

Retroactive registration request: CYY Biopower Wastewater treatment plant including biogas reuse for thermal oil replacement and electricity generation Project, Thailand (GS560)

This document serves the project proponent to identify areas where further information is needed for proceeding to retroactively register to the Gold Standard's CER stream.

Information on the submission:

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Date of feedback: December 18th 2008

Documents provided and reviewed:

- PDD
- **GS Annex including Initial Stakeholder Consultation Report**
- **Final Validation Report from the DOE**

Project summary:

The proposed project entails the installation of an upflow anaerobic sludge blanket technology (UASB) biogas reactor and up to a 2.721 MWeI gas engines at an existing tapioca starch processing plant for:

- a) the extraction of methane (biogas) from the wastewater stream through the biogas reactor,
- b) the reuse of biogas as fuel in existing thermal oil boilers within the plant for starch drying,
- c) the reuse of biogas as fuel for power generation (using up to 2.72 (1.36 x 2) MWeI gas engines)

The objective of the project is to introduce a new biogas reactor with methane capture and utilisation for energy purposes into the existing open anaerobic lagoon based wastewater treatment system. As a consequence of the new anaerobic reactor, the organic load entering the lagoon system is reduced because most of the organic matter is converted to biogas in the reactor. The project activity avoids the release of methane into the atmosphere, which would occur due to the anaerobic digestion of the organic content in the open lagoon based wastewater treatment system. In addition, the biogas reactor produces biogas to fuel thermal oil boilers for starch drying, replacing the use of heavy fuel oil, and to fuel a gas engine for the production of power for both in-house use and sale to the electricity grid. This will replace the production of power from the Thai national grid.

The proposed project will be implemented at the Chok Yuen Yong Industry Co Ltd industry facility with a total expected wastewater flow-rate of 2400 m³/day and an average COD concentration of 30,000 mg/l.

Besides reducing greenhouse gas emissions by displacing electricity generated by the Thai national grid and by avoiding the use of heavy fuel oil for starch drying, the project activity is expected to have the following sustainable development benefits:

- Reduction of offensive odour from the open lagoon system
- Improvement of the quality of water discharged into the environment
- Increased employment by employing 8-12 full-time staff to operate the system (8 as per the GS Annex, 12 as per the PDD – to be clarified, see the *Sustainable Development Assessment Matrix* section)
- Generating incomes for local community
- Reduction in dependency on fossil fuels for electricity generation

The project activity applies the methodology AM0022 version 4 and the associated Tool(s). It also applies the Additionality Tool version 5 in the GS Annex, as this is not required by the applied methodology. A fixed crediting period of 10 years has been chosen (although the PDD Section C mentions a renewable period, all calculations have been based on 10 years. To be corrected.) The total emission reduction over the 10-year period is expected to be 974,681 tCO₂e (or 97,681 tCO₂e per year).

CDM Status: The deadline of the methodology was 13 August 2008. Since the project is not appearing under the request for registration, it is assumed to be in the completeness check. Please inform the Gold Standard in case the project was not submitted by the deadline.

Review results and conclusions:

The GS has reviewed the submitted project and has identified a number of areas where additional information is necessary for the project to be in line with the Gold Standard requirements:

1. Eligibility

- *ODA*. Please upload into the Registry a clear financial plan (this will be treated as a confidential annex) confirming that the project does not make use of ODA for the purchase of VERs.
- Although the PDD mentions that all recovered biogas will be used to deliver energy services, please repeat this in the GS Annex under Project Type Eligibility Screen to confirm that at least 65% of the recovered biogas is used to deliver energy services, which is an eligibility criterion for biogas projects.

2. Clarification on Additionality

- *Common practice analysis*. Please provide traceable references or documentary evidence for the figures and facts listed in the common practice analysis, including the number of existing anaerobic digesters (25), the proof that 8 projects are VER projects, the weblink to the 6 CDM projects, and the proof that the remaining 11 projects have received letters of approval. The DOE shall explain in the GS validation report how the common practice analysis has been assessed.
- *CDM consideration*. Since the early consideration of CDM revenues are particularly important in retroactive projects, the DOE should describe in detail how it is validated that CDM clearly played a role in the decision to go ahead with the project activity. This description should include a clear timeline (starting with the board meeting on 25 February

2006, the first purchasing date, the contract with the CDM consultant, and any other relevant milestones).

3. Baseline, project and leakage emissions & emission reduction calculations

- Please submit calculations also in excel format.
- *Conservativeness*. The GS stresses the importance of a conservative approach, including in the choice of the options and parameters within a given methodology. The GS Manual for CDM Project Developers, p18 states: “When applying the appropriate baseline methodology conservative options and data should be used to calculate the baseline emissions....Unless there is a convincing case for an alternative choice of baseline methodology and technical assumptions (e.g. emission factors), the approved methodology that results in the lowest baseline emissions must be used.” In other words, the baseline considered must be the most conservative among the equally convincing options. In order to be in line with the GS fundamental principle of conservativeness, please either make use of the more conservative baseline option, i.e. the weighted average emissions of the current generation mix provided at the time of submission to the GS, or provide substantial enough evidence that the combined margin approach is a more convincing case.
- The DOE shall confirm that there is no captive power generation that is being displaced by the electricity generated by the project activity, since the PDD (p.3) states that “until the VSPP program registration is formalized, the electricity generated by the project activity will be used for in-house consumption at the tapioca starch processing plant, displacing electricity that would have been drawn from the grid.”
- The DOE shall explain how the value of COD concentration in the wastewater (30 kgCOD/m³) was validated and whether this can be assumed to be representative and conservative, especially since 5 other registered/request for registration CDM projects in the cassava industry in Southeast Asia applying AM0022 have values between 10-28 kgCOD/m³.
- Please confirm that the use of normal or standard conditions is consistent for both the density of methane applied and the biogas amounts, as these are main parameters for the calculation of emission reductions during verification. The PDD states in Section B.6.2 that density of methane at standard conditions will be applied whereas the biogas amounts are normalized.

4. Sustainable Development Assessment Matrix.

- The scoring of the SD indicators must be easily reproducible by the DOE and the reviewers. Please support the scoring of the SD indicators with more evidence and some quantitative data when possible, and try your best to systematically refer to publicly available and easily accessible references (use weblinks, page numbers, etc. to enable traceability) for all justification paragraphs, regardless of the score. A reference can be any academic or non-academic source such as a feasibility study or government report, website, local expert opinion (provide contact details), EIA, sections of the PDD, etc. For references which are not easily accessible, please attach them to the PDD as an annex. All 12 indicators require a justification paragraph and reference source.

- Please take note that the sensitive and crucial SD indicators have to be identified with an asterisk (*) in the SD Matrix and included in the monitoring plan. A sensitive indicator is an indicator which is likely to change over the crediting period due to changes in the boundary conditions. A crucial indicator is either an indicator which strongly contributes to an overall positive score (i.e.: at least all indicators scored +2), or an indicator scored -1, or an indicator specifically pointed out by the stakeholders during the consultation. Please revise the SD matrix and monitoring plan accordingly.
- *Water quality and quantity.* Since this is monitored anyway as part of the CDM process, please mark it with an asterisk and include it in the monitoring plan in the GS Annex. A reference to the relevant parameter ID from the PDD Monitoring Plan can be made if it is demonstrated to be sufficient.
- *Air quality.* Please provide further justification and a reference to support the score of +2.
- *Soil condition.* Please provide further justification and a reference to support the score of +1. If the impact on soil condition is marginal or negligible, then this is not sufficient to support a score of +1.
- *Employment (quality).* Note that employment in the section 'Social sustainability & development' is about employment quality, whereas employment in the section 'Economic & technical development' is about employment numbers (jobs created). Please discuss to what extent the project activity leads to greater incomes, better skilled jobs, or safer working conditions than the current average in the region in order to justify a score of +2. Furthermore, please discuss how safety in the biogas plant is ensured. Since safety is a main concern in biogas plants, it is strongly suggested to consider monitoring this indicator (e.g. monitoring the training of the plant personnel in safety issues, or monitoring other safety measures taken in the plant).
- *Access to energy services.* Please describe, at least qualitatively, how the access to energy services is being improved for the *locals* as a result of the project activity, i.e. show that the power will not be dispatched in priority to other regions connected to the grid. Otherwise keep the indicator neutral.
- *Employment (numbers).* The PDD mentions that 12 full-time staff will be hired to operate the system whereas the GS Annex mentions 8. Please clarify. In addition, since this is considered a crucial indicator that has an overall positive impact on local sustainable development, the monitoring of this point should be considered.
- *Balance of payments and Technological self reliance.* For both of these indicators, please provide further justification and a reference to support the scores of +2. If these are considered crucial indicators (i.e. having major positive impacts on sustainable development), then monitoring of these points should be considered.

5. Stakeholder consultation

- Please do not use the term 'Initial Stakeholder Consultation (ISC)' as there is no ISC for retroactive projects. Instead, the project proponent discusses whatever consultation took place as part of the GS annex, waits for the results of the Pre-feasibility Assessment, fixes

the PDD accordingly, then conducts a “second-round” stakeholder consultation in line with the suggestions provided by the Gold Standard.

Please incorporate the following GS requirements in the second round of stakeholder consultation:

- Please invite local NGOs, GS NGO supporters (local ones and international ones¹), and GS local experts to comment on the existing project design (retroactively and based on the scored SD Matrix). Also go back to the stakeholders who were consulted earlier for them to comment on the way their concerns have been taken into account. A site-visit is strongly recommended and would be a good opportunity for collecting opinions, discussing the non-technical summary and the SD matrix, and for taking photographs.
- The project proponent is encouraged to submit a final stakeholder consultation report after the second round of stakeholder consultation has occurred in order to facilitate a more efficient DOE validation. In any case, stakeholder comments must be reported upon in the PDD and action taken to resolve issues presented in a written and interpretable manner so as to provide a paper trail that underpins a decision by the validator. Please ensure that the following points are taken into account and fully documented:
 - A list of all stakeholders invited to the stakeholder meetings, including local NGOs and GS-NGO Supporters.
 - A copy of posters/flyers, newspaper articles, e-mails or other advertisements that were used to invite participants to the meetings.
 - A clear list of all meeting attendees, with their signatures and clear contact details.
 - A copy of the non-technical summary of the project handed out at that meeting.
 - A summary of the resulting stakeholder comments and responses provided.

6. Monitoring

- The monitoring plan should include all sensitive or critical SD indicators identified in accordance with guidelines provided in section 4 above.
- The monitoring plan should also include a description of the methods and equipments to be used, frequency of monitoring, and quality assurance measures.

7. Other

- Please upload an executive summary of the IEE into the Registry.
- The starting date of the crediting period will be the date of CDM registration.
- The PDD mentions in Section B.5. that a CDM service agreement was signed between CDM Solutions and CYY Biopower Co. Ltd. on March 20th, 2006. Section B.8. states South Pole Carbon Asset Management Ltd. as the responsible entity for developing the baseline and monitoring methodology. Finally, Annex 5 mentions Advance Energy Plus Co., Ltd. (AEP) as the representative of the CDM project advisor. Please clarify the role of these three different entities (CDM Solutions, South Pole and AEP).

¹ WWF, Greenpeace, Mercy Corps, and REEEP; contact their local representatives or the international office by default

Conclusion – The GS has the opinion that the project can be retroactively registered to the Gold Standard provided the above-mentioned points are addressed in a satisfactory way.

Further process for retroactive registration

This document must be part of the project documentation uploaded in the GS Registry and submitted to the selected DOE for validation. A summary table must be provided in the validation report with the list of the above-mentioned points and a brief explanation of how they have been dealt with.