

**Meeting of CTF Pilot Countries and Regions
November 1, 2012 - Istanbul, Turkey**

Progress Updates from CTF Pilots

Country/regional pilot: Thailand

Investment Plan Endorsement date: December 2009

Briefly outline your country's experience in terms of coordination and ownership of the CTF investment plan. What has been positive? What are the main challenges and barriers to a programmatic approach, and what could be done to address them?

Overall experience with coordination and ownership:

- Strong MDB support for initial IP preparation; IBRD project preparation for public sector project was very slow and ultimately Government of Thailand decided to curtail borrowing from MDB for public sector projects
- Revised IP endorsed in February 2012: 1st country to do major revision of IP; 100% of CTF now allocated to private sector EE and RE development
- ADB private sector RE program: approved by TFC in May 2012; 1st ADB Board approval in June 2012

Challenges and barriers:

- Allocating CTF financial support to Private Sector Clean Energy Investment which is enable private sector to access to financing sources.
- Private sector still requires some concessional funding alternatives to complement and mobilize commercial bank financing with long tenors.
- Rules and legal enforcement difficulties.
- Need support on Research and Development in RE/EE.
- IFC financing programs approved in 2010, but slow progress on subsequent project approvals.

Lessons learned:

- During the update of CTF Investment Plan (CIP), the public financing is available at low rate, obviating the need for concessional funds for public sector projects. Moreover, under the existing Constitution, the Parliament has to follow Article 190 which requires

two approvals by Parliament for sovereign borrowing, including from CTF. The constitutionally-mandated review and approval procedures for sovereign borrowing are expected to take 1 to 2 years. Therefore, the public sector projects included in the original CIP faced a major implementation risk that would not explicitly identified in 2009 and that cannot be mitigated. However, as the CIP is a dynamic document with the flexibility to consider changing circumstances and new opportunities. These support Thailand for the reallocation by shifting CTF sources from public sector projects to private sector investments.

Please share with us your experience from one of the CTF projects in your country under development or implementation: What is the status of the project? How is this project helping to accomplish your country's low emissions development goals? What challenges have been experienced in developing/implementing this project? What are 3 key lessons from this project?

Project, status, goals:

- ADB private sector RE Program – up to 520 MW new generating capacity envisioned
- TFC approval in February 2012; 1st ADB Board approval in June 2012
- ADB program complements IFC programs for EE & RE; collectively, these programs are expected to facilitate acceleration of investment to meet national goals elucidated in the Alternative Energy Development Program

Challenges:

Despite government-approved “adders” for RE, commercial bank financing is still limited. Foreign exchange financing can help, if properly structured. Potential forex-local currency mismatch remains problematic.

Lessons:

1. Concessional financing still needed to provide longer tenors for RE projects. CTF must provide this type of incentive / leverage to be effective.
2. Minimum concessionality must be determined on a case by case basis within the investment program envelope; flexibility is required to support an evolving project pipeline. At the time of IP endorsement and program funding approval it is not possible to predict a fixed reduction of concessionality which could be progressively introduced. Risk premiums cannot be distilled to a single factor such as project type (e.g., solar vs. wind); risk premiums from lenders take into consideration sponsor experience and credit, tenor of lending, amount of equity contributed, strength of EPC contractors, strength of contracts (and any sponsor support), etc.
3. Although investment programs have been approved, commercial bank financing remains limited for large-scale RE investments. It is too early to determine the actual impact of CTF on market transformation.

Project Name

Provincial Solar Power Project

Project Description

The Provincial Solar Power Project has been developed and will be implemented over two phases¹ (Phase 2A [Chaiyaphum] and Phase 2B [Ayutthaya]) under 4 standard renewable energy power purchase agreements (PPA) of 8 MW each with PEA in Chaiyaphum and Ayutthaya Provinces. The Project will have a total capacity of 32 MW and will use multicrystalline photovoltaic technology. The PPAs are automatically renewable after every 5 years and include an “Adder” of B8.0 per kWh applicable for 10 years in addition to the wholesale tariff.

Project Developer

The Project will be developed and operated by Bangchak Solar Energy Company Limited (BSE), a special-purpose company incorporated in Thailand that is 100% owned by Bangchak Petroleum Public Company Limited (BCP). BCP is a leading integrated oil refining and marketing company in Thailand. BCP was established in 1985 and is listed on the Thai stock exchange. BCP owns and operates an oil refinery located in Bangkok with a capacity of 120,000 barrels per day (bpd). BCP’s retail business consists of a network of over 1,000 service stations, making BCP the third largest gasoline distribution company in Thailand and the leader in green fuels, such as gasohol and biodiesel. BCP’s major shareholder² is the national oil company, PTT Public Company Limited (PTT), which owns 27%. Other shareholders include the Ministry of Finance (10%) and the public (63%) investing through the Stock Exchange of Thailand.

Status

The Project has been approved by ADB's board in June 2012. The Project is expected to be the first private sector project with cofinancing from the CTF administered by ADB.

The Project is expected to benefit from a concessional loan of up to \$15 million, or 10% of project cost, whichever is less.

The commercial operations of both phases are planned in 2013.

Goal

The government’s Alternative Energy Development Plan, approved by the cabinet on 30 December 2011, notes the immense energy potential of solar radiation in Thailand and the energy imports that can be avoided through its use, with private sector investment. The Project will help Thailand accelerate and expand private sector investment in clean energy infrastructure to help meet the Government’s target of 2,000 MW_{AC} of solar power capacity, 25% of primary energy from renewable sources, and reduction of 76 Mton of CO₂ emissions a year by 2021. The project supports the government’s long-term objective for the Thailand Clean Technology Fund

¹ Each Phase will be developed under a separate engineering, procurement, construction (EPC) arrangement with commercial operation date planned for the first quarter of 2013.

² As of March 1, 2012

Investment Plan to utilize CTF resources to support renewable energy projects in the private sector.

To achieve sustainable long-term economic growth, Thailand is promoting alternative sources of energy for power generation such as solar, and is beginning the transition to a low-carbon based economy. The Project will provide a secure, reliable and sustainable source of electricity by helping to diversify the country's energy mix; increase energy security; reduce reliance on fossil fuels; and lower exposure to commodity and exchange rate risk. Because the Project does not rely on fossil fuel, it will reduce waste, GHG emissions, air pollutants, and noise compared to a conventional power plant. Improved air quality, noise reduction, and a lower carbon footprint will provide healthier and more sustainable living conditions for the people of Thailand.

Challenges:

1. The first Bangchak Solar Power Project³ was affected by floods in 2011, illustrating the importance of climate-proofing projects. The project's civil works will ensure that physical and hydrological design assumptions take into account the changes predicted for precipitation patterns and the severity and frequency of floods due to climate change.
2. The solar panel manufacturing industry has continued to experience over capacity and lower margins which has led to deteriorating financial conditions of most suppliers.
3. Solar photovoltaic has relatively high upfront capital costs and minimal operating costs. The cost structure is highly predictable, with limited expenditure on maintenance and part replacement and no ongoing fuel expense. Debt servicing costs therefore are the only significant expense and consequently drive the economics and viability solar power projects. It is therefore important for solar power projects to obtain long-term, fixed-rate debt financing to reduce debt servicing costs.

Lessons:

1. The Phase 2B [Ayutthaya]) has included climate change adaptation in its civil works' design and construction. The more vulnerable Ayutthaya site will implement a more conservative design that can withstand a 100-year flood.
2. The sufficient track record, technical capacity, and financial standing are crucial in selecting an EPC contract/ consortium.
3. The longer repayment profile of the ADB loan and CTF loan and the concessional nature of the CTF loan are necessary for the Project to reach financial close, achieve sound debt service levels over the life of the project, and mitigate the risk to solar power projects arising from their high upfront investment costs, which have to be amortized over the long term with intermittent revenue generation.

³ In Bang Pa-in, Ayutthaya Province

Have circumstances in your country changed since your investment plan was endorsed? Is your country planning to revise its CTF investment plan?

- **In mid-2011, government decided to curtail borrowing from MDBs for public sector infrastructure including energy sector, as Government can raise funds domestically at cost which is competitive with MDBs.**
- **Concessional finance still needed in foreseeable future:** e.g., 50 GW solar potential will require well over \$50 Billion total investment, which exceeds the foreseeable capacity of domestic capital markets.
- **Revised IP was endorsed in February 2012.**

Briefly outline three major lessons learned arising from your CTF programming and implementation process.

Lessons learned:

1. The IP should be more dynamic and more flexibility. As the government confront the time constraint and cost of funding that is relatively high as compare with domestic borrowing. Therefore, Thai government proposed to reallocated fund from public sector projects to private sector projects which we can utilize the fund more effectively and timely manner.
2. CTF must provide additional incentive / leverage to be effective, e.g., longer tenors for RE projects. TFC should be open and receptive to creative financing instruments / modalities.
3. Although IFC and ADB investment programs have been approved, commercial bank financing remains limited for large-scale RE investments. It is too early to determine the actual impact of CTF on market transformation.