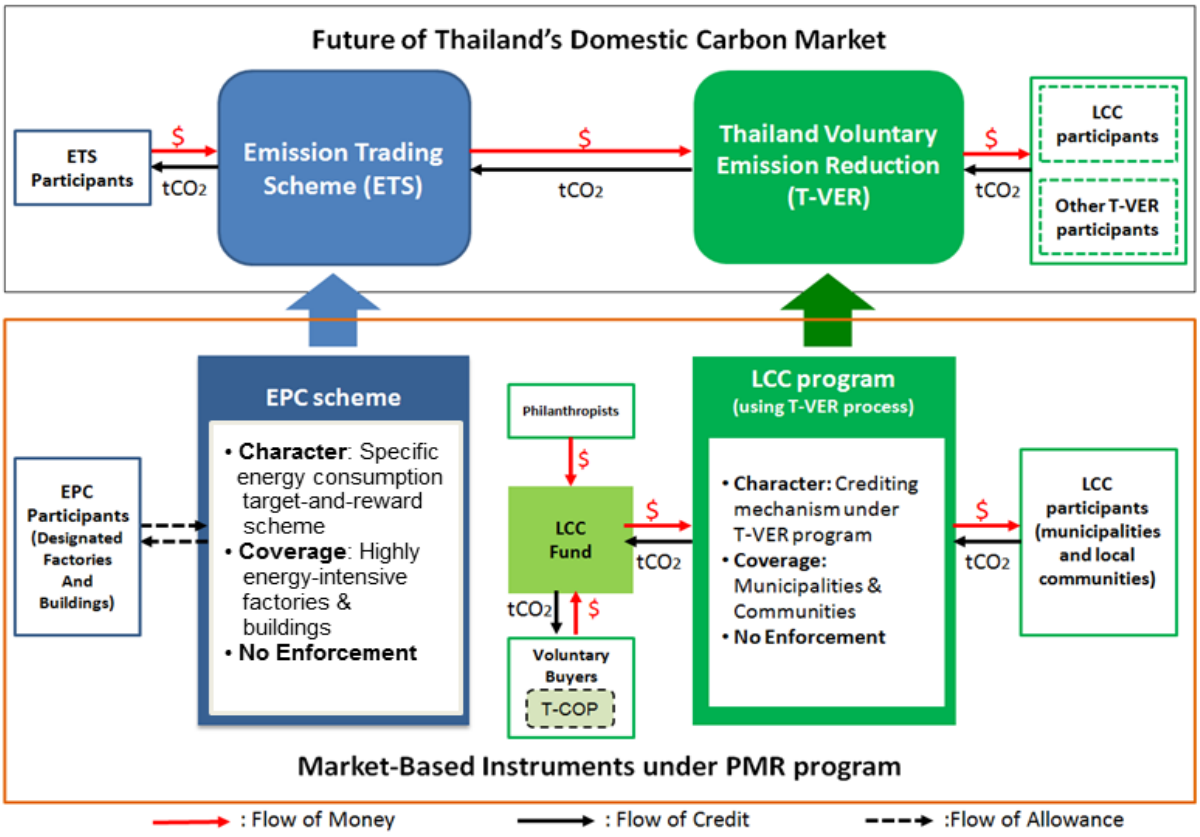
Thailand Voluntary Emission Trading Scheme (Thailand V-ETS)

Since 2012, TGO has conducted several research studies to identify appropriate calculation methodologies for GHG emissions in industries, options for cap-setting and allowance allocation, as well as recommendations on institutional framework, operating rules and appropriate models for Thailand V-ETS. Results from these research studies were shared with

many stakeholders in the industrial sectors - such as steel, cement, glass, petrochemical and chemical, power, refinery, pulp and paper, and others, via numerous consultation meetings. In 2013, TGO carried out a project to develop the MRV system for Thailand V-ETS and has organized several consultation meetings with industries to disseminate knowledge on ETS. However, results from these activities are still at research stage.

Vision of Future Domestic Carbon Market

With a view to establish a mandatory domestic carbon market, Thailand has considered to establish both Emission Trading Scheme and GHG crediting mechanism. Although, under the PMR program, the EPC scheme and the LCC program are not designed to link together, the EPC scheme aims to expand and transform into the Emission Trading Scheme (ETS), while the LCC program aims to expand to cover all municipalities and to generate eligible credits for compliance purpose under the ETS (see figure).



3. Technical Design of EPC

(i) Rationale

Emissions are driven by energy and industrial sector. The Final Energy Consumption by Economic Sectors of Thailand shows that the Industrial sectors constitute the maximum share followed by transportation and buildings. Both building and industrial sectors together contribute over 75% share of GDP with about 60% share in final energy consumption. As the economy is

growing in Thailand, it is also expected that manufacturing (hence industry sector) and building sector would continue to be the major energy consuming sectors due to aggressive commercial activities in the coming years. From the supply side, the energy sector i.e. the electricity generation from power plants and the petroleum refineries consume a huge amount of primary energy. The electricity generation is primarily coming from thermal power plants (hence combustion of fossil fuel) which consume about 85% of total input energy in the supply side. This shows a clear concern about the GHG emission from energy sector. It may be noted that emissions were primarily dominated by the energy sector, which is responsible for about 70% of total emissions. At the same time, the emissions from industrial processes stood at 16.39 M tCO2e (i.e. about 7.2%). That means the energy sector and the industrial processes (precisely manufacturing sector) contribute over 77% of total GHG emission.

A policy push is required to accelerate the yearly reduction in energy intensity in a time bound manner which can ensure the national goal by 2030. As the economic activities go on, the absolute energy consumption would also rise. Now, Thailand has set goal of reducing 25% in energy intensity by 2030 from the base year which estimates a saving target of 16,257 ktoe and 3,630 ktoe by 2030 from industry and large commercial building sector respectively. This implies that the industries and buildings will have to reduce their energy intensity at about 2.1 % per year. Traditionally, as per practices across the region, industries are reducing their energy intensity of their own by about 0.5 to 1.5% every year with implementation of energy efficiency and conservation measures. The same may be the case in Thailand also. As of now, there is no policy which defines target to reduce energy intensity for any industry.

Despite the formulation of an action plan with definite strategies, the MOEN still faces a number of challenges to achieve EEDP's target.

- **Lack of continuous monitoring systems and verification standards for energy savings despite the government support**: About THB 2,000 million (USD 70 million) has been spent every year to provide financial supports for various energy conservation programs. Most types of the financial supports have been provided at the first year of installation and the measurement of energy savings was conducted only in the first year. This has hindered the MOEN in evaluating the continued effectiveness of those supportive measures and in obtaining the information about the actual energy saving achieved. Therefore, the development of management systems as well as management tools, e.g. the development of an energy consumption database and the reporting, verification and assessment systems, is one of its key success factors.
- **Lack of mandatory targets on energy performance**: Many EE measures are already financially viable for investors at current prices, yet are not fully realized due to many market failures and barriers. In particular, adopting EE measures in the building, industry, and transport sectors is a function of the preferences of, and requires action by, many decentralized individuals, energy demand is less responsive to price signals, and regulations tend to be more effective. To achieve the national energy savings targets, mandatory specific enterprise energy saving or energy performance targets for top energy-intensive enterprises can be a more effective policy option particularly when combined with penalties for noncompliance and financial incentives for exceeding the target.9 Although the ENCON Act allows the MOEN to stipulate energy performance

standards, criteria and methods for large energy consumers defined as Designated Factories and Designated Buildings (DF&Bs) as well as the penalties for those who fail to comply with, the current mandates cover only reporting energy consumption, establishing energy management target and plan, appointing personnel responsible for energy, and conducting energy audits. The key barrier for setting mandatory targets on energy performance is that existing data are insufficient, unsystematic, and lacks of a data verification standard.

- **Limited awareness and information**: Consumers have limited information on EE costs, benefits and technologies. Moreover, many energy service companies (ESCOs) in Thailand, which have been promoted to provide a broad range of comprehensive energy solutions, are not publicly recognized and also less qualified energy service companies exist. Although there is an ESCO registration system supervised by the Institute of Industrial Energy under the Federation of Thai Industries (FTI), no close monitoring on the ESCOs' performances has been conducted; as a result, some ESCOs cannot guarantee energy savings throughout the payback period.
- **Capped amount of financial support for each facility**: Various forms of financial instruments including subsidies, soft loans, tax incentives as well as venture capital have been adopted for EE; however, all of the instruments have criteria to limit the amount of financial

In summary, based on extensive consultations with various stakeholders, there is a solid demand /requirement of a performance based and trading system in Thailand because of the following:

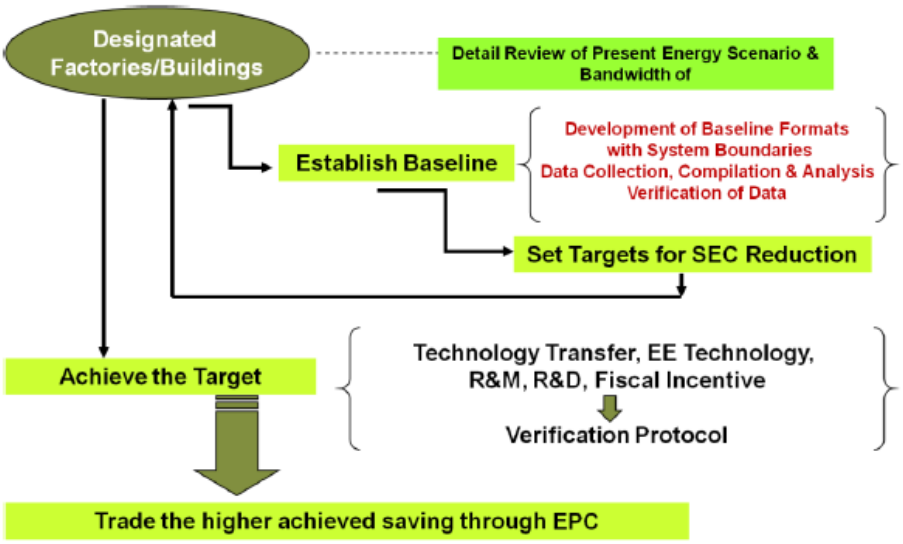
- This will drive energy efficiency in energy intensive manufacturing, building and energy sector in a cost-effective manner
- This will promote technology transfer and adoption of energy efficient best practices
- This will create job opportunities of energy professionals at different levels
- This will infuse more fiscal transactions by bankers or financial institutions by lending fund to deserving factories/building who takes initiatives in implementing the energy efficiency projects.
- This will pave way for linking with other climate change mitigation schemes, hence creation of a wider market for emission trading

(ii) **Objective**

The EPC scheme aims to build market readiness components in energy and manufacturing sectors, major GHG emitters, to be the foundation for establishing the future emission reduction trading scheme in Thailand. The EPC is a target-and-trade scheme designed to enhance energy efficiency and GHG emission reduction and to support achieving the national goal of energy intensity reduction by 25% in 2030, relative to the specific energy consumption levels in 2010. The expected target groups are highly energy-intensive industrial units and commercial buildings. Each of the EPC participants will have the specific energy consumption (SEC) reduction target expressed in "ton of oil equivalent (toe) per unit of product" (e.g. for power production: toe/kWh). The EPC scheme is also designed to improve data accuracy to set energy consumption standards and put in place effective monitoring system which are lacking in the current energy promotional regime. The activities to help set the energy consumption baseline

and performance targets and MRV standards will significantly improve effectiveness of the current policy regime.

(iii)**Building Blocks of EPC Scheme**



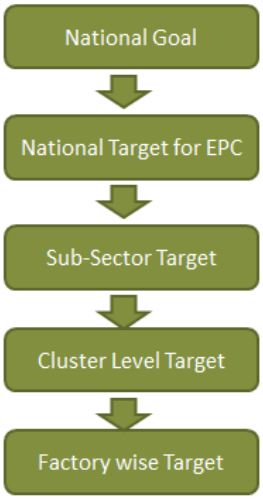
Scope and coverage. The selection of sectors are done in three steps: (i) Selection of Economic Sector by their share in energy consumption and the national GDP; (ii) Selection of Sub-Sectors in the Industry, Building and Power Sector by the share of energy consumption of each sub-sector; (iii) Selection of Scheme Participants by considering absolute energy consumption, energy consumption per industry, energy intensity and emissions per square meter and energy consumption per square meter for buildings

The combination of above criteria shows that the manufacturing sectors in Food & Beverage, Cement, Ceramic, Paper, Iron & Steel and Petro-Chemical rank high in all three criterion and hence are suggested to be included in the EPC. Apart from this, the thermal power plants would also be included in the EPC scheme due to high energy consumption and their contribution towards GHG emission. Similarly, Hotels, Hospitals and Department Stores are selected for EPC scheme because of high energy and carbon intensities.

Selection of boundary: Since Thailand is a developing country, the EPC scheme will be based on reduction in the SEC and not the absolute energy consumption. The SEC gives the indication of efficient utilization of different sources of energy in an operational boundary to produce one unit of product. This is defined as the ratio of total energy input to plant boundary and the quantity of products produced. The SEC of a plant would be calculated based on Gate-to-Gate concept.

Target setting methodology: The potentially large variation of SEC within a sub-sector, and the inability of all designated factories to achieve a sectoral benchmark SEC, suggests that SEC improvement norms need to be set for range of factories or even individually. In general, the better the energy efficiency level (or the lower the SEC), the lower is the energy-savings potential. The target may be defined in the 'percentage' form. It is the percentage reduction of

SEC from Baseline SEC of Base Year to be achieved in a target year. The target setting methodology is provided below:



Allocation of Allowances: Although an allowance-based scheme is probably more expensive in terms of administrative costs than a certificate-based scheme, based on discussion with DEDE, TGO, and Industry Association at several stakeholder discussions organized by TGO, the allowance-based scheme was finalized and selected to generate interest for participation. The allowance-based scheme will also help to build capacity and provide lesson learnt for Thailand in establishing future ETS. In this approach, program administrator will fix energy consumption allowance for each participant which will be based on annualized SEC improvement target. The SEC target will be based on the baseline estimation methodology and the target setting methodology as discussed in the previous sections. The permissible energy allowance will be given annually. At the end of year, participants will have to surrender allowance depending on the actual performance. If actual energy consumption is less than the permissible allowance, participant will have surplus of allowance that can be sold to the sink fund. A procedure for allocation of allowance (free distribution and/or auctioning), minimum price setting (if any) will be finalized during the EPC preparation phase (2014-16). Lesson learnt from EPC allocation will be used to build up and design an allocation methodology for ETS.

System for domestic MRV and compliance: MRV framework has been proposed for MRV in the EPC conceptualization study at different implementation stages.

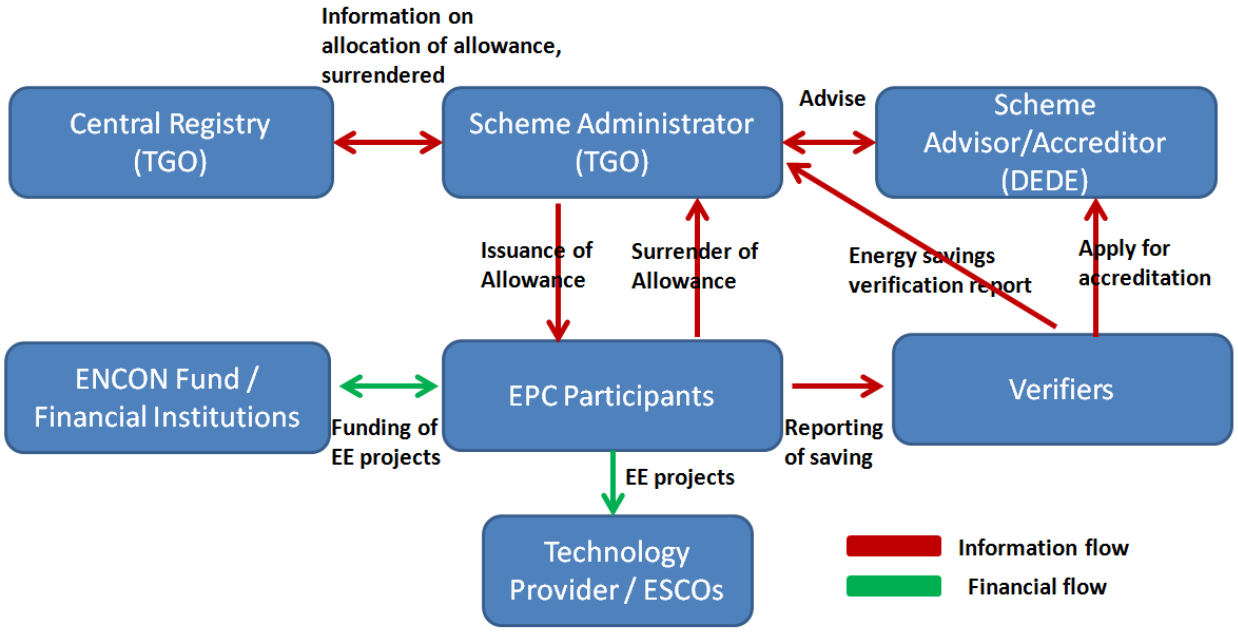
- Baseline Estimation: Verification of baseline energy data collected during the baseline estimation exercise. The verification guidelines will be a part of the EPC scheme rules. Verifiers empanelled with the scheme administrator will conduct this exercise and will verify the production, energy consumption, capacity utilization data, etc.

- Target Setting: For setting the energy performance targets for eligible DF&Bs, energy audits will be conducted to estimate the energy savings potential, cluster classification and assessment of investment required.

- Verification of Data Submitted by DF&Bs: Annual verification of savings will be done by the accredited verifiers. This activity will include verifying and assessing the energy savings achieved, SEC reduction achieved, measures adopted for energy conservation. The verified report will state achievement or shortfall.

Regulatory framework and institutional arrangement: Thailand already has the necessary legal and regulatory framework (ENCON Act and EEDP) supporting some of the activities envisaged under EPC scheme. However, the existing regulations may not be sufficient to support the entire activities, and hence in order to implement the remaining activities, some regulatory gaps are required to be addressed.

The conceptual design of institutional arrangement is proposed below:

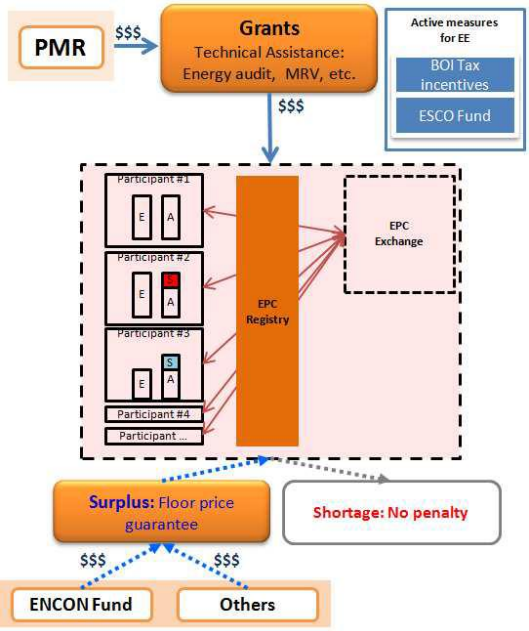


Use of offset and/or linking consideration. In order to establish a simple and independent system, it has been decided that the demonstration EPC scheme will not allow the use of offset and not consider to link with other energy efficiency trading or emission trading scheme.

Incentives for EPC participants. To participate in the EPC scheme, the investment cost and transaction costs occur. Such transaction costs may include pre-audit of energy uses, cost of document preparation, cost of measuring devices, cost of verification by third party, etc. The financial tools are required to compensate such additional costs as well as to attract the participation of EPC scheme.

Based on an initial study and a discussion with relevant stakeholders, it is proposed that an incentive option that contains both of providing grants for covering the transaction cost and of providing a floor price guarantee to all surpluses of EPC units could be accepted by potential

EPC participants to voluntary join the scheme. The design of the incentive option for EPC participants is presented below.



From the figure of incentive above, it shows that the EPC participants will receive two main incentives when participating in the EPC scheme.

1. Grants for compensation of the transaction cost: The ECP participants will be supported with technical assistance, energy audits and MRV.
2. A guarantee floor price to sell the surplus of allowance: In case, the EPC participants can save energy than the target, the surplus of allowance can be sold to the sink fund, which will be set up by funding from ENCON Fund. This can promote more energy saving in the EPC scheme.

(iv) **Plan for Operationalization**

A phased approach is proposed for **operationalization of EPC** as per the following:

Phase 1: EPC Preparatory Phase (2015 to 2017)
Objective: This phase would focus on the detail assessment of the various preparedness levels, identify and bridge the gaps, develop methodology and procedures, establish MRV system and develop detail operational guidelines of EPC scheme, convince all stakeholders regarding the scheme.
Activity Areas: The broad activities would range from feasibility studies, stakeholder consultations, data compilation & analysis, capacity building, etc.

Phase 2: EPC Demonstration (2017 to 20120)
Objective: This phase would focus on launching the scheme on a pilot basis where the design frame- work of the EPC scheme will be tested. The learning and gaps (if any) will be the key

take away of the pilot scheme to take necessary corrective action for launching a mandatory ETS system in the future. The pilot phase is expected to cover at least 100 D F&Bs and a maximum of 20% of the probable D F&Bs of the identified sectors. No trading will occur in this phase.
Activity Areas: The broad activities would range from technical and financial support, MRV, capacity building, assessment of the efficacy of the pilot study, etc.

(v) **How EPC would evolve into ETS?**

International experience suggests that energy trading/emission scheme should be mandatory to ensure participation and achieve the objective. However, the EPC scheme, if launched mandatory, would require a number of issues to be addressed in terms of data availability, data authenticity, human resource requirements, institutional arrangements, legal provisions, financial arrangements, most importantly the acceptance of all relevant stakeholders, before the EPC scheme is announced as a mandatory scheme. Consulting with DEDE and industry association made it clear that Thailand, with its present institutional, regulatory and administrative set-up would find it extremely difficult to start the scheme as mandatory. Therefore, under the PMR project, Thailand proposes to initially set up the EPC scheme as a voluntary scheme. The objective of voluntary nature of the scheme is to establish a robust Thailand's institutional, procedural and legal platform which would be very useful in the long run when the scheme is made mandatory.

Also, to launch the EPC scheme voluntary and make it successful, good preparation by the Thai government is critical in the following areas:

- Institutional Preparedness : Scheme administration, facilitation, monitoring, data management, financial and technical support
- Technical Preparedness : Data, baseline and target setting methodology, MRV system, database system
- Human Resource Preparedness: Verifiers, Energy Auditors
- Legal Preparedness

These preparedness and readiness components will be a fundamental basis for Thailand to expand and build the mandatory ETS in the future.

(i) Rationale

Thailand is fostering a low-carbon society and green growth. Following the 11th NESDP, the country is setting up different policy instruments to achieve the "Low Carbon City" paradigm (and ultimately the "Low Carbon Society" paradigm), avoiding locking into unsustainable municipal infrastructures. LCC policies can contribute to large GHG mitigation potentials. However, the contribution of international market-based instruments like the CDM to low-carbon urban development has been very modest in municipalities and communities, due to the limitations of traditional carbon market instruments to achieve GHG emission reductions in urban environments, including additionality, principal-agent problem, data availability, transaction costs, etc. (WB, 2010; UNEP, 2012).

Emerging cities can design and implement a wider range of market-based instruments to achieve climate change mitigation, including, inter alia, carbon taxes, cap and trade systems and other crediting instruments. In addition, they can use other policies such as command and control regulations, technology support policies and information and policy approaches (IEA, 2011).

Achieving GHG emissions through a crediting instrument like the LCC Program has clear advantages relative to more traditional command and control regulations, such as technology or performance standards. By placing a general price on avoiding pollution, the LCC Program gives a general incentive for climate change mitigation, providing a wide-range signal to abate GHG emissions. Several studies have demonstrated that this approach can lead to significant gains in effectiveness related to technology mandates. Instead of favoring low carbon activities with different policy instruments (i.e. one-off subsidies to LED street lighting, Feed-in-Tariff to renewable energy, concessional loans to municipal solid waste management facilities, etc.), a crediting instrument like the LCC Program will ensure that GHG abatement is rewarded equally and impartially, regardless of the technology, sector or geographical location where it takes place (IEA, 2011).

The LCC Program complements and interacts with other policy instruments. The implementation of LCC Program can support the mitigation objectives as already defined within the country's main regulatory framework. For example, the 11th NESDP has set up mitigation of GHG emissions as a key target in the country's development to achieve a low carbon economy. The LCC Program will be implemented under energy policy and measures such as following strategies introduced in the AEDP, obtaining existing financial incentive for supporting renewable energy development from the ENCON Fund through investment subsidy, soft loan, and both equity investment and equipment leasing measures under ESCO Fund, to support an investment in renewable energy and energy efficiency projects. Meanwhile, the implementation of LCC Program can support the goal of AEDP since municipalities and communities will be facilitated to ensure that they are able to develop renewable energy projects, and with their own experiences, they will have better understanding of renewable energy so that renewable energy development becomes more widely accepted. Moreover, the municipalities and communities will also gain co-benefits from conducting GHG mitigation activities such as improving air quality and public health.

(ii) Objective

The LCC program aims to support municipalities and communities in achieving the national goal to shift towards a low carbon society by implementing GHG emission reduction activities. "Low Carbon City" refers to a province, city, municipality, or community that pursues a systematic process to achieve GHG emission reductions. The projects under the LCC Program, developed by municipalities and communities, will apply the T-VER for certifying and issuing carbon credits, TVER credits, generated under the LCC program (LCC-TVERs). The LCC-TVER credits can be used for offsetting carbon footprints in voluntary market, and once the domestic emission trading scheme in Thailand is established, the LCC-TVER credits will be eligible for compliance purpose in the scheme.

(iii) Building Blocks of LCC Program

Conceptual framework of the LCC Program. The LCC Program aims to be a crediting mechanism to achieve GHG emission reductions in municipalities and communities by applying the existing design from T-VER program as a basis for generating and certifying carbon credits, so-called "LCC-TVERs." The LCC-TVERs can be sold to LCC fund which is a one-stop service for buyer and seller of LCC-TVERs. The LCC fund will therefore be the main element to ensure the functionality of the LCC program (see figure below). In addition, the municipalities will also be supported in terms of technical assistance and capacity building to conduct Local GHG Abatement Plan, identification of GHG emission reduction actions and GHG mitigation potential assessment, as well as implement the MRV procedures through the T-VER scheme.

(iv) Scope and Coverage

Eligible Participants: Thai municipalities and local communities will be eligible to participate in the LCC Program to develop GHG emission reduction activities. Specifically, Thai municipalities, Special Municipalities (BMA and the City of Pattaya), Provincial Administration Organizations (Thailand's 77 geographical units into which Thailand is divided) or its 7,853 Tambon Administration Organizations and local communities include local community enterprises and local cooperative units.

GHG covered by the LCC Program: The LCC Program will focus on the reduction of GHGs including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions and reductions under the LCC will take into account the Global Warming Potential (GWP) of each gas and report under a common unit: tons of carbon dioxide equivalent or tCO2e (e.g. CO_2 (1), CH_4 (25) and N_2O (298)).

Sectors covered by the LCC Program: The LCC program will focus on project activities with GHG mitigation potential, as defined by the IPCC (IPCC, 2007). Only the municipalities (local public authorities) and the local communities will be eligible to implement the activities covered. The commercial and industrial sectors are excluded from the LCC Program. The LCC program's scope will include GHG mitigation activities in the seven areas covered by the T-VER as:

- Energy Efficiency
- Alternative Energy
- Renewable Energy
- Solid Waste Management
- Transportation Management
- Forestry and Green Area
- Agriculture

Quantification of emission reductions and the MRV system. The LCC Program will also rely on simplified MRV procedures under the T-VER able to accomplish a satisfactory degree of environmental integrity while building on readily available information. The municipalities and local communities will rely on the existing monitoring methodologies developed by the T-VER scheme to gather necessary data to calculate the GHG emission reductions achieved by Thai municipalities and communities. The goal of the monitoring reports will be to ease the

monitoring process and to generate standard and comparable documentation. The monitoring report will be verified by an accredited third party. The verification framework will need to be flexible enough to ensure reduced transaction costs in participating municipalities and communities. The LCC program will need to establish an accreditation process to become an authorized entity to carry out verification services under the LCC program. In line with other market-based instruments like the CDM, the cost of the verification will be borne by the project proponents, i.e. LCC Municipalities and communities.

(v) Regulatory framework and institutional arrangement

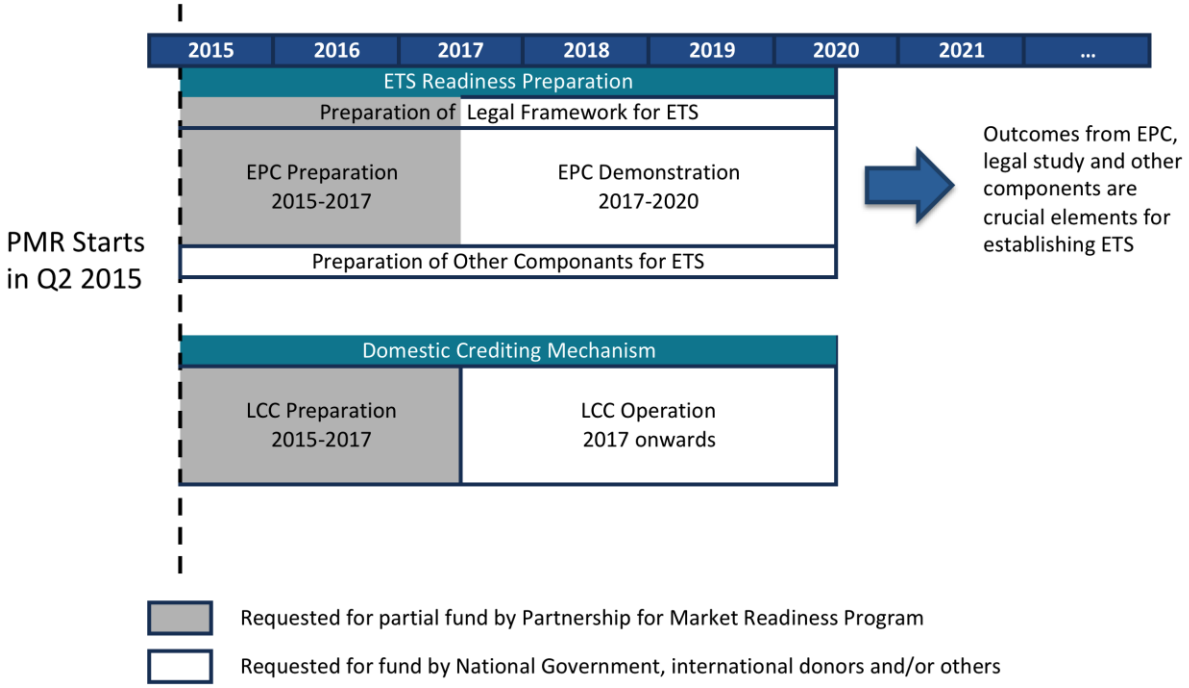
- Policy Thrust and Direction: Thailand's future market-based instruments to mitigate GHG emissions at a local level, could receive policy thrust and direction by the PMR Steering Committee under TGO. The TGO has been created under the MONRE with the specific purpose of becoming an implementing agency of GHG emission reduction in Thailand, promoting low carbon actions, marketing on GHG emission reductions and setting up a GHG information center. In order to correctly align the market-based instruments for local GHG mitigation with existing policies to promote LCC development in Thailand, it will be necessary to also receive political thrust and guidance from other institutions, such as the ONEP of the MONRE, and from other public bodies, such as the DEDE.

- Coordination and Management: TGO appears to be the most logical institution to perform the coordination and management function of the market-based instruments for local GHG mitigation under the Project Management Unit (PMU).

- Baseline setting, quantification of emissions reductions, MRV and tracking system: TGO has the necessary institutional capacities to carry the baseline setting and quantification of emissions reductions, MRV, as well as the tracking system function. In fact, TGO has several technical units which could perform the different functions required by the market-based instruments under the LCC Working Group and LCC Technical Unit.

- LCC Fund function and activities. In principle, any Thai municipalities and local communities who participate in the LCC program can sell carbon credits to the LCC Fund via LCC-TVERs sale and purchase agreement. On the other hand, voluntary buyers who are interested to offset their carbon footprints while support local communities can purchase LCC-TVERs via LCC Fund. The LCC Fund acts as the one-stop service for both LCC-TVERs buyers and sellers. It is important to note that the LCC fund does not provide any investment subsidy or loan to finance the LCC projects. LCC participants must finance projects by themselves either by their own equity financing or together with debt financing from financial institutions. LCC Fund only provides another source of revenue to LCC participants from the sale of carbon credits.

4. Timeline of the Proposed Program



Annex 3: Detailed Project Description

1. The PDO is to provide selected technical and analytical support to Thailand that informs policy decisions to develop readiness of market-based instruments to reduce greenhouse gas (GHG) emissions in Thailand.

2. The project consists of the following components:

Component 1: Preparation of key market components of the Energy Performance Certificate (EPC) Scheme (US$1,600,000). Component 1 will comprise of the following activities:

Activity 1A: Development of MRV system for EPC scheme (US$275,000)

- Develop a data template in the context of EPC and the ETS requirement including proposing methods for collecting and managing data.
- Propose a methodology in converting 'toe' to 'tCO_2' for transferring the EPC unit to the ETS unit.
- Review and asses DEDE's existing data reporting and MRV system.
- Propose and build a data reporting system and an appropriate MRV system that can be used for the EPC scheme and the future ETS.
- Develop a system to facilitate data interchange of annual energy report between DEDE and TGO and submission of GHG information from DF&Bs to TGO.

Activity 1B: Assessment of the DF&Bs energy management and updating the SEC for 11 sectors (US$300,000)

- Collect and review present data and storage system (list of DF&Bs, annual energy consumption of each DF&B, data capture and storage system) and analyze energy data for the year 2012-2013.
- Research study on sector-specific energy usage patterns and potential improvement for energy efficiency in 11 sectors.
- Development of sector-specific technology compendium.
- Study on energy benchmarking of products in 11 sectors.

Activity 1C: Energy data verification of selected DF&Bs (US$475,000)

- Develop criteria for selecting DF&Bs to participate in the energy data verification.
- Invite DF&Bs to participate in the energy data verification.
- Verify all existing data by independent verifiers/ energy auditors.

Activity 1D: Target setting methodology for EPC scheme (US$250,000)

- Analysis of data for baseline estimation and target setting for EPC.
- Study on target setting methodologies for EPC.

- Propose (an) appropriate target setting methodology (ies) and energy saving targets based on SEC for targeted sectors.
- Consultation process on the proposed target setting methodology.

Activity 1E: Assessment study on provisions of present law and amendments required for the EPC scheme (US$100,000)

- Assessment study on provisions of present law and amendments required for the EPC scheme.
- Review international experiences on legal frameworks for the EPC.
- Provide policy recommendations on the legal framework for the implementation of EPC in the Thai context.

Activity 1F: Study on pricing mechanism and incentives for EPC (US$200,000)

- Review international experiences on pricing of carbon credits in relation to the EPC scheme and collect and study information on pricing structures of carbon credits or pricing of credits related to EPC in other countries.
- Review and study international experiences in the capitalization of sink fund or related carbon fund to buy back surpluses.
- Review and study international experiences on legal frameworks and administrative structures of sink fund management.
- Study information about available sources of funding, management structures and related laws in the Thai context.
- Study and determine the price level to buy back the surplus of allowances under the proposed Thai EPC scheme.
- Identify potential sources of fund for EPC sink fund in Thailand.
- Propose the structure of the sink fund and its admin and legal requirement.
- Provide policy recommendations on the price setting method for surplus allowances under the EPC scheme, potential sources of fund, fund capitalization, management structure of the sink fund which are appropriate and feasible in the legal framework of Thailand.
- Conduct a cost-benefit and cost effectiveness analysis of EPC scheme as a policy option to reduce energy use and carbon emissions.
- Training and knowledge sharing.

Component 2: Development of Local GHG Abatement Plans and study on pricing mechanism for LCC Program (US$700,000). This component will provide support to 24 local municipalities to develop a Local GHG Abatement Plan which will be used to guide mitigation actions and low-carbon investment at the municipal level. The LCC program will be built on the TGO's past experiences on the pilot City Carbon Footprint Project which had been carried out in three municipalities – i.e. Chiangrai Municipality, Lampang Municipality and Nong Samrong Municipality (Udonthani province). The pilot City Carbon Footprint Project assisted the three municipalities to prepare the city-level GHG inventory, prioritize GHG-contributing sectors, assess potential technologies to reduce GHG emissions and recommend mitigation activities for the city's mayor consideration. Based on the existing Thai City Carbon Footprint (CCF)

Guidelines and experiences gained from the development of these 24 Local GHG Abatement Plans, the GHG Abatement Plan Guideline will be developed as part of the project. A Project Design Document (PDD) for the selected mitigation action will be developed for each municipality using the RTG co-financing resources. The development of LCC PDD will follow the available T-VER methodologies and its eligibility criteria. The PDD will not be a comprehensive city-wide program but rather focus on specific activities. It is an initial assessment document for considering the selected GHG reduction project of the city/municipality and is not an investment plan but briefly describes the project activities, baseline GHG emission and reduction from the proposed activity and monitoring plan. From TGO's experience on the pilot City Carbon Footprint Project, potential activities for LCC include solar rooftop project, conversion of street lighting and/or municipality's building lighting to LED, methane recovery from existing wastewater treatment system/landfill, improvement of solid waste transportation logistic to reduce fuel consumption and operating cost, promotion of non-motorized vehicles (e.g. bicycle), etc.

The PMR will also support the LCC pricing/incentives study to set the price of carbon credits generated under the LCC program for voluntary buyers and provide recommendations on other fiscal or financial incentives that the RTG can adopt to expand the size of the domestic voluntary carbon market. The study will also help TGO explore the potential to set up a LCC fund to act as a carbon fund.

Activity 2A: Development of Local GHG Abatement Plans (US$600,000)

(a) Development of Local GHG Abatement Plans for 24 municipalities. A Local GHG Abatement Plan will include the followings:
- Identify all mitigation options in the municipality area.
- Assess the potential for GHG reductions of each action.
- Estimate the cost of each option.
- Estimate medium-term investment requirements for the municipality.
- Prioritize mitigation options for a municipality based on multiple criteria (potential for GHG reductions, cost effectiveness, readiness for implementation, financing availability) and propose prioritized mitigation actions for further PDD development.

(b) Development of Local GHG Abatement Plan Guidelines

Activity 2B: An analytical study on pricing mechanism for LCC Program (US$100,000)

- Review international experiences on the development of domestic voluntary market and measures used by government to promote its voluntary domestic market.
- Study international experiences on pricing of voluntary credits in domestic voluntary carbon markets.
- Conduct international and domestic benchmarking of project costs.
- Propose a suitable methodology/practice for pricing LCC credits in Thailand.
- Propose other incentive options (e.g. tax incentives) for LCC T-VER buyers in order to stimulate demand for voluntary credits.

- Propose feasible functions of the LCC fund, to act as a one-stop service for local municipalities in carbon project development, including, but not limited to, project technical support, green investment pool and sourcing, T-VER credit brokerage, general project financing, etc.
- Provide training and knowledge sharing

Component 3: Policy recommendation on legal framework to establish the ETS (US$400,000). This component will support the analytical works to inform the RTG's consideration for establishing the ETS in Thailand. The PMR support is sought to focus on the legal aspect of the ETS preparation given that the legal barrier is foreseen to be one of the key issues in establishing the ETS as well as the one that will take a long time to prepare. In principle, the legal framework shall be developed with basic rules to provide institutional safeguards for emission trading and ensure a fair, open and equitable market.

Activity 3A: A study to review international experiences on ETS legal framework and propose policy recommendations on the legal framework for establishing the ETS in Thailand (US$400,000)

- Review legislative practices in overseas emission trading schemes (e.g. EU ETS, China ETS, Korea ETS, etc.).
- Review existing Thai laws related to future establishment of ETS.
- Propose a suitable legal framework for establishing ETS in the Thai context including creating a new law and amendments of existing laws.
- Propose an institutional arrangement for the operationalization of ETS.

Component 4: Project management. (US$300,000) TGO will establish a project management unit (PMU) headed by TGO staff. Two technical officers, one assistant technical/procurement officer and one financial officer will be hired to provide technical support. The project management budget will also be used to organize workshops and trainings related to project implementation. The cost of financial audits is also included in the management cost.

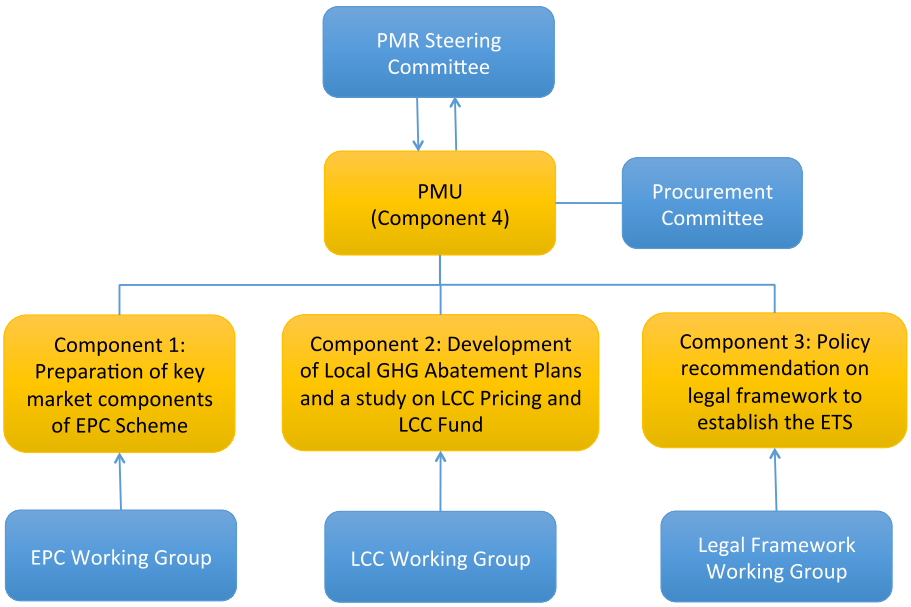
3. **Double counting risk**. This risk has been recognized by TGO, who has a lot of experience during the first commitment period of Kyoto Protocol. The LCC program will include GHG mitigation activities in the seven areas covered by T-VER program, while the coverage of EPC scheme will focus on designated factories and buildings (DF&Bs), to which the Energy Conservation and Promotion Act (ENCON Act) is applied. The participants will not be counted more than once.

Annex 4: Implementation Arrangements

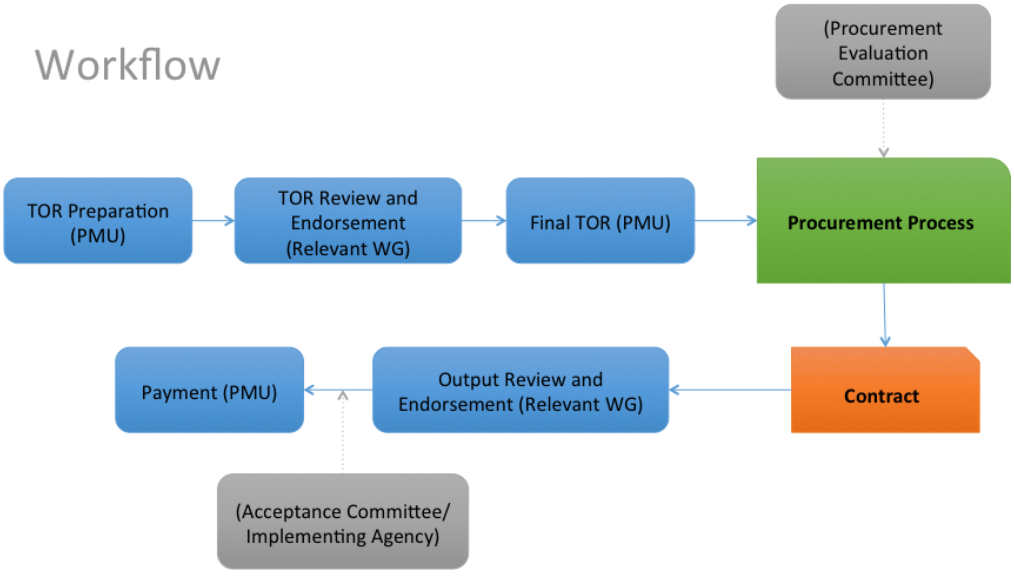
Project Institutional and Implementation Arrangements

Project administration mechanisms

1. The implementation arrangement of this project can be presented as per the below flow diagram:



2. The general workflow of the assigned entities is show below:



Financial Management, Disbursements and Procurement

Financial Management

Summary of the Financial Management Assessment

3. A Financial Management (FM) capacity assessment was conducted to determine the adequacy of the Financial Management capacity of the Thailand Greenhouse Gas Management Organization (TGO) to manage funds according to the Bank's requirements as stipulated in OP/BP 10.00. The proposed project is an expanded project of the Partnership for Market Readiness (PMR) Phase 1 project, following the same institutional arrangements. The assessment was carried out during May 2014 and further updated during the recent appraisal mission conducted in September 2014. The assessment was substantially based on the previous FM assessment, findings of existing internal and external reviews, and the supervision of the preparation grant of the PMR and performance and discussions with the Accounting section of TGO.

Staffing

4. The Accounting Unit of TGO currently consists of three staff headed by the accounting manager who has accounting background with extensive experience in accounting (27 years). Based on our discussion, the accounting team will help with the day to day FM work of the project. However due to their workload, it is proposed to recruit one qualified FM consultant, to be financed by the project, to help with the management and reporting on the funds. Once the project becomes effective, the FM consultant together with TGO accounting team will be trained in more detail concerning the Bank Financial Management and Disbursement policies and procedures.

Accounting Policies and Procedures

5. The existing accounting policies and procedures already in place within TGO, used during the phase 1 will also be applied to the project. The existing Financial Management Manual, which will be part of the Operations Manual, will be enhanced and updated to ensure that it is relevant and adequate for use under the PMR.

6. As the World Bank requires any Bank funded project to provide a financial report for the project, TGO will establish a supplemental system within the current accounting system to separately record the transactions of the project. Such system should be capable of maintaining separate accounting records and documentation; to produce periodic financial reports and have systematic control procedures to ensure that project expenditures are properly verified and duly authorized before payment are made.

7. The financial report will be prepared in accordance with the Thailand accounting standards, which are compatible with International Accounting Standards. The project will use the cash basis of accounting.

8. Supporting documentation will be maintained at TGO and be available for subsequent review and audit

Internal Controls

9. The system of internal control will be clearly described in the FM manual to provide guidance to the project management and finance staff. The manual will outline the controls put in place to ensure that sensitive expenditure is properly monitored for eligibility, the financial information is accurate and that no single person will be able to initiate, verify and authorize payment for a transaction.

10. A project fixed assets register should be prepared for all fixed assets and a physical inventory will be regularly conducted (at least once a year) to ensure the existence and condition. Management and control of project assets shall also be detailed in the FM manual.

11. An advance control book should be prepared and maintained to monitor outstanding advances. Liquidation should be done in a timely manner. Month-end procedures, such as bank reconciliations, cash counts etc. will be performed by responsible person and reviewed by management.

Funds Flow and Disbursements

12. Grant Funds will flow from the World Bank to a Designated Account (DA), opened at Bangkok Bank Limited in USD and managed by TGO. The ceiling of the DA will be US$ 250,000 which is the estimated quarterly expenditures based on the total funding allocation of the project.

13. Conversion/Operating account will also be operated in local currency to facilitate efficient flow of funds and activity implementation.

14. The accounting for transactions and reporting on the use of funds will be done by TGO. The DA should be replenished on monthly (not later than quarterly) basis (irrespective of the amount involved) to assure liquidity of funds.

15. All replenishment applications will be accompanied by reconciled bank statements from the depository Banks showing all transaction through the DA.

16. The authorized and procedures for withdrawals from all bank accounts shall be elaborated in the FM manual.

Disbursement Arrangements

17. Disbursements from the grant account shall be based on traditional method i.e. made against the Statement of Expenditures (SOE) and/or full documentation depending on prior review thresholds.

18. Disbursement methods shall include: (i) advance, (ii) reimbursement; and (iii) direct payment. The disbursement grace period will be needed and shall be equivalent to 4 months after the project closing date. The minimum value for direct payments and reimbursements shall be at least equivalent to US$50,000.

19. Disbursement will be against the following category:

	Disbursement Category	**Amount of the Grant (US$)**	**Financing Percentage (inclusive of taxes)**
(1)	Goods, non-consulting services, consultants' services, Training and Workshops, and Operating Costs under the Project	3,000,000	100%
	TOTAL	3,000,000	100%

20. ***Incremental Operating Costs*** means reasonable expenditure directly related to the project incurred by the Recipient in managing and coordinating the implementation of the project (and include only expenditure that would not have been incurred in the absence of the project). Incremental Operating Costs include consumable materials and supplies, communications services (postage, telephone and internet), printing services, translation and interpretation services, office space rental and utilities, maintenance of office equipment, vehicle rental, fuel, operation and maintenance of vehicles, bank charges, advertising expenses, utilities, Project staff travel, lodging and per diems, (excluding salaries, bonuses, fees, honoraria or equivalent payments to members of the Recipient's civil service) and other reasonable expenditures directly associated with the implementation of project activities.

21. ***Interest earning on Special Account.*** Interest income earned on the outstanding balance of the Special Account (if any) would be retained on the account and be used by TGO for the project's purposes agreed with the World Bank.

Retroactive Financing

22. Retroactive financing of about US$300,000 will be applied in this project for eligible expenditures as of December 1, 2014. Activities for retroactive financing are identified in the procurement plan and subject to the Bank's prior review. Retroactive financing will facilitate and expedite the PMU establishment and procurement of key consulting services as well as allow the implementing agency to conduct critical technical assistance and institutional strengthening activities.

Financial Reporting

23. The project's Interim Unaudited Financial Report (IFR) is to be prepared on a semi-annual basis according to the format agreed with the Bank. The IFR is to be submitted to the Bank no later than 45 days after each period. The IFR shall include the following: (i) Narrative descriptions of the project progress in each component, procurement activities and financial summary; (ii) Statement of Sources and Uses of Funds by component/activities; and (iii) Variance analysis on the uses of fund by project component/activities compared against work plan and budget. The IFR format and content will be agreed before negotiation.

24. The period for the purpose of the financial reporting will be on semi-annually and for annual audit reporting from October 1 to September 30.

Audit Arrangements and Disclosure Procedures

25. Project's Financial Statement is to be audited annually. The audit report and management letter are to be submitted to the Bank no later than 6 months after the financial year end.

26. Agreement has been reached with Office of the Auditor General (OAG) of Thailand to audit all Bank funded support in Thailand. In this regard, once the project is effective, TGO will inform the Office of the Auditor General to agree on the audit work plan. The audit will be against Terms of Reference acceptable to the Bank.

27. TGO will have to make available to the public the audit report and audited financial statements. It has been agreed that the reports will be posted on TGO website. Disclosure procedures shall be detailed in the FM manual.

28. There is no outstanding audit report under Bank project currently being implemented by TGO.

Implementation Support and Supervision Plan

29. Implementation support mission will be carried out within 3 months after the project becomes effective and twice a year in the first year and once a year in the subsequent years. The frequency of Financial Management implementation support mission will be further defined depending on the identified issues, progress and capacity of the implementing agency during project implementation.

Procurement

30. **Assessment of the agency's capacity to implement procurement.** The project is an expanded project of PMR Phase 1 Project, following the same institutional arrangements. TGO will be the implementing agency. An assessment of the capacity of the Implementing Agency identified following key issues and risks concerning procurement that could arise when implementing the project, as well as measures necessary for mitigation. They are as follows:

- ***Limited capacity and no experience with procurement*:** As the implementation agency, the experience of TGO with competitive procurement is limited. Although TGO has experience with the Phase I of the PMR, it limits to a few CQS contracts. The same project technical team which is familiar with the World Bank's procurement and selection procedures will remain working with the proposed project. One assistant Technical Officer will be hired to be responsible for the project procurement within the PMU, under supervision of TGO Project Director and guidance from the TGO's Senior Procurement Officer. The Bank team will provide procurement training to the implementing agency staff to familiarize them with the Bank's procurement policy and procedures.
- ***For employment of consultants:*** the TGO's procurement and selection procedures have inadequate comprehensive procedures and standard documents to provide clear competition. It was clarified with TGO that selection of consultants will follow the World Bank's Guidelines and standard request for proposals.

  One Procurement Evaluation Committee: In order to expedite the procurement and evaluation procedures, it was suggested to TGO to establish one permanent evaluation committee for all procurement packages financed by the project in order to smooth out the procurement and contracting activities under the Project. Having this same committee members participating in all projects' activities will continue understanding and efficient management of procurement processes in timely manner.

31. Based on the above analysis, the initial risk assessment for project procurement is "Moderate" and remains "Moderate" with the agreed mitigations.

32. **Applicable Guidelines.** The procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 (revised July 2014), and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers", dated January 2011 (revised July 2014); and the provisions stipulated in the Legal Agreements.

33. **Procurement Plan.** At project appraisal, TGO finalized the Procurement Plan for the first 18 months of project implementation and submitted to the Bank for no objection. The procurement plan provides the basis for the procurement methods and review requirements by the World Bank. This plan has been agreed between TGO and the Word Bank, and is available in the project's files. Once the project is approved, it will be made available at TGO and the World Bank's external website. The Procurement Plan will be updated in agreement with the World Bank annually or as required to reflect the actual project implementation needs and improvements in institutional capacity within TGO.

Goods and Works and Non-Consulting Services

34. **Prior Review Threshold**: Procurement Decisions subject to Prior Review by the Bank as stated in Appendix 1 to the Guidelines for Procurement*:*

Goods:

	Procurement Method	Prior Threshold US$	Prior Review Condition
1.	Shopping (Goods)	*Below US$ 100,000*	-
2.	Direct Contracting	*All*	*All*

35. **Any Other Special Procurement Arrangements:** Advance procurement and retroactive financing.

Summary of the Procurement Packages Planned during the First 18 months

1	2	3	4	5	6	7
Ref. No.	**Description**	**Estimated Cost US$**	**Packages**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Comments**
1.	Summary of the of the Shopping (Goods) packages	4,000	1	No	Post	

Selection of Consultants

36. **Prior Review Threshold**: Selection decisions subject to Prior Review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants:

	Selection Method	Prior Review Threshold	Comments
1.	Competitive Method (Firms)	Above US$ 100,000	
2.	Single Source (Firms/Individual)	All	
3.	Individual	SSS >$10,000 and fiduciary and legal positions	

Consultancy Assignments with Selection Methods

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost	Selection Method	Review by Bank (Prior / Post)	Expected Proposals Submission Date	Comments
CS-1	Technical Officer for EPC scheme		3 CVs/ Individual	Post	Dec 2014	Retroactive 33 months assignment
CS-2	Technical Officer for LCC program		3 CVs/ Individual	Post	Dec 2014	Retroactive 33 months assignment
CS-3	Assistant Technical Officer/Procurement		3 CVs/ Individual	Post	Dec 2014	Retroactive 33 months assignment

CS-4	Financial Officer		3 CVs/ Individual	Prior	Jan 2015	33 months assignment
CS-5	Study to propose the legal framework for establishing the ETS in Thailand		Firm/QCBS	Prior	Mar 2015	
CS-6	Study on provisions of present Law and amendments required for EPC scheme		Firm/CQS	Post	Mar 2015	
CS-7	Development of MRV system for EPC.		Firm/CQS	Prior	Mar 2015	
CS-8	Assessment of the D F&Bs energy management system and updating SEC for 11 sectors.		Firm/QCBS	Prior	Mar 2015	
CS-9	Energy data verification of selected D F&Bs.		Firm/QCBS	Prior	Apr 2015	
CS-10	Target setting for EPC scheme.		Firm/CQS	Prior	Apr 2016	
CS-11**	Study on GHG emission and identify potential GHG emission reduction. Develop local GHG abatement plans in 8 municipalities (Region 1)		Firm/ CQS	Prior	Apr 2015	
CS-12**	Study on GHG emission and identify potential GHG emission reduction. Develop local GHG abatement plans in 8 municipalities (Region 2).		Firm/ CQS	Prior	Apr 2015	
CS-13**	Study on GHG emission and identify potential GHG emission reduction. Develop local GHG abatement plans in 8 municipalities (Region 3).		Firm/ CQS	Prior	Mar 2015	

	Develop GHG abatement plan guideline that include environmental and social management framework.					
CS-14	Study on pricing mechanism for EPC unit, LCC TVERs, source of fund and incentive options for LCC TVERs buyer.		Firm/CQS	Prior	Mar 2015	

** These TORs will be combined into one REOI which specify the firm could express the interested region.

37. **Frequency of Procurement Support.** The procurement capacity assessment indicated the need for bi-annual implementation support missions to assist in project implementation during the first year of operation. The frequency of procurement supervision will be further defined depending on the progress and capacity of the implementation agency.

Environmental and Social (including safeguards)

38. The project will provide technical assistance to Thailand in preparation of ETS, EPC and LCC scheme. It will not finance any physical investment, piloting activities nor feasibility study/technical design work. Under ETS component, the project will conduct analytical works and studies of legal and institutional framework on emission trading. These studies will be needed to inform ETS policy design in the future. The PMR support for EPC component will focus on data readiness, target setting methodology for different industrial sectors and buildings, development of MRV system, assessment of laws and regulations and modifications required to implement EPC, and an analytical study on performance-based incentive and pricing mechanism. For LCC component, PMR will support development of Local GHG Abatement Plans for 24 municipalities and GHG Abatement Plan Guidelines. Development of the local abatement plans will be conducted in consultation with key stakeholders from government, private sectors and representatives from local communities and civil society. Gender consideration will be put in place when organizing these consultations as men and women might have different perspectives on the GHG and its mitigation actions. According to the local abatement plan, the PDD, for the selected mitigation action will be developed for each municipality using the RTG co-financing resources. The LCC PDD is an initial assessment document for considering GHG reduction project of the city/municipality and is not an investment plan but explains what the proposed project is, how and how many GHGs it will reduce, etc. The PDD will not be a comprehensive city-wide program but rather focus on specific activity. From TGO's experience on piloting city carbon footprint in 3 municipalities, potential activities for LCC include solar rooftop project, conversion of street lighting and/or municipality's building lighting to LED, methane recovery from existing wastewater treatment system/landfill, improvement of solid waste transportation

logistic to reduce fuel consumption and operating cost, promotion of non-motorized vehicle (e.g. bicycle) and electric car, etc.

39. In summary, the project will be solely on technical assistance activities. The PMR support will not include physical investment, piloting activities nor investment plan/feasibility study. It is anticipated that the project will lead to long term positive impacts to the environment particularly on GHG emission reduction and energy consumption reduction. The project activities are likely to have minimal or no adverse impacts, although the PDD may lead to the preparation and implementation of projects in the future that may have environment and social impacts downstream, when these are implemented. That taken into account, the project is categorized as Category B.

40. No separate safeguards instrument is required for this TA project. The key TORs will be reviewed by the Bank, e g., preparation of local GHG Abatement Plans to ensure that appropriate safeguards measures, including environment and social screening criteria, are incorporated in relevant studies and the development of Abatement Plan Guidelines. The project will screen the PDDs based on these Guidelines for environment and social impacts, identify policies triggered and appropriate safeguard instruments to be prepared for each project as part of preparing their feasibility studies and detailed engineering designs in the future outside this project.

41. The Bank will work with the counterpart to ensure stakeholder consultations especially on the development of the Abatement Plan and PDD of each participating municipality and those perspectives of men and women on GHG and its mitigation actions are taken into account.

42. In order to ensure sufficient resource on safeguard, the TGO counterpart on safeguard has been assigned during the project appraisal and will be part the PMU for PMR project implementation. TGO has high capacity on safeguard aspects in CDM projects development and approval even though it has limited experiences on the World Bank safeguard policies. A session on an overview of the Bank safeguard policies and its application to the project will be introduced to TGO prior to and during PMR implementation. The TGO safeguard counterpart will work closely with the Bank safeguard specialists to ensure that adequate safeguard consideration has been taken into accounted in preparing and implementing the project.

Monitoring and Evaluation

43. Project reporting. Project reporting requirement is as follows:

(a) *Project Results Framework*: PDO and Intermediate Results Indicators as contained in Annex 1.

(b) *Project Progress Reports and Financial Statements*: Implementing Country Participants will provide project progress reports together with the project's Interim Unaudited Financial Report (IFR) on the implementation of the project bi-annually. The progress report and the IFR are to be submitted to the Bank no later than 45 days after each period. The period for the purpose of the financial reporting is from October 1 to September 30. The goal of project

progress report is to ensure timely support and feedback from the Bank on the activities outlined in the Grant Agreement.

(c) *Completion Report*: Implementing Country Participants are required to prepare a completion report to ensure objectives outlined in the MRP and the Grant Agreement is met and there is a plan for their sustainable continuation.

(d) *PMR Country Updates*: Implementing Countries will update the progress of activities in the MRP and Grant Agreement once a year at the PMR Partnership Assembly meetings on the progress of their implementation phase activities. PMR PA meetings occur a minimum of two times per year. The purpose of these updates is to inform the PA and also seek feedback from the PA.