

May 4, 2012

Response to Germany from ADB on the Approval by Mail: Thailand Private Sector Renewable Energy Program [the Program]

Replies to Germany's queries are provided below in red.

Thank you very much for the submission of the Thailand Private Sector Renewable Energy Program (the program) to the CTF TFC for approval. We welcome the program objective of scaling-up renewable energy in Thailand in principle. However, before we can approve the program, we would like to ask for more information especially on the following points:

As the availability of finance for large scale solar and other RE projects is generally well established in Thailand, we don't see the immediate need for concessional finance through the CTF. Local banks already offer and provide funds on attractive terms, at least for utility-scale projects. We would therefore like to see a more in-depth justification for the use and added value of CTF concessional finance for this program.

RE financing is available but not on sufficiently attractive terms to mobilize financing for utility-scale projects: local banks will provide loans with up to 12 years repayment, which is not sufficient for utility-scale RE projects. As noted in the CTF Investment Plan Update (CIP-U), the installed RE capacities are below that envisioned in the Alternative Energy Development Plan (AEDP) 2008-2022. ADB would like to note that most of the RE projects to date have been small-scale (a few MW per project) due to risks present in the market. Such small projects have relatively high transaction costs and cannot reap economies of scale necessary for market transformation.

Due to limited sources of long-term Baht funds from local banks (up to 12 years), longer tenors are required from ADB and CTF to help improve cash flow projections in the financing and avoid potential events of defaults as the technologies are deployed in utility scale projects. Also, longer tenors are required for renewable energy projects due to the lack of crucial operational data (e.g., wind resources and solar insolation data, as well as available data on utility scale O&M costs in Thailand; O&M data from other countries will only be illustrative). Wind power projects, for example, have regular underperformance issues relative to projected wind speeds. This has led to lower revenue generation as against baseline projections (which stresses coverage ratios for debt service, a typical event of default covenant). On the other hand, solar power projects have very large capital costs per MW, which lead to excessive annual debt service in relation to the annual revenue generated if the projects are not able to repay their debt load over a longer period as is standard in more developed markets. Therefore, longer tenors are required to provide additional comfort for debt servicing (e.g., Improving values of DSCRs for power generation projects with less uncertainty on revenue generation).

Prior to CTF, as shown in Table 2 of the original CIP, there was 32 MW solar, 1 MW wind, and 5 MW WTE projects. Table A summarizes the current status of RE development, which shows that the realized RE capacity is far below potential and far below the AEDP targets [as discussed in the CIP-U).

Table A: RE Based Generation Capacity Additions and Targets (MW)

Resource	Resource Potential	Existing as of July 2009	Existing as of January 2010	Target for 2011	Expected for 2011-2012	Target for 2022
Solar	50,000	32	38.6	55	145	500
Wind	1,600	1	5.13	115	200-300	800
WTE	400	5	5.6	78	77.5	160

Source: S. Tongsopit and C. Greacen. 2012. Thailand's Renewable Energy Policy: FITs and Opportunities for International Support. Presentation made to the WRI-ADB Workshop on Feed In Tariffs. Manila. Accessed on 24 April 2012. http://pdf.wri.org/wri_fair_fit_workshop_presentation_thailand_tongsopit_greacen.pdf

In terms of financial incentives, existing tariff adders (feed-in tariffs / FITs) may be attractive conceptually, but – like revenue from certified emissions reductions (CERs) – the FITs are not being readily monetized by many project proponents to finance the implementation or enhance the feasibility of the project; otherwise there would be no need for concessional financing for private sector RE. While many developers have applied for PPAs, very few have been able to raise adequate financing and build the project they have applied for.

We would also like to see more detailed information on the pipeline of projects, the nature, technology and size of projects. We esteem that the level of detail provided in concretisation of the CIP and CIP-U is not sufficient for an approval of the program by the CTF TFC.

Given the sensitive nature and status of current project development and negotiations, ADB is not at liberty to publicly disclose these details at this time.

Further, we would like to see a comprehensive strategy on monitoring and evaluation regarding the predicted leverage effects and correspondent GHG reductions to be included within the ADB Thailand Private Sector Renewable Energy Program since there is no information included regarding this matter.

As noted in the funding proposal CTF cofinancing will be limited to a maximum of 20% of total project costs per project; ADB will maximize the leverage to the extent possible and the CTF amount may vary from project to project as the principal of minimum concessionality is applied. Monitoring and evaluation details will be included in the individual project proposals submitted to ADB's Board for approval. The estimated GHG reductions and proposed performance indicators were clearly presented in the funding proposal (and the CIP-U) as follows (see next 2 pages):

Estimated GHG Reductions ^a			
<i>Total GHG reductions directly supported by CTF</i>		<i>Total GHG Reductions with potential replication and scale up</i>	
350 MW wind at 30% output	643,860 tons / year CO ₂ e	1250 MW ^b wind at 30% output	2,299,500 tons / year CO ₂ e
50 MW waste-to-energy at 80% output	245,280 tons / year CO ₂ e	350 MW ^c waste-to-energy at 80% output	1,716,960 tons / year CO ₂ e
120 MW solar at 25% output	183,960 tons / year CO ₂ e	5000 MW ^d solar at 25% output	7,665,000 tons / year CO ₂ e
Total	1,073,100 tons / year CO₂e	Total	11,681,460 tons / year CO₂e

^a GHG reductions assume that RE displaces fossil power in the grid at 0.7 tons CO₂e/MWh. Using an average grid emissions factor of 0.55 tons CO₂e/MWh, the total direct emissions reductions would be about 843,150 tons CO₂e/year.

^b Assumes replication and scale-up potential is limited to total of 1600 MW potential identified in the AEDP (see Table 8 of original CIP)

^c Assumes replication and scale-up potential is limited to total of 400 MW potential identified in the AEDP (see Table 8 of original CIP)

^d Assumes replication and scale-up potential is 10% of total of 50,000 MW potential identified in the AEDP (see Table 8 of original CIP)

The performance indicators outlined below are derived from the CTF Results Measurement Framework and Thailand's CIP and CIP-U. These indicators will be tracked at least annually.

1) CTF Related Performance Indicators

ProgramIndicator	Baseline	Anticipated Results by December 2017 (5 years)
GHG emissions avoided by the Program (including replication and scale up)	N/A	1 MtCO ₂ e/year at the end of the five-year period 2012 to 2017 as direct result of ADB/CTF resources ¹
CTF financial leverage for the Program	N/A	1 : 5 (CTF loans \$ 100 million: ADB loans \$250 million; other cofinancing and sponsor's equity \$500 million)
CTF cost effectiveness for the Program	N/A	Replication and scale up achieves 5 MtCO ₂ e/year at the end of the 15-year operation period through 2027. Total emissions for the 20 years of the Program is estimated at 85 MtCO ₂ e ² Direct reductions => CTF\$5 / ton CO ₂ e decreasing to CTF\$1.18 / ton CO ₂ e Or 0.2 t CO ₂ e ton CO ₂ e /CTF\$ invested, increasing to 0.85 ton CO ₂ e /CTF\$ invested with replication and scale up

NOTE: Other performance targets and indicators quantifying developmental impacts of each individual project will be determined during the preparatory stages of implementation. Performance targets and indicators include among others:

- (i) Annual contribution to government revenue from payment of income tax throughout the term of the debt facility
- (ii) Average energy output (MWh) delivered to off-takers per year of each RE and/or

¹ This estimate assumes that 520 MW of capacity is operating with emissions reductions as estimated in the table above.

² This assumes that RE capacity is built out with GHG reductions of 1 Mt/y for years 1 – 5 [5 million tons total], 5 Mt/y for years 6 – 15 [50 million tons], then 6 Mt/y for years 16-20 [30 million tons]; total is 85 million tons over 20 years.

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| | WTE generation facility |
| (iii) | Number of people employed temporarily during construction and initial operation of generation facility/facilities and permanently during full operation of generation facility/facilities |