

CTF PRIVATE SECTOR PROPOSAL

<i>Name of Project or Program</i>	Thailand Sustainable Energy Finance Program (T-SEF)
<i>CTF amount requested</i>	Investment – up to US\$28.5 million equivalent Advisory services component - US\$1 million Implementation and supervision budget - US\$0.5million
<i>Country targeted</i>	Thailand
<i>Indicate if proposal is a Project or Program</i>	Program

DETAILED DESCRIPTION OF PROGRAM

Fit with Thailand Country Investment Plan (CIP)

On December 2, 2009 Thailand’s Country Investment Plan (CIP) was endorsed by the CTF Trust Fund Committee. Thailand’s CIP described the country’s GHG emissions profile and indicated that energy efficiency and renewable energy were key strategic areas to apply CTF resources, including through direct private sector initiatives. Following further appraisal and discussions with market players, the distribution of IFC’s \$70 million CTF allocation between RE and energy efficiency programs have been adjusted to better reflect the relative needs in the respective sectors to meet the objectives of the CIP. IFC’s first programmatic proposal under the CIP is targeted at advancing direct private sector investment in RE projects with CTF US\$ 40 million allocation which was approved by the CTF TFC on June 2, 2010. This proposed program with a \$30 million allocation will help develop and support the scale-up of Thailand’s sustainable energy efficiency (EE) and renewable energy (RE) financing through the private sector by supporting local financial institutions, ESCO operators, and global banks on a programmatic basis.

Thailand is one of the foremost development success stories in Asia and its greenhouse gas (GHG) emissions have been steadily increasing. This programmatic approach is designed to boost the banking and leasing sector’s involvement in EE/RE/ESCO financing as well as to promote applications of low carbon technologies in Thai’s large corporate, SMEs, residential and municipal sectors in EE production lines such as air conditioning related facility of buildings, factories, motors, boilers, lightings, etc. IFC submitted a separate program focusing on support toward renewable energy projects in Thailand. While that renewable energy program focuses on developing the solar and wind sectors in particular, this program represents an IFC initiative to scale up domestic financing and accelerate private sector participation in EE, ESCO and RE projects that are too small for IFC direct investments; as such these two programs complement each other.

In Thailand, energy consumption and electricity demand have closely followed economic growth over the past 25 years. The annual average growth rate for final energy consumption over the last 25 years was 6 percent, while electricity consumption grew even faster at 9 percent; the equivalent of an almost 25% per capita growth in the past five years. Thailand’s economic output per unit of energy has declined by over 10 percent between 1996 and 2004. The driving forces for greater energy (and carbon) intensity are industrial development and increasing demand for transport fuels.

Therefore, Thailand's development policies and strategies have increasingly focused on GHG emission reductions and improved energy intensity. The Tenth National Economic and Social Development Plan (TNESDP) (2007-2011) seeks to cap CO₂ emissions per capita to 3.5tCO₂/person, well below current level. The Government has also recently announced the 15-year Alternative Energy Development Plan (AEDP) which lays out the country's long term vision and strategic direction for reducing dependence on fossil fuels.

As agreed in Thailand's CIP, CTF resources will specifically be used for the following priority activities:

- Clean energy advancement through complementary public and private sector initiatives that contribute to the ambitious national renewable energy targets set by the Government of Thailand (GoT).
 - Catalyzing clean energy investments through the Specialized Financial Institutions (SFIs).
 - Advancing public investments in clean energy through public utilities – the Electricity Generating Authority of Thailand (EGAT) and the Provincial Electricity Authority (PEA).
 - Clean energy advancement through private commercial banks.
- Urban transformation through support to the comprehensive GHG emissions reduction program of the Bangkok Metropolitan Authority
 - Bus Rapid Transit as part of an integrated urban transport system
 - Improving City Energy Efficiency

Thailand's GHG emissions profile

Thailand's GHG emissions grew at an annual rate of about 2 percent per year between 1994 and 2003. In 2006, energy-related GHG emissions were 272 million tons of CO₂-equivalent, placing Thailand as the 24th largest emitter globally. GHG emissions from fossil fuel sources have been growing at 3 percent per year, mostly due to consumption of petroleum products.

The largest contributors to Thailand's emissions are electricity generation (37 percent), transport sector (26 percent), and manufacturing (23 percent). Thailand's residential and commercial sector, which accounts for 7 percent of emissions, is a small contributor but has the highest growth rate.

Market Description

The Government of Thailand's Approach to GHG emissions reduction

Thailand has voluntarily reduced its GHG emissions through the implementation of the Clean Development Mechanism even when as a non-Annex I country Thailand is not mandated to limit or reduce its GHG emissions under the Kyoto Protocol. The Government of Thailand (GoT) has taken several steps to address development challenges while promoting a low carbon growth path. As mentioned above, the TNESDP, approved by the GoT in September 2006, is Thailand's strategic framework for addressing its medium term development challenges. The TNESDP reflects changing behavior towards development resulting from the globalization experience of the mid-2000s. The Plan maintains the priorities identified previously—i.e. human and social capital development, competitiveness, poverty and inequality alleviation, and natural resources / the environment conservation and improvement—and adding governance as a new priority. The Plan seeks to cap CO₂ emission per capita to 3.5 tCO₂/person, below current levels of 3.8 tCO₂/person.

AEDP sets a target to increase the share of alternative energy from 6.4 percent in 2008 to 20 percent in 2022. If the target is achieved, it will help Thailand avoid the addition of 42 MtCO₂e GHG emissions per

year. AEDP identified four areas of alternative energy development as follows,

- Increasing the share of power generation from renewable sources by Small Power Producers and Very Small Power Producers (accounting for 2.4 percent)
- Increasing the share of thermal power from renewable sources (7.6 percent)
- Promoting the use of biofuels, including ethanol, biodiesel and hydrogen for transportation (4.1 percent)
- Promoting the use of natural gas for vehicles (6.2 percent)

The GoT also announced other initiatives, policies and strategies to tackle climate change and reduce energy intensity, especially in the industrial sector as well as in commercial buildings, and residential sector.

In addition to the countrywide approach, there is a similar plan aimed at the municipal level. Bangkok is one of the few cities in the world which has developed a city-wide climate change strategy, as articulated in the Bangkok Metropolitan Authority's Action Plan on Global Warming Mitigation 2007-2012. The Plan consists of five initiatives with the objective of reducing carbon emissions per person from current annual levels of 7.7 tons/person to 5.5 to tons/person:

- Expand Mass Transit and Improve Traffic Systems
- Promote the Use of Renewable Energy
- Improve Electricity Consumption Efficiency
- Improve Solid Waste Management and Wastewater Treatment Efficiency
- Expand Park Areas

Sustainable Energy Market in Thailand

Thailand consumed 55,503 ktoe of final commercial energy in 2008. The Industrial sector is the largest energy consuming sector, accounting for 37% of total energy consumption, followed by transport sector- 35%, and then combined agricultural, commercial and residential sectors- 27.5%. However, in terms of total electricity consumption, the industrial sector accounts for nearly 45%, while commercial and residential sectors account for 46%. Energy demand in Thailand is largely met by imports: in 2008 energy imports were 19.5% of total national imports (34 billion USD), or 13% of GDP. While oil demand decreased by 3.3% in 2008, oil expenditures actually increased by 14.1% due to price surge, natural gas demand increased by 18.4%, and coal import increased by 21.8% compared to 2007. These have a huge cost implication to the economy beside the environmental impact. The government of Thailand has set clear energy savings targets for 2008-2011: Industrial sector targeted to save 3,190 ktoe (4.4%), Transport sector targeted to save 3,413 ktoe (4.7%), and Demand side management in commercial-residential sectors are targeted to save 1,217 ktoe (1.7%). The government is currently putting together a plan for the period up to 2020 with even more ambitious targets on energy efficiency- (for example to reduce energy intensity in industrial sector by 20% compared to the 2006 base). Both mandatory (Energy Conservation Act) and voluntary approach (tax incentives, low cost finance) have been used to motivate companies to improve energy efficiency. While, in the past period, many measures to tackle climate change were taken in Thailand, going forward energy efficiency improvements in industries, such as agri-processing, electronics, food processing, construction materials production etc. will be the potential high cost investments. Normally, in a developing economy like Thailand, the most energy-efficient model of equipment carries high price premiums because they are mainly imported, while the domestic manufacturing of energy efficient equipment/machinery is under-developed.

Thailand actually had early regulatory support for energy conservation (compared to other countries in Asia). It passed the Energy Conservation Promotion Act in 1992, and since then set up several energy conservation funds to promote energy efficiency retrofits. The two prominent government vehicles supporting EE investments were the ESCO Fund and the EE Revolving Fund established in 2003. The ESCO Fund had 14.7mil USD and provided up to 50% equity capital for ESCOs. So far, 8.3mil USD was disbursed to 17 EE/RE projects. The fund actually outsourced identification and appraisal of projects to two contractors. In addition to providing equity capital the ESCO Fund was expected to support ESCO venture capital, equipment leasing, carbon market, etc; however, these haven't happened yet. The EE Revolving Fund had 58.8mil USD from the government at the start, and provides zero-interest credits to 11 public and commercial banks for on-lending to EE projects with interest rates of no more than 4% a year. So far after 7 years the revolving fund has supported 250 projects, with a total portfolio of 500mil USD. However, the role of the revolving fund in providing low-cost capital will be winding down and Department of Alternative Energy Development and Efficiency ("DEDE") will be focusing on supporting technical assistance and consultancy services, thus gradually withdrawing government interventions in the EE lending market.

On the RE side, Thailand has a natural endowment of world-class renewable energy resources (solar, wind, biomass and hydro). However, Thailand's RE sector remains relatively untapped. Reasonable progress has been made in hydropower, which contributes 5% of total generation capacity installed. Biomass power currently accounts only for 1.7% installed capacity despite the fact that Thailand is the largest rice producer, and it has abundant resources of other agricultural wastes from cassava, sugar canes, etc. Both the wind and solar sectors have less than 10MW of grid-tied capacity installed. The government has put in incentives for independent power producers through various tariff adder schemes. The most recent efforts are tariff adders for small (>10MW) and very small power producers (<10MW). The tariff adder schemes give highest subsidies to SPP/VSPs in solar (8- 9.5 baht/kwh), wind (2.5- 4 baht/kwh), municipal solid waste to energy (2.5- 3.5 baht/kwh), biomass (0.3- 1.3 bath/kwh), and hydro (1.4-1.8 baht/kwh).

Nevertheless, in order to reach the AEDP 2022 target of 5.6GW of RE generation capacity, it is estimated that Thailand would need US\$10 billion of new investment, or an annual investment of around US\$760 million over the next 14 years- 80% of this total investment is expected to come from private sector.

Clearly, despite government support policies and interventions in the early stage, the EE/RE/ESCO investment market in Thailand will only get sustainable momentum if other barriers (beside policies) are properly addressed. These barriers include motivating and building the capacity of the financial sector that are discussed below.

Barriers to market transformation

EE/RE/ESCO investments typically have attractive economic rates of return and often also financial rates of returns and seem attractive but still fail to meet the investment thresholds of investors (eg. small or limited impact on the bottom line). While the Government has taken several measures to promote energy conservation and energy efficiency, the development of EE, RE, ESCO and Cleaner Production (CP) remains limited. The identified barriers are as follows:

- (a) **Inadequate awareness of the benefits of EE/RE/ESCO and perceived high technical and financial risks of such projects among industry.** In many cases both FIs and companies perceive EE/RE/ESCO projects to be technically risky and not bringing about commensurate financial returns, particularly when compared to green field or expansion investments.

- (b) **Insufficient capacity for evaluating EE/RE/ESCO projects among FIs, and their perception of high financial risks of such projects.** There is a lack of adequate debt financing for such projects, primarily due to FIs' lack of experience in lending and the absence of proven business cases in Thailand. For industries, FIs prefer new investments, or investments that raise productivity or capacity, rather than investments aimed at reducing costs or improving efficiency. FIs have noted complicated reporting requirements with technical details as one component of the increased costs for them and their clients. Additionally, FIs do not typically have internal resources to evaluate such reporting from their clients and don't have adequate scoring systems adjusted to the additional requirements; nor are their marketing staff trained to provide detailed product information or identify clients that are appropriate for EE/RE/ESCO projects. As a result of these hurdles, financing on fully market rates do not provide FIs a sufficient return to venture into the "EE/RE/ESCO" line of business. Small project size is another discouraging factor for many FIs and as a result many companies and developers have found themselves unable to borrow even at higher interest rates.
- (c) **High transaction costs in developing sustainable energy investments.** The transaction cost of developing EE/RE/ESCO investments faced by industry as well as by FIs is usually high. Such costs can arise from energy audits, feasibility studies, sometimes the need to shut down processes in order to rehabilitate or replace plants. These costs are further increased by the lack of adequate familiarity and experience with identifying and preparing such projects both within industry as well as within the FIs. Financial institutions have not actively pursued EE, RE and ESCOs as a business-line as it requires a large commitment in terms of acquiring technical and financial skills to devise appropriate financing schemes, review project proposals as well as in establishing credit review standards, all when the FI's return for such an investment is uncertain/unproven.
- (d) One of the key limitations for wider project implementation of EE/RE/ESCO financing is **limited financial resources**. In general, there is enough liquidity in Thailand's financial market but it is limited in tenor. Considering EE/RE/ESCO financing generally requires long term funding, there are constraints in this business area.
- (e) **Limited financial resources particularly for small-scale projects and SMEs.** Typically financial institutions assess companies on their past financial performance and do not consider the expected improvement in financial performance (reduced costs) which results from the new energy efficient equipment. As a result, financing terms have been restrictive and unattractive for customers.
- (f) **Limitations of existing EE related funds in Thailand.** The Ministry of Energy has established the EE Revolving Fund and ESCO Fund. These funds are, however, relatively small in size and face limitations because they limit funding amounts to no more than USD 1.2 million per project and because funds are mainly allocated to high-credit commercial banks which tend to approve projects proposed by large and existing customers. In addition, going forward the government has a strategy to gradually withdraw government interventions in providing low-cost finance for EE lending market.

Summary of the Program and use of CTF funds

Objectives

The proposed program will help Thailand address its climate change challenges by making a major contribution in three critical areas:

- (1) Increasing private sector involvement – in the development and financing of EE/RE/ESCO investments – IFC offers financial institutions innovative financing packages to catalyze investment in

this sector.

- (2) Supporting EE market transformation – by developing EE/RE/ESCO investments and providing new clean energy technologies and energy efficient equipments in Thailand’s large corporate, SME, commercial, residential and municipal sectors.
- (3) Enhancing energy savings – by raising market awareness of benefits to induce new clean technology and to reduce GHG emissions.

This program is expected to help transform the financial sector so that it can view investments in EE/RE/ESCO projects as a standard business practice. At the same time, that transformation is expected to penetrate to other industrial, commercial, residential sectors and to accelerate development of EE/RE/ESCO projects.

Summary of the Program

The proposed Program will comprise both an Investment and Advisory Services component to support the scale up of EE/RE/ESCO projects in Thailand’s large corporate, SME, commercial, residential and municipal sectors. The investment component aims to transform these sectors through Thailand’s financial sector, towards low-carbon, climate-sensitive behavior, and in doing so, support the economic development and social well being of people. The proposed Program will encourage FIs in Thailand to develop financing programs for small sized carbon mitigating investments such as EE projects and small-scale renewable energy investments in the sectors noted above. Financial institutions can be very effective in educating their clients and enabling wide scale uptake of new product lines such as energy efficiency technologies. Working through global FIs as well as local FIs is particularly appealing in these instances given the scale required to have a climate change impact; through this structure, scale can be achieved via the FIs’ network and client relationships. Leasing companies have also proven to be an effective way of reaching SMEs. Leasing is an effective way of keeping energy efficiency investments off-balance sheet and makes smaller investments more attractive. Leasing companies finance a variety of technologies including cogeneration units, boilers, compressors, chillers, control systems, EE motors and other energy efficiency technologies. The Program’s Advisory Services component will support the investment component by addressing many of the knowledge and capacity barriers outlined above.

With CTF support and a strategic approach, this investment program can be used as a model for other financial institutions and be expanded with significant market transformation potential. It is an extended, innovative approach for the Thai market and without CTF, IFC would not be able to provide resources with the terms and in the quantity needed to achieve transformation.

The Investment Component

Through the Program, IFC will provide a combination of its own and CTF financing to private leasing companies and/or commercial private banks on terms necessary to address the barriers outlined earlier and to catalyze uptake and scale-up of EE/RE/ESCO projects in Thailand. IFC has an active pipeline of transactions that are potential recipients of CTF funding, making this an urgent program for support. Specific projects are not mentioned in this programmatic proposal given issues of confidentiality and to preserve flexibility in IFC’s discussions.

Sample EE/RE/ESCO investments under the Program can enhance production technology upgrades, lighting, motors, space conditioning (heating and cooling), and automated control systems, as well as cogeneration systems that produce electricity from waste heat generated for industrial uses, among other projects which help to deliver energy services more efficiently.

The Program's financing will be structured to incentivize financial institutions and leasing companies to undertake the perceived risks and learning curve necessary to create EE/RE/ESCO financing into a viable business. Once the first few leasing companies and/or banks are operating successfully and a track record is established for the new products, the financial attractiveness of EE/RE/ESCO projects is expected to create sufficient incentive to entice additional financial institutions to undertake the learning curve without further CTF's support.

Note that final agreement to provide CTF funding to any FI would be subject to a full due diligence of each project and approval by an internal IFC Approval body as well as IFC's Board, per the CTF private sector guidelines. The terms of each individual CTF transaction will be reviewed and approved by an Investment Review Committee which is independent from and different to the Investment Review Committee that approves the terms of the IFC investment.

The Advisory Services Component

The advisory component of the Program will be structured to support both the financial institutions and the end-users, including energy efficiency equipment vendors and energy efficiency service companies (ESCOs). This feature will aim to make the Program attractive to financial institutions, particularly since most of them have not had extensive experience in the area of EE/RE/ESCO financing. At the same time the advisory component will strengthen the long-term impact of market transformation by solidifying capacity, awareness and know-how.

The objectives of the advisory services component are as follows:

- (1) Capacity Building and Enhancement for FIs - By steepening the learning curve for financial institutions so they can become active in EE/RE/ESCO financing in Thailand. The capacity building / enhancement component of the Program will comprise training on EE/RE/ESCO finance techniques, credit analysis, marketing, support with financial product development, and reporting methodologies.
- (2) Market Awareness Raising - By supporting general market promotion, such as conferences, seminars and workshops, as well as by EE/RE/ESCO promotional campaigns. Links will be made with relevant industry associations and market players with credibility who can further promote EE/RE/ESCO uptake in Thailand.
- (3) End User Support / ESCO Development - By supporting end-users to evaluate different technical alternatives for energy efficiency improvements and by supporting ESCOs and energy efficiency businesses in managing and expanding their operations, including assistance in obtaining funding and structuring projects.

Capacity Building and Enhancement for FIs in Thailand

For participating FIs, the advisory services program will offer a broad range of activities on capacity building and enhancement, starting by training in EE/RE/ESCO finance through close support during the EE/REESCO project evaluation process and ending in publication of a "best practice manual in financing of EE/RE/ESCO" which would be used for other market stakeholders. Training will include an introduction to energy efficiency technologies, economics and end-user savings benefits and will be layered in order to address several target groups, starting with management through credit risk analyst/managers, and ending with account officers. Special features of EE/RE transaction structuring, including ESCO financing and project finance techniques relevant for EE/RE projects, will be taught. These techniques will vary and must be applied to specific end-user sectors. Training will also focus on marketing EE/RE/ESCO finance services and one-on-one consultations with each financial institution to establish an EE/RE/ESCO finance unit/department within an appropriate department of the financial

institution. Part of the effort to encourage FIs to internally structure an EE related unit/department also is an incentive scheme for account officers/internal staff. This would encourage faster uptake of the Program though the proactive development of EE/RE/ESCO deals by relationship officers and other related FI employees.

Each financial institution program must insure that, within the institution, EE/RE/ESCO finance knowledge is broadly understood. This knowledge must be developed among financial institution staff involved in finance, origination, credit and structuring decisions, and then promoted within the institution's branch network. Because EE/RE/ESCO finance can address a range of end-user sectors and project types, it is important to take a "financial product" approach to development of various financing structures. A financial institution's selection of the financial products to be offered will be based on their finance appetites and capabilities and market opportunities. The advisory services program will assist each financial institution to develop and adapt EE/RE/ESCO finance products to target sectors.

Despite the fact that advisory services will be provided directly to participating financial institutions, there is also expected to be a public good component of the capacity building/enhancement exercise. Best practices from development of specialized lines of business will be summarized and will be presented to other market participants to reach wider potential of EE/RE/ESCO finance providers.

Market Awareness Raising

Targeted market awareness raising activities will be organized in order to build sufficient pipeline for potential investments as well as to develop sufficient levels of understanding of the EE/RE/ESCO market in Thailand. Thus activities will cover conferences, seminars and trainings for SMEs/commercial entities (both management and energy professionals). Other tools used will be focused on direct marketing activities, work with industrial associations and other professional bodies. Light versions of the joint promotional campaign including road shows will be prepared to help disseminate information about EE/RE technologies and financing options from Thai FIs.

End-user support/ESCO development

The advisory services program will include specific initiatives targeting SMEs. SMEs will participate in the Program in two ways. First, as energy users, SMEs will receive financing supported by the Program for EE/RE/ESCO investments in their facilities. Second, as energy efficiency businesses SMEs are involved in delivering energy efficiency equipment, projects and services. With training, these businesses can expand their product and service offerings and their sales. Training curriculums may include: efficient technologies and equipment, energy auditing techniques, financing EE/RE/ESCO projects, fundamentals of project development, marketing efficiency services, and will work with specific partners organized through the Program (e.g. financial institutions, district heating companies, ESCOs, etc.) and business management. The Program can help create sales for these businesses by organizing markets, supporting energy audits for potential customers, and providing access to customer financing.

The advisory services program will also work at the project level and will support development of projects. Performing an energy audit for a prospective energy efficiency customer is the beginning of the project sales cycle. By supporting energy audits, the Program will assist in building a pipeline of projects for financing. Participating financial institutions and energy efficiency businesses can then identify prospective customers.

Market Transformation

The combined effort by the programs is expected to result in a transformed financial sector by i)

supporting FI's to develop lines of credit and establish a track record of successful lending practices which could be sustained in the future without future subsidies, and ii) addressing their lack of capacity. At the same time, it is expected that the industrial, commercial and residential sectors will view EE/RE/ESCO projects as a standard way of operating an efficient business and competing in the market. In the long term, the growth of EE/RE/ESCO projects and resulting pipeline of projects should attract more FI lenders to the market. The CTF investment, combined with the advisory services, will build on the momentum of the Thai government to direct the business community to a low carbon growth path. Without CTF participation, it would be difficult to scale up the enabling environment for scaled up investments in the EE/RE/ESCO projects.

FIT WITH INVESTMENT CRITERIA

i) Potential GHG Emissions Savings:

The Program is structured as an intermediary operation. As such, the precise composition of the FI's loan/lease portfolio cannot be exactly predetermined. Therefore, it is necessary to provide a broad range estimate of the emissions reduction that is likely to result from the project.

The Program will support implementation of energy efficiency/cleaner production projects which would likely not otherwise be implemented due to institutional and financial barriers and the incremental risks perceived by financial institutions. On the technology side the projects implemented will use technically viable, proven technologies which represent low risk and allow large scale-up and replication potential once a track record is established for the underlying portfolio.

Assuming the same investment to emissions ratios used above, the Program's total direct and indirect emission avoided are expected to reach approximately 0.44 million t/ CO_{2e}/year by the end of the investment cycle (when all projects are fully implemented). Total emissions for the lifetime of the Program (15 years life of the technology financed) are expected to be approx. 6.6 million t/ CO_{2e}.

ii) Cost-Effectiveness:

With the projected lifetime of the Program of 15 years, cost effectiveness of CTF investment would be from 4.44 US\$ / t CO_{2e} (if impact of mobilization counted) to nearly 5.93 US\$/ t/ CO_{2e} (if counted only impact of IFC/CTF financing). Given the long-term effect of market development work, and capacity building/enhancement, we expect that the participating FIs will continue their EE/RE/ESCO lending business, and other banks will get into the market later as well. So over time, the cost effectiveness of the CTF program will continue to increase.

iii) Demonstration Potential at Scale:

Demonstration potential for the scaling up is very high – once the private sector is mobilized to invest in EE/RE/ESCO projects and realize good returns, it will continue to do so without concessional support. IFC has started to work with some partner financial institutions and they recognize demand for EE related financing. As discuss, reaching to SMEs as well through ESCO service, demonstration potential is expected to be significant.

The program is expected to demonstrate a financial sector that investment in EE/RE/ESCO projects can

be standard business practice. At the same time, it is expected that the industrial, commercial and residential sectors will view EE/RE/ESCO projects as standard ways of operating an efficient business and competing in the market. The CTF investment, combined with the advisory services, will build on the momentum of the Thai government to direct the business community to a low carbon growth path. With CTF participation, the Program would establish the enabling environment for scaled up investments in the EE/RE/ESCO projects.

iv) Development Impact:

The Program is expected to generate a range of environmental and economic benefits related to the development of the EE/RE/ESCO industry and stream of EE/RE/ESCO project investments. Specifically, the Program would: (i) build capacity in the local banking and leasing sectors to finance EE/RE/ESCO projects; (ii) support the development of energy service companies by securing financing for them; (iii) develop EE/RE/ESCO investment projects across all sectors; and (iv) improve the local as well as the global environment through reduced emissions of greenhouse gases and other conventional pollutants. A detailed development impacts summary is written below:

Replication Potential: The Program is expected to have a large spillover effect to the companies through the on-lending of financial institutions. The Program can be replicated with financial institutions in other developing countries.

Access to Finance: Increasing the importance of energy efficiency and efforts to decrease GHG emissions and pollution in Thailand will require development of new innovative financial mechanisms to support access to finance of target sectors, which will need to implement energy efficient projects and measures. The Program's support in the development of financial products for energy efficient and renewable energy equipment will help the end users to find proper financial instruments and to raise awareness about the availability of finance among industries and other end users. Long term funding that will be provided to financial institutions through the Program will enable them to on lend to SMEs with longer tenors, so that the SMEs can undertake the necessary EE/RE/ESCO investments, which require longer term financing.

Improved Competitiveness of the Sub-borrowers: The implementation of EE/RE/ESCO projects for the underlying borrowers (lessees) will increase long-term sustainability of operations, improve competitiveness, and bring financial benefits through lower costs and improved process efficiencies.

Job creation: EE related investments in Thailand would mainly include modernization and optimization of existing production systems, thus it would not lead to job reductions. Considering development impact and demonstration effect, this program will develop a new market in SMEs / residential sector and expand existing EE related markets in commercial sector. That will contribute to job creation in industries such as equipment manufacturers, ESCOs, retailers, housing etc. The question of job creation attributable to EE related investments is a difficult one. The team will try to build an M&E system in a way to keep track of employment growth among end borrowers.

Gender equality (% of new jobs occupied by women): In Thailand, generally women's labor participation is in a higher level compared to Indonesia, Philippines etc. Depending on the sectors each FI targets with their EE related finance programs, the gender equality ratio can reach up to 70%. On average, we estimate that 40-50% of new jobs would be occupied by women.

Number of people/businesses benefiting from EE projects: Prime beneficiary is corporate sector

because EE investments result in reduction of energy intensity, i.e. energy consumption per output unit; and thus help companies to reduce their energy costs. Energy Conservation Promotion Act in Thailand requests factories and building which live up to certain standards to conserve energy and to audit and analyze energy utilization. Number of targeted factories is estimated about 3,000, buildings about 2,000.

Market development of new local enterprises: While IFC is comfortable estimating and tracking indicators such as job creation, it is uncomfortable estimating and tracking the number of new enterprises created through the program. Because new jobs may be mainly created by existing companies. If any new enterprises, some ESCOs but it is near to impossible to anticipate. For this reason, we prefer to focus on job creation versus company creation for the Thailand program.

Poverty Reduction: The Program may have a trickle-down effect on poverty reduction as following steps:

- a) the Thailand EE/FI program will promote the use of energy efficient technologies with end users and will make equipments more accessible by increasing access to finance for such equipments.
- b) This will lead to expansion of EE related market (technologies, equipments, financing etc.) and, once such technologies or/and market practices become 'business standard', demand for EE related technologies and financing will increase more.
- c) Companies with sophisticated EE technologies will be able to lower their cost and will have competitiveness.
- d) All above will contribute to economic growth and job creation as well as an increase in waged salaries to employees.
- e) It should be noted that these impacts would be indirect and difficult to measure, except as part of a broader assessment of market evolution in Thailand done several years after the implementation of the program.

v) *Implementation Potential:*

The Program will benefit from the fact that the Government of Thailand has recently taken several legal steps to promote EE/RE/ESCO projects. As mentioned above, Thailand has voluntarily reduced its GHG emissions through the implementation of the Clean Development Mechanism. The Government approved the TNESDP, which addresses its medium term development challenges seeking to cap CO₂ emission. The Government also announced AEDP which sets a target to increase the share of alternative energy to 20 percent in 2022.

In addition to the countrywide approach, there is also a municipal level approach. Bangkok announced a city-wide climate change strategy which consists of five initiatives with the objective of reducing carbon emissions per person approximately 28%.

There are two major existing funds in Thailand which has been supported by government (EE revolving Fund and ESCO Fund). Nevertheless, the Program will have a significant role and will differentiate itself from existing programs due to the fact that: i) average 3 projects for each bank per year under government's programs has not been enough for scaling up; ii) the GoT has a strategy to gradually withdraw government interventions; iii) the Program has flexibility in project size and available financial

instruments using a commercial approach; iv) in this Program, IFC will be able to reach new financial institutions which have never benefitted from previous programs as well as those which have benefitted; and vi) the Program will also bring in a TA program to help capacity building. IFC has been approached by several EE/RE/ESCO developers and financial institutions that have expressed strong interest in partnering with IFC. With more than ten years implementing similar financing mobilization programs in other countries, IFC is in a position to develop, design and implement these proposed interventions for Thailand as well. Once the CTF funding support is confirmed, IFC could readily arrange regional and global resources to support the implementation of the financing projects in Thailand. Accordingly, the likelihood of IFC being able to structure appropriate incentives using CTF funds and implement an initial program is very high.

IFC will coordinate closely with donors and the Government during the implementation of this proposed Program.

vi) Additional Costs & Risk Premium:

The interest rate, tenor and amount of the CTF senior loan to be provided under the Program will reflect the need for subsidies but also market conditions and the current financial crisis. CTF funding will help overcome barriers to market transformation for the Program.

vii) Financial Sustainability

The Program reflects the current situation in the market, where there is very low activity among leasing companies and banks in developing specialized loan products or entering new markets such as EE/RE/ESCO projects financing. By offering concessionary priced funding with longer maturity and capacity building, the Program will establish a track-record for the viability of commercial financing for EE/RE/ESCO projects and will play a significant role in accelerating market development. Once the initial partner FIs have developed their internal capacity and see that EE/RE/ESCO projects finance is profitable without concessional interest rates, they are expected to continue the line of business without the need for further subsidies.

Sustainability within the market (market proliferation), is expected because primary participants in the Program will be role models for other market participants. IFC's experience in Eastern Europe shows that once it is proven that the EE/RE projects can generate additional income for FIs, other banks will follow suit using their own funds to develop the new products. It should be noted as well that the barriers for new entrants will be significantly reduced as much of the learning from the initial banks will be captured and shared with new market entrants through the Program's knowledge management component (especially the "best practice manual").

viii) Effective Utilization of Concessional Finance

As mentioned earlier, a lack of funding resources, their costs are current barriers in the Thailand market to develop dedicated financial products for areas such as EE/RE/ESCO projects finance. Together with other key barriers, like certain levels of internal capacity and specialization needed for EE/RE/ESCO projects

financing as well as lack of specialized skills in marketing and product development, the market lacks activity and need to be stimulated by incentives. Considering banks' concern about additional costs for special skills and reporting request of EE/RE/ESCO projects financing, the concessional element of the CTF loan is a critical tool for the financial institutions to be incentivized to receive and on lend EE/RE/ESCO projects financing. To maximize the effectiveness of the concessional portion of the loans, IFC will encourage FIs to create internal incentives for officers to catalyze loan development at a faster rate.

Financial institutions that receive funds from the Program must fully comply with IFC standard financial covenants and reporting requirements, in addition to other covenants and requirements that would be determined during the due diligence performed at these institutions.

ix) Mitigation of Market Distortions

The proposed Program will not distort the market, since it will not be displacing any private sector investment. The financing provided by the leasing companies and/or banks will be used by SMEs. The SME segment in Thailand is not receiving any carbon financing. Also, the Program will be open to all participants, especially on the end-users side and will not prefer any entity against another.

x) Risks

Political/Macroeconomic risk: The latest political tensions in Thailand would have unpredictable impacts on the Thai economy. Slow economic growth is a key risk for the activities of financial institutions and has an impact on this program.

Mitigant: Historically, despite political turmoil, Thailand's economic growth has been consistent and steady. In the first quarter, Thai GDP reached 12% (year -on-year basis) and the Government has revised its forecast upward. This forecast has factored in the impact of political unrest and potential change of monetary policy in which interest rate is expected to be 'normalized' from 'an unprecedented low level'.

Market Awareness: Thailand still lacks a sufficient level of market awareness for EE/RE/ESCO investments and support is limited both on governmental as well as private level. Therefore, companies and SMEs have low level of motivation to undertake such investments.

Mitigant: The new electricity strategy and related legislative and regulatory measures provide stronger support for EE/RE/ESCO initiatives. Program itself will provide basic market awareness activities and will work with FIs and end-users to motivate them.

Entry into EE Related Market: Energy efficiency is a relatively new market segment in Thailand, and the legislation governing this sector was implemented recently. The Banks and non-bank FIs are hesitant to take a leadership role in financing this untapped market need for financial products that promote energy efficiency. Therefore, the participating FIs need to actively market this new EE related product.

Mitigant: The advisory services component, in particular, the EE training, is expected to assist in mitigating this risk by supporting the FIs in developing the EE related products for this new market segment. Furthermore, the combined offer from development banks and CTF will trigger the participating FIs to leverage their existing relationships with their client bases to successfully deliver EE

related financing product to its clients in the SME segment.