EcoSecurities Limited

ECO SECURITIES

1st Floor
Park Central
40/41 Park End Street
Oxford OX1 1JD
UK

Tel +44 (0)1865 202 635
Fax +44 (0)1865 251 438
Email uk@ecosecurities.com
www.ecosecurities.com

Members of the CDM Executive Board
UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D-53153 Bonn
Germany

28 January 2009

Dear Members of the CDM Executive Board,

Request for review for: "Jiratpattana Biogas Energy Project" (2144): Response from the Project Participants

1. The DOE shall further justify how it has validated the technological, financial and social barriers to the anaerobic and aerobic alternatives are prohibitive.

2. The DOE shall clarify how it has validated the baseline emission calculations, especially regarding the quantity of the biogas to be generated, and the amount of fuel oil to be saved.

Whilst the request for review is addressed to the DOE, the project participants would like to provide the following additional information in order to substantiate the additionality arguments presented in the PDD.

1. The DOE shall further justify how it has validated the technological, financial and social barriers to the anaerobic and aerobic alternatives are prohibitive

Technology Barrier
A third party report from 2007 by the Energy Conservation and Renewable Energy Division and Energy Policy and Planning Office of Thailand[1] (hereafter referred to as 'the EPPO report') clearly confirms that open ponds are the prevailing practice for the treatment of wastewater at tapioca (also called cassava) starch plants in Thailand. The report also states that insufficient knowledge and confidence in the technology is preventing the use of more advanced water treatment technology, i.e. that this is operating as a preventative technology barrier for anaerobic reactors.

At the time of decision making for the project the Ministry of Energy in Thailand had started a pilot scheme to study and demonstrate biogas technology at tapioca starch processing facilities. The projects involved in the scheme received financial support from The Energy Conservation Fund (ENCON) and technical support from the Ministry of Energy. Nine factories were selected for this pilot scheme, but the project activity was not included in this scheme so it did not receive this kind of financial support. The existence of this support

[1] Seminar Document : The Promotion of Biogas from Wastewater as An Alternative Energy and for Environmental Improvement, published by the Energy Conservation and Renewable Energy Division and Energy Policy and Planning Office (EPPO), 2007

scheme demonstrates that these projects face significant barriers and would not be developed in the absence of external support.

In addition to the projects receiving financial support under the ENCON scheme, there are 17 similar projects that have applied for CDM financing in Thailand[2], suggesting that CDM incentives are necessary for these projects to take place, due to the barriers described in the PDD. No similar projects have been identified outside of the CDM or ENCON scheme, therefore it can be considered that there are no similar operational projects in Thailand that do not have financial support either from the Government or from CDM revenues.

The technology for the proposed project was not available in the host country, as described in the validation report, and the equipment had to be imported. The technology adopted is an advanced covered in-ground anaerobic reactor (CIGAR)®, a technology developed by a New Zealand company, Waste Solutions Ltd. The CIGAR® system consists of a series of baffled reactors covered by thick HDPE covers, connected by overflow weirs, plus gas blowers, as well as a state-of-the-art monitoring system. As stated in the validation report, major equipments such as dual fuel burner and gas blowers have been imported from Germany and New Zealand, respectively. Furthermore, no other projects using this CIGAR® technology were developed in the host country prior to the start date of this project, with the exception of the Korat Waste To Energy project (KWTE), a registered CDM project (UNFCCC #1040)[3]. Therefore there are no similar projects in the host country using this technology (in the absence of CDM).

Financial Barrier

The EPPO report mentioned above clearly states that anaerobic reactors come with “high investment cost and high operating costs”, and that consequently most facilities chose to retain their wastewater in open ponds.

Although the project activity has secured funding and this funding has been provided by a foreign investor, it should be noted that those investors were specialized in renewable energy, with a very good understanding of the CDM. In fact it was never an option for the investors to develop the project as anything other than a CDM project, as evidenced by the Investment Memorandum presented to the DOE. The funding was only secured because of the CDM and the additional incentives and investor confidence it brings to the project. The project is being funded by TBEC, a company created in 2003 and invested in by CleanTHAI, Al Tayyar Energy Ltd (ATE) and Private Energy Market Fund L.P. (PEMFUND) as an investment vehicle for CDM biogas projects in Thailand. The company was specifically created to help facilities in Thailand develop clean technology biogas projects through the CDM process, and the profitability of each of the projects being developed relies on income from the CDM. This is clearly demonstrated in the Investment Memorandum that was presented to the DOE during validation and is referenced in the validation report. It is also demonstrated in the TBEC Shareholder Agreement signed in April 2004 that specifically states the company (TBEC) will engage in the ‘generation and sale of Emission Reduction Certificates.’

[2] Website of the Thailand Designated National Authority
[3] As evidenced by the sales list from the technology providers, Waste Solutions

In the Investment Memorandum it was clearly demonstrated that the financial rates of return of the project activity, and the other similar projects, was not sufficiently high to make them an attractive investment without income from the CDM. This memorandum is specific evidence to support the barrier due to lack of financing in the absence of CDM.

The technology used in the project has been imported into Thailand, and the evidence for this (list of equipment from the technology provider) is referenced in the validation report. This equipment was paid for in US Dollars, whilst in the absence of CDM the project would have no income in US Dollars, only in Thai Baht, the local currency. This would mean that there would be a significant exchange rate risk, which exacerbated the low rate of return and made the project even more unattractive for investors. Exchange rate fluctuations can be seen in figure 1 of this response, which shows the Thai Baht exchange rate for the 10 years prior to decision making. This figure clearly shows that there have been large fluctuations in the exchange rate, particularly following the 1997 Asian financial crisis, that significantly increase the risk of financing such a project for potential investors. Carbon credit sales are paid for in US Dollars, so the CDM effectively mitigates the exchange rate risk.

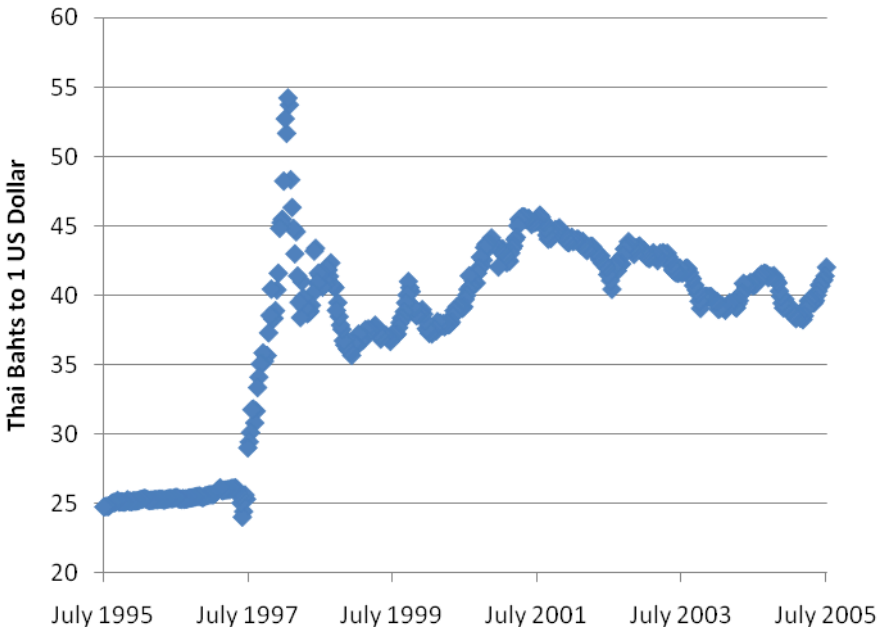

Figure 1: Thai Baht to US Dollar exchange rates from July 1995 – July 2005 (Source: Bloomberg Finance LP)

Social Barrier

The social barrier described is minor and may not have prevented the implementation of the project on its own. This may have been considered by the DOE to have been a minor barrier. However, at the same time the DOE considered that the technological and financial barriers were sufficiently strong to have prevented the project activity without CDM income. Even without the social barrier, the barrier due to lack of financing would mean that the project would not be invested in, and hence would not be built in the absence of additional incentives from CDM.

Concluding remarks

For all of the barriers, documents and references were provided to the DOE, and these documents provided detailed evidence to show that the barriers are significant. However, we accept that the content of these documents could have been presented in more detail in the PDD, and we would be willing to add more explicit reference to the documents if required. We hope the above information sufficiently addresses the request for review, and we are happy to provide further information or a revised PDD if necessary.

2. The DOE shall clarify how it has validated the baseline emission calculations, especially regarding the quantity of the biogas to be generated, and the amount of fuel oil to be saved.

Amount of fuel oil to be saved

AM0022 states (p11):
"F is the corresponding amount of fossil fuel displaced by the use of biogas for the generation of on site heat (unit). This is estimated as product of :(1) Average specific fuel consumption for the output of the facility, estimated using 3 years historical data; and (2) the annual production".

In our case we have applied the following values:

1) Average specific fuel consumption for the output of the facility, = 38.53 dm^3/t

2) The annual production = 48,271 t

➔ F = 38.53 dm3/t x 48,271 t = 1,860,000 dm3

This is shown in cell C32 of the inputs tab of the calculation spreadsheet uploaded on the CDM website. However, at Jiratpattana the biogas production will not be sufficient to displace all of the fossil fuel consumed in the baseline heating facility, and the site continues to use some HFO in its boilers. In order to increase accuracy, and in order to be conservative in estimating baseline emissions, we have applied an adjustment factor to the quantity of fossil fuel displaced, based on monitored data from the facility, given that the project was already operating during validation. Monitoring data was available from the date the site started operations, on 12/06/2006. Until 30/09/2007 the project sent a daily average of 6,556Nm^3 biogas to the heaters corresponding to a yearly 2,229,040 Nm^3.

According to the monitoring section of AM0022:

$$F_{MONITORED} = \frac{V_{HEAT} \times C_{CH4} \times NCV_{METHANE}}{NCV_{FUEL\ OIL}} = \frac{2{,}229{,}040 Nm^3 \times 58.7\% \times 3.59E-5\ TJ / Nm^3}{39.996E-6\ TJ / dm^3} = 1{,}174{,}448\ dm^3$$

Hence only 63% (= 1,174,448 dm3/1,860,000 dm3) of the heat energy was supplied by biogas, the rest of the heat requirements being met by HFO directly. Consequently, we have conservatively adjusted the baseline estimations based on 63% of fuel displaced by the project activity:

F = Average specific fuel consumption (38.53 dm^3/t) x Annual production (48,271 t) x Portion displaced by the project (63%) = 1,174,448 dm^3

It should be noted that this was done to increase accuracy and conservativeness, and is only for the purposes of ex-ante estimations in the PDD, having no impact on CERs since the actual quantity of biogas produced will be directly monitored.

Quantity of biogas to be generated

The amount of biogas produced by the system was also based on monitored data, since the project was operating during validation. As no guidance was found in AM0022 on that regard, we have based the amounts of biogas sent to flare, generation sets and heaters on the monitored data from the period from 12/06/2006 to 30/09/2007. The total volume of biogas produced is taken as the sum of these 3 components (cell C17 of the 'Inputs' tab of the calculation spreadsheet uploaded on the CDM website). It is then used in the Project Emissions calculation to account for the 1% leakage from the digester.

In the interest of transparency we would like to notify that an error has been identified in the estimated values of the PDD, although without impact on anything else: the daily estimated value for F in section B.7.1 is stated as 3,434dm^3. The correct value is 3,454dm^3, corresponding to 6,556Nm^3 of biogas sent to the heaters and an annual fuel displaced of 1,174,448dm^3 (assuming 340 days of operation per year). The spreadsheet calculations were correct and the values of estimated emission reductions in the PDD were not affected. The PDD has been updated to correct this error.

Yours sincerely

Jonathan Avis
Principal CDM Project Manager
EcoSecurities
jonathan@ecosecurities.com