

Summary

I Title

Practical Steps in Obtaining Carbon Credits through a Thai Biomass Electricity Generation Project

II Purpose

This project aims to obtain knowledge and experience for a CDM project process from a biomass power generation project in Thailand. The carbon credits from the project could be internationally accepted.

III Project outline

This project will implement the following practical steps for obtaining carbon credits from a Thai rice husk power generation project, for which a feasibility study is already completed.

1 Design Documentation

Project Description

Carbon Credit Evaluation

Baseline Study

Carbon Emission Reduction

Monitoring Plan

2 Validation of Carbon Credits by Operational Entity

3 Host Country Approval

4 Documentation for Carbon Credit Investors

IV ATB Rice husk power generation project

A. Abstract

This is a project consisting of five rice husk power plants in central Thailand, each having approximately 20 MW gross generating capacity. Electricity will be sold through 25-year power purchase agreements (PPAs) with the Electricity Generating Authority of Thailand (EGAT). EGAT is required to purchase electricity from renewable energy power producers with an 80% minimum purchase guarantee. In addition to electricity, the plants will produce and sell steam to industrial and agricultural users in their vicinity. A project feasibility study was completed in 1997.

A financial closure will be expected to finish by mid-2002.

B. Project Developer

A.T. Biopower Co., Ltd. (ATB), the project company, has developed strong in-company capacity to plan and manage this project. ATB is responsible for a variety of project development activities and field operations, including engineering project management, fuel supply and transport, permitting, community and local government relations, and investor relations.

V Carbon Credit Evaluation

A. Background

1 Environmentally friendly disposal of rice husk

Thailand is the world's largest exporter of rice. In central Thailand, the location of ATB's power plants and fuel supply, there are three rice harvests a year. Demand for rice husk is relatively low. As a result, the disposal of rice husk is a serious problem for many millers, many of whom must resort to open burning or dumping. Most mills in Thailand are too small to economically generate electricity from rice husk.

2 Importance of biomass energy for Thailand

Biomass fuels, especially rice husk and bagasse, represent a particularly rich energy resource for Thailand. These renewable energy sources currently fuel less than 1% of Thailand's generating capacity, which is dominated by natural gas, lignite and imported fuel oil. Stated goals of Thai government include tripling the production of electricity from renewable energy sources within the next five years as well as cutting oil imports by 30,000 million baht (about US\$670 million) per year, or about 10%. The ATB Project will make a significant contribution towards achieving this goal.

B. Baseline emission

ATB selects a baseline period of seven years, with the option for renewal for a maximum of two additional periods. The Thai national electricity grid is the baseline, since the project plans to sell the electricity it produces to EGAT. Thailand's national electricity pool has a relatively low Carbon Emission Factor (CEF) due to the widespread use of combined-cycle natural gas power production, amounting to about 50% of grid-connected electricity. Our calculations estimate that annual CEF for Thai Electricity Grid is as follows.

Table 1 : Annual Carbon Emission Factor for Thai Electricity Grid

YEAR	Carbon Emissions Factor kgCO₂/KWh
2000	0.494
2005	0.470
2006	0.504
2007	0.531
2008	0.510
2009	0.516
2010	0.529
2011	0.517

The amount of grid electricity to be replaced by the five ATB plants will be: $5 \times 20\text{MW} \times 24\text{h} \times 365\text{d} \times 85\% = 750,000\text{MWh/year}$. Thus, baseline emissions for electricity generation are obtained by multiplying the Thai CEFs by the amount of grid electricity to be replaced by the electricity from ATB's power plants. The annual bunker oil consumption amounts by a paper mill is 775,000 liters/year. The CEF for heavy fuel oil is 2.68 kgCO₂/litre. Hence, baseline steam emission is 2,000tCO₂/year.

C. PROJECT EMISSIONS

IPCC Guidelines stipulate that biomass consumption is assumed to be equal to its re-growth. Therefore, the combustion of rice husk for the project, is deemed to be carbon neutral. The estimation for the project emission must include off-site emissions for the transportation of rice husk by trucks. No significant leakage is expected.

D. Estimation of Emission Reduction

The total estimated emission reduction for 2005-2011 (7years) will 2,645,000CO₂e.

E. Addtionality

But for a small number of exceptions, rice mills in Thailand are too small to use the rice husk they produce for electricity generation. The Project collects unused rice husk from these mills as the fuel for its power plants. Without the Project, the rice husk will continued to be either dumped or burned in the open or in simple incinerators. The financial plans for the Project do not involve public funding from Annex I countries.

F. Environmental Impact Assessments (EIAs)

Initial environmental evaluations already completed for the similar rice husk plants suggest that negative environmental impacts are minimal.

G. Social Responsibilities

ATB will enter into two social contracts with the local communities; one dedicated to improving local community welfare and environment; and another whose aim is to guarantee the environmental performance of ATB's power plants.

H. Monitoring Plan

ATB will be responsible for monitoring the Project as a CDM project. Based on the modern information technology it intends to use for control and reporting. ATB will ensure the availability, accuracy and consistency of commercial transaction records to be used for monitoring and verification of baseline and project emissions from electricity and steam.

VI Thai government's attitude

The Thai government expects to ratify the Kyoto Protocol in the second half of 2002. The Thai National Strategy Study (NSS) on climate change, to be completed in May 2002, will provide a legislative framework for the distribution of social benefits from the CDM. The Office of Environmental Policy and Planning (OEPP), the focal point for the Kyoto Protocol in the Thai government, is conducting the NSS and suggests that the Thai government is supportive of the CDM, and welcomes the benefits it could potentially bring to Thailand. In unofficial discussions, OEPP officials have expressed favorable opinions about the project, believing that it is a socially meaningful project and one that is important to sustainable development.

VII Validation by Operational Entity

No designated operational entity (DOE) will exist until the UNFCCC CDM Executive Board completes the designation process. Several international certification organizations and auditors are listed to be a DOE.

One of the operational entity candidates, Det Norske Veritas (DNV), is currently validating the project on the basis of currently existing and emerging requirements for validation under the CDM in the Kyoto Protocol. DNV has reviewed the Project Design Documentation (PDD) submitted by Tokyo-Mitsubishi Securities Co., Ltd. DNV is an

independent, autonomous foundation headquartered in Oslo, Norway. DNV Certification is the GHG validation and verification branch of DNV, which will execute this assignment.

DNV's preliminary comments on the ATB's PDD can be summarized as follows.

The PDD is clear and for the most part sufficient to validate the project. The assumptions made in the PDD seem reasonable and conservative in their nature, and the preliminary review has concluded that the project is likely to fulfil the requirements for CDM projects according to Art. 12 of the Kyoto Protocol. The necessary project information is likely to be provided at a later stage of the desk review, or during the site visit to Thailand.

VIII Carbon Investors and Project Idea Note

There are two official carbon credit investors in the world. One is the Prototype carbon fund in the World Bank and the other is Certified Emission Reduction Unit-Procurement Program (CERU-PT) in Netherlands.

CERU-PT is a program engaged in the procurement of carbon credits set up according to the EU directive for supplies. Responsibility for CDM in the Netherlands is with the Minister of Housing, Spatial Planning and the Environment, which appoints Senter as the tendering authority for CERUPT.

The first selection phase of CERUPT was completed at the end of January 2002. ATB submitted a Project Idea Note (PIN) to Senter. The PIN is a brief document for carbon credit investors screening the carbon credit value. The short list of the first selection for CERUPT will be announced in May 2002.

IX Conclusions

A procedure for CDM projects has not been fully established yet. Carbon credits, however, could be practically obtained as soon as the Kyoto Protocol is ratified, if the procedure is simultaneously properly prepared. Through this project it can be seen that the procedure is not very complicated, and that it is necessary to build infrastructure for project design and monitoring plan documentation, as well as negotiating skills with an operational entity. In addition, local project developers and host country officials must be provided with education on the Kyoto mechanism and training to obtain practical skills to develop CDM projects.