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Att: CDM Executive Board

Your ref.:  
 CDM Ref 2138

Our ref.:  
 WONGYS/MLEH

Date:  
 27 January 2009

## Response to request for review of project 2138 “Chao Khun Agro Biogas Energy Project”

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV’s request for registration of the project activity 2138 entitled “Chao Khun Agro Biogas Energy Project”, and would like to provide the following initial response to the issues raised by these requests for review.

*1. The DOE shall further justify how it has validated the technological, financial and social barriers to the anaerobic and aerobic alternative as prohibitive if: a) the VR (p14) states that few tapioca starch processing facilities have adopted anaerobic digester technology in Thailand; b) only generic evidence was assessed to prove that lack of funding for the anaerobic and aerobic alternatives; however the project activity has been funded by a foreign investor (VR, p15); and c) the DOE (VR, p16) states that social barrier is a minor barrier to anaerobic and aerobic alternatives.*

### **DNV Response:**

DNV has assessed the technological, financial and social barriers to the anaerobic and aerobic alternatives as described in section 4.3 of the validation report. However, further evidences were provided by the project proponent and reviewed by DNV to provide justification on how the barriers listed in the PDD are real and would likely have prevented the proposed project activity from occurring in the absence of CDM benefits. The details of which are provided in response to issues raised by the requests for review as follows:

*a) the VR (p14) states that few tapioca starch processing facilities have adopted anaerobic digester technology in Thailand*

The implementation of anaerobic digester technology in tapioca starch processing facilities is not a common practice due to number of barriers which also make the project activity unviable without CDM benefits. It has been demonstrated in the project design document and further verified in the validation report that the Covered-In-Ground-Anaerobic-Reactor (CIGAR) technology is not available indigenously and needs to be imported. Although the technology may be imported into Thailand, the penetration of technology is limited. This has been verified by reviewing the equipment list provided by the technology supplier. In addition, further evidences were requested from the project proponent to conclude on the existing few tapioca starch processing facilities that have adopted anaerobic digester technology in Thailand.

A report from 2007 by the Energy Conservation and Renewable Energy Division and Energy Policy and Planning Office of Thailand<sup>1</sup> (EPPO report) was reviewed by DNV to verify that open ponds are prevailing practice for the treatment of wastewater at tapioca starch plants in Thailand. The EPPO report confirms that most manufacturers prefer to retain wastewater from cassava starch plant in open ponds. The EPPO report also confirms that during 2003 to 2005, the Ministry of Energy started a pilot demonstration of the biogas system in starch industry with 4 different technologies at 9 factories. The participating manufacturers receive financial support from the Energy Conservation (ENCON) Promotion Fund through four agencies that include: Department of Alternative Energy Development and Efficiency (DEDE), Department of Industrial Works (DIW), King Mongkut's University of Technology Thonburi (KMUTT), and Biogas Advisory Union Foundation (BAU). DNV is of the opinion that the existence of such support scheme demonstrates that these projects faced significant barriers and would have not been developed in the absence of external support.

In addition to the projects receiving financial support under the ENCON scheme, the project proponents have stated in their response that there are 17 similar projects that have applied for CDM financing, suggesting that CDM incentives are necessary for these projects to take place. DNV was able to cross check this by reviewing a published article from the Thai Tapioca Starch Association (TTSA).<sup>2</sup>

DNV was also provided with a letter from Dr. Saroch Boonyakitsombut, a faculty member of Department of Environmental Engineering, King Mongkut's University of Technology Thonburi (KMUTT) stating that until CDM became reality the open lagoon system was the most cost effective form of wastewater treatment from starch plants over aerobic and anaerobic systems in Thailand.

No similar projects have been identified by DNV outside of the CDM or ENCON scheme. Therefore, it can be confirmed with reasonable level of assurance that CDM incentives have been a major deciding factor for tapioca plant owners to invest in anaerobic digester and biogas utilization technology. The few tapioca starch processing facilities that have adopted anaerobic digester technology in Thailand either received financial support under the ENCON scheme or were developed considering CDM.

*b) only generic evidence was assessed to prove that lack of funding for the anaerobic and aerobic alternatives; however the project activity has been funded by a foreign investor (VR, p15)*

The project is being funded by Thai Biogas Energy Company Ltd (TBEC), a company specifically created to help facilities in Thailand to develop clean technology biogas projects through CDM process. It has also been confirmed by DNV that the profitability of each of the projects being developed by TBEC relies on income from the CDM. DNV was able to verify this through the Investment Memorandum during validation and has referenced it in the validation report. In this Investment Memorandum it is clear that the financial rate of return is only sufficiently attractive if income from the CDM is included. This memorandum is specific evidence to support the barrier due to lack of financing in the absence of CDM.

The investors in TBEC commissioned a Legal Due Diligence Report on Chao Khun Agro (CKA), the host company, while they were considering whether to go ahead with the investment. The Legal Due Diligence Report was prepared by Bamrung Suvicha Apisakdi Law Associates Bangkok, Thailand in March 2004<sup>3</sup>; it includes an assessment of the CKA's audited accounts.

<sup>1</sup> 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

<sup>2</sup> Advance Energy Plus Co., Ltd. presented the pilot project of CDM development program in "bundle" pattern among medium size starch manufacturers and small size starch manufacturers. [http://www.thaitapiocastarch.org/co-operation\\_detail.asp?id=5](http://www.thaitapiocastarch.org/co-operation_detail.asp?id=5)

<sup>3</sup> Legal Due Diligence Report was prepared by Bamrung Suvicha Apisakdi Law Associates Bangkok

DNV was able to verify that this Legal Due Diligence Report concludes that the auditor of Chao Khun Agro's (CKA) most recent accounts 'had significant concerns over the financial prospects of the Company'. This demonstrates that there was significant risk associated with investing in the project activity which would make equity participation difficult to find locally and internationally. Due to poor financial state of the host company (Chao Khun Agro) it was not possible for CKA to make additional investments in the proposed project activity since it could put their core business at risk and it was not easy to find investors willing to invest in the business.

In addition, the technology implemented under the project activity was imported to Thailand. The equipment imported was paid in US dollars and would have been paid from income from the first years of operation. However, without income from CDM (in dollars), evidenced through the Investment Memorandum, the only income from the project would have been in the local currency (Baht). This would mean that there would be a significant exchange rate risk, which exacerbates the low rate of return and makes the project even more unattractive for investors. This risk was easily mitigated by carbon credit sales that would be paid in US dollars.

Furthermore, in the absence of CDM the only revenue for TBEC was related to the production and utilisation of biogas. It is exposed to the same risks associated with any company developing this kind of project in Thailand. Hence, it is in our opinion that some barriers to the project could be 'generic' to the sector, but are nevertheless real and significant.

*c) the DOE (VR, p16) states that social barrier is a minor barrier to anaerobic and aerobic alternatives.*

It was explained by the project participant that there are some minor social barriers faced by the project participant, namely perceived risks associated with new technology and safety issues with regards to collection and storage of biogas. It is the opinion of DNV that these barriers are deemed minor but reasonable in the local situation. The two alternatives (anaerobic and aerobic systems) that faced these barriers had other barriers that were much more important and DNV assessed that it was sufficiently demonstrated through those that the project activity faces barriers and concluded on the social barriers to be minor. Therefore, even if social barrier is questioned, it is in DNV's opinion that this should not question the overall additionality of the proposed project since it also faces technological and financial barriers.

We sincerely hope that the Board accepts our above explanations.

Yours faithfully  
for DET NORSKE VERITAS CERTIFICATION AS



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Technical Director  
Climate Change Service



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