Validation Report

of "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" in "Thailand"

GLC Report No: 175, Rev. 06

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Handelsregister Hamburg, Abt. B., Nr. 52078

Validation Report

GLC Report No. 175, Rev. 06

Organisational Unit	
Germanischer Lloyd Certification GmbH (GLC), Greenhouse Gas Services	
Client "Swiss Carbon Assets Ltd."	Client reference person Patrick Burgi

Summary:

Project Name:	"Eiamrungruang Waste Water Treatment and Biogas Utilization Project"	
Project Country:	"Thailand"	
Sectoral Scope(s), Technical Area (s)	CDM Sectoral Scope 1 and 13 ;Technical Area 1.1 and 13.1.	
Methodology (ies):	AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17).	
Name:	"Methane Recovery in Wastewater Treatment", "Thermal energy production with or without electricity" and "Grid connected renewable electricity generation"	
Project Size:	☐ Large Scale	☒ Small Scale
GHG Project:	The project activity involves the installation of biogas plant. The biogas is captured from the wastewater treated in the starch manufacturing industry which includes the incorporation of acidification pond and the UASB to the wastewater treatment system. In the absence of the project activity the methane produced from the wastewater treatment process would be emitted to the atmosphere. The produced biogas is used to generate electricity and thermal energy.	
ER Estimation:	393,733 t CO_{2e} total	56,248 t CO_{2e} per year
Crediting Period:	☐ Fixed (10 years)	☒ Renewable (7years)
Validation opinion:	☒ Positive ☐ Negative	

Project assessed by:	**Assessment reviewed by:**	**Work approved by:**
Srikanth Meesa, Karunakar Avuram, Stephen Etheridge, Sudruethai Kitjaroen, Ellen Goel	Jose-Emilio Moreno, Markus Weber	Markus Weber
Date of this revision:	Revision No.	Number of pages
2012-04-12	06	129

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History of report revisions:

Rev.	Date	**Person** (short sign or name)	**Function**	**Action**
01	2011-11-29	Srikanth Meesa Karunakar Avuram Ellen Goel Stephen Etheridge	Assessment team leader Auditor Financial expert Technical expert	Preparation of the report
02	2011-12-14	JMor	Technical Reviewer	Review with comments
03	2012- 04-10	Srikanth Meesa	Assessment team leader	Revision of the report to address the TR comments
04	2012-04-11	JMor	Technical Reviewer	Review with comments
05	2012-04-12	Srikanth Meesa	Assessment team leader	Revision of the report to address the TR comments
06	2012-04-12	Markus Weber	Final Reviewer / Approver	Final review and approval

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board (the board)
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CMP	Meeting of the Parties to the Kyoto Protocol
CM	Combined Margin
COD	Chemical Oxygen Demand
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COP/MOP	The Conference of the Parties to the United Nations Framework Convention on Climate Change serving as the Meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operation Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
EPPO	Energy Policy and Planning Office
ERPA	Emission Reduction Purchase Agreement
ERR	Eiam Rung-Ruang Renewable Co., Ltd.
FAR	Forward Action Request
GSC	Global Stakeholder Consultation
GHG	Greenhouse gas
GLC	Germanischer Lloyd Certification GmbH
GWP	Global Warming Potential
IEE	Initial Environmental Evaluation
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
LoA	Letter of Approval
MW	Megawatt
NCV	Net Calorific Value
NGO	Non-governmental Organisation
ODA	Official development assistance
O&M	Operation and maintenance
PDD	Project Design Document
PEA	Provincial Electricity Authority
PP	Project Participant (s)
SCADA	Supervisory Control Data Acquisition System
SME	Small and Medium Enterprises
UASB	Up-flow Anaerobic Sludge Blanket Reactor
UNFCCC	United Nations Framework Convention on Climate Change
VSPP	Very Small Power Producer

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1 INTRODUCTION

Swiss Carbon Assets Ltd. has commissioned Germanischer Lloyd Certification GmbH (GLC) to perform the validation of the “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” in "Thailand" (hereafter called “the project”). This validation report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedure and the subsequent decisions made by COP/MOP and the CDM Executive Board.

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project’s compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of Project Design Document (PDD) and supporting documentation. The PDD and supporting documentation are reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved consolidated baseline and monitoring methodologies AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17). The validation was based on the recommendations and guidance of the Validation and Verification Manual /5/.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Project Description

The project activity mitigates the GHG emission due to the following three aspects.

(1) Methane avoidance due to the capture of the methane from the wastewater treatment system
(2) It avoids the carbon dioxide emissions due to the electricity generation by installing the gas engines.
(3) It avoids the carbon dioxide emissions due to the thermal energy generation by consuming the biogas in the thermal oil boiler.

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The "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" comprises the energy generation by installing two gas engines and one thermic oil boiler from the biogas captured and recovered. This biogas is produced from the UASB which is a part of the project activity and the wastewater is produced in the starch manufacturing process. The project activity is a green field project. In the absence of the project activity the wastewater would have been treated in the anaerobic lagoons and the methane would have been emitted to the atmosphere. In the absence of the project activity, electricity would have been imported from the grid and the thermal energy would have been produced by combusting the fossil fuel in the boiler.

The detailed project description is provided in section 5.3.

The project activity is expected to result in the average annual GHG emissions reduction of 56,248 t CO_{2e} over the 7 years renewable crediting period.

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2 VALIDATION TEAM

A competent team with relevant knowledge and experience in the specific scopes and sectors was by GLC appointed. The appointment of the team takes into account the required scope, technical area and project activity knowledge requirements for validating the project design and the relevant CERs achieved by the project activity.

Table 2-1: Validation team members, qualification and knowledge

	Name	Function [1)]	Sectoral scope specific knowledge	Technical area specific knowledge	Local knowledge	Type of involvement						
						Desk review	On-site visit / interviews	Reporting	Supervision of work	Technical review	Expert input	Approval
☒ Mr. ☐ Ms.	Srikanth Meesa	ATL				X	X	X	X			
☒ Mr. ☐ Ms.	Karunakar Avuram	A				X	X					
☒ Mr. ☐ Ms.	Stephen Etheridge	E	X	X	X		X				X	
☐ Mr. ☒ Ms.	Sudruethai Kitjaroen	E			X		X				X	
☐ Mr. ☒ Ms.	Ellen Goel	FE				X					X	
☒ Mr. ☐ Ms.	Jose-Emilio Moreno	R	X	X						X	X	

	Name	Function [1]	Sectoral scope specific knowledge	Technical area specific knowledge	Local knowledge	Type of involvement						
						Desk review	On-site visit / interviews	Reporting	Supervision of work	Technical review	Expert input	Approval
☒ Mr. ☐ Ms.	Markus Weber	R/FA	X	X						X	X	X

1) ATL: Assessment Team Leader; A: Auditor; E: Expert; FE: Financial Expert; R: Reviewer, FA: Final Approver.

3 METHODOLOGY

The validation consists of the following three phases:

I desk review of the project design documentation and supporting documents
II on-site assessment and follow-up interviews with project stakeholders
III resolution of outstanding issues and the issuance of the final validation report and opinion

This final validation report summarizes the findings after all phases of the validation. The following sections outline each step in a more detailed way.

3.1 Desk Review of the Project Design Documentation and Supporting Documents

The initial version of the PDD as well as supporting documents is initially assessed in the context of a desk-review. A complete list of documentation reviewed during the validation is presented in Section 7.

3.2 On-Site Assessment and Follow-Up Interviews with Project Stakeholders

From 2011-08-22 to 2011-08-25, Mr. Srikanth Meesa, Mr. Karunakar Avuram were part of the GLC's validation team who conducted out on-site visit to the site of Eiam Rung-Ruang Renewable Co.,Ltd. Validation team was accompanied by the technical expert Dr. Stephen Etheridge and a local expert Ms. Sudruethai Kitjaroen during the site visit.

In the context of such on-site visits, GLC performed visual inspection to the project site, assessment of project related documents provided by the project participants. The members of the validation team also conducted interviews with representatives of project stakeholders in order to confirm the selected information and to resolve issues earlier identified during the desk review of documents. The main topics of the interviews and interviewed persons are summarized in the Table 3-1.

Table 3-1: Interviewed persons and interview topics

Name	Organization/Position	Interview Topics
Ms. Suwipa Rukwongtrakool, Project Manager	South Pole Carbon Asset Management Ltd.	- Project design and adopted technology - Demonstration of additionality (including prior CDM consideration) - GHG emission reduction calculations - Application of the monitoring methodology as well as expected design and application of the monitoring plan - Assessment of environmental impacts, environmental licensing and legal compliance - Stakeholder consultation process - Project overview, and detailed explanation about the project's relevant technical aspects - Project implementation schedule - Assessment of environmental impacts, environmental licensing and legal compliance of the project and baseline scenario with applicable regional and national legislation. - Status of the development of the Environmental Impact Assessment (EIA) for the proposed project activity - Issuance of the Letter of Approval (LoA) for "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" by the DNA of "Thailand"
Mr. Patana Surawatanapong, Project Manager	South Pole Carbon Asset Management Ltd.	
Mr. Patrick Burgi, CTO/Regional Director Thailand	South Pole Carbon Asset Management Ltd.	
Ms. Natdoun Noiklang, Biogas Supervisor	Eiam Rung-Ruang Renewable Co.,Ltd	
Ms. Khanttha Sutthokun, Managing Director	Eiam Rung-Ruang Renewable Co.,Ltd	
Mr. Prasong Suttakun, Manging Director	Eiam Rung-Ruang Renewable Co.,Ltd	
Ms. Ubonwan Utachkul, CDM Co-ordinator	Papop Co. Ltd.	
Mr. Suchai Rattananadhiskul, CDM & Sales Support Manager	Papop Co. Ltd.	
Mr. Prawit Kaewrawwang, Deputy Electrical Manager	Eiam Rung-Ruang Renewable Co.,Ltd.	
Mr. Pithoon Pongsakun, Head of Electrical Dept.	Eiam Rung-Ruang Renewable Co.,Ltd.	
Mr. Kanitphoom Darbklang	Village Headman Moo-1.	
Mr. Suktiem Mitrasantia	Baan Mai Subdisctrict,	

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	Administrative Organization	- Local stakeholder consultation: Interview of the stakeholders near by the villages of the project activity. - Discussion on the global stakeholders comments.
Mr. Boonlorm Jongjaroon	Asst. Village Headman, Moo-1.	
Mr. Pamorn Seeprasert	North Eastern Tapioca Trade association, (NEETA)	
Mr. Kanitphoom Darbklang	Village Headman Moo-1.	
Mr. Pimaksipon Sampoon, Lab Assistant	Eiam Rung-Ruang Renewable Co.,Ltd.	

3.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to GLC's positive conclusion on the project design as described in the Project Design Document (PDD) and supporting documentation. In order to ensure transparency, a validation questionnaire was customised for the project, according to the latest Validation and Verification Manual (VVM) /5/. This questionnaire shows in transparent manner VVM requirements, source, means and findings of validation as well as the results from validating the identified criteria. The validation questionnaire serves the following purposes:

- It organises, details and clarifies the requirements a CDM project activity expected to meet;
- It ensures a transparent validation process where the validators will document how a particular requirement has been validated and the result of validation.

The validation questionnaire consists of one table with sub-sections. These sections are related to the different topics which have to be validated and checked with respect to the VVM requirements. The completed validation questionnaire for the "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" is enclosed in Annex A to this report. The different columns of this questionnaire are explained in Table 3-1.

Findings established during the validation can either be seen as a non-fulfilment of criteria of the applicable CDM baseline and monitoring methodology, and/or applicable criteria of the CDM or where a risk to the fulfilment of project objectives is identified.
Corrective action requests (CAR) are issued, where:

i) the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions; or
ii) applicable baseline and monitoring methodology, and/or applicable criteria of the CDM have not been met; or
iii) there is a risk that emission reductions cannot be monitored or calculated or that the project would not be accepted as CDM project activity

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A request for clarification (CL) may be used provided information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met or where additional information is needed to fully clarify a particular issue.

The validation questionnaire consists of individual frames for each Corrective action requests (CAR) and request for clarification (CL) raised. The content of each frame is described in the figure below. To guarantee the transparency of the validation process, the concerns raised by GLC and the responses provided by the project proponents are fully documented in Annex A of this report.

Forward Action Requests (FARs) are issued during validation to highlight issues related to project implementation that require review/assessment during the subsequent verification(s) of the project activity. FARs are not related to the CDM requirements for registration

The findings are separately presented in a findings list table which is also attached in Annex A. The different columns of this list are explained in Table 3-3.

The resolution of all raised CAR and CL for the "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" is enclosed in Annex A of this Validation Report.

Table 3-2: Structure of the Validation Questionnaire

CHECKLIST QUESTION / VVM REQUIREMENT	***SOURCE***	***MEANS AND FINDINGS OF VALIDATION***	***Draft Concl..***	***Final Concl.***
Lists CDM requirements which the project should meet. The checklist is organised in several different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the checklist question or item is from.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR), Clarification request (CL), or Forward Action Request (FAR).	This is either: OK, when the Draft Conclusion is OK or raised CAR/CLs have been successfully closed out; OK, with only FAR remaining; Or: CAR/CLs

Table 3-3: Structure of the Findings List – Resolution of Corrective Action and Clarification Requests

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what is required and why; address the context (e.g. section)*	**Date** *(dd/mm/yyyy)*	**Project Participants Response** *This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence*	**Date** *(dd/mm/yyyy)*	**GLC Assessment** *The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.*	**Date** *(dd/mm/yyyy)*
In this column a finding is described	Date of raising the	In this column the PP shall provide a	Date of PP	In this column GLC shall provide the conclusion of	Date of GLC

in a clear and transparent manner. It also shall be described which further information is needed or which correction must be applied.	finding.	clear statement how to close the finding. This statement shall be sustained with suitable arguments and evidence.	response.	the assessment. The finding can be close here or if the argumentation and/or evidence are not suitable a new line below with the continuation of the finding will be opened.	assess-ment

3.4 Technical Review

Before submission of the final Validation Report, a technical review was carried out by GLC for the whole validation procedure and the draft report during the period from 2011-11-29 – 2012-04-12. The appointed technical reviewer team is competent GHG auditors for the sectoral scope and technical area this project falls under. Each involved reviewer is not directly involved in the validation assessment up to the start of the internal technical review phase of this project.

As a result of the internal technical review process, the validation opinion and the topic specific assessments as prepared by the validation assessment team leader may be confirmed or revised. Furthermore, reporting improvements might be achieved.

4 VALIDATION FINDINGS

The findings from the desk review of published PDD, visits, follow-up interviews and supporting documents are summarized here.

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification of assessed documentation and assumptions; and the results from validating the identified criteria are all documented in more detail in the validation questionnaire in Annex A of this report. The validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation (PDD version 2.3 dated 2012-04-12 /1/ and supporting documentation).

For each case where GLC had identified an issue that needed clarification or that represented a risk to the fulfilment of the project objectives, a CL or a CAR have been issued respectively. All raised CARs and CLs are documented in Annex B. The validation of "Eiamrungruang Waste Water Treatment and Biogas Utilization Project" resulted in seventeen (17) CARs, eight (8) CL and one (1) FAR. Upon successful closure of the raised CARs and CLs and based on the on-site findings and the reviewed project documentation; the validation team confirms that there are no remaining non-conformities.

The main changes between the first version of the PDD made available for the validation (PDD version 1 dated 2011-07-05 /2/) and the final PDD (PDD version 2.3 dated 2012-04-12 /1/) are summarized below:

- project description has been improved.
- the access to barrier presented in the context of the assessment and demonstration of additionality was revised
- project boundary is revised to reflect the current project status.
- the time table for the demonstration of CDM prior consideration was updated
- information about the application of the monitoring methodology and description of the monitoring plan (section B.7 of the PDD) was improved
- ex-ante estimated emission reductions were corrected
- minor typing corrections were implemented

5 VALIDATION REPORTING

5.1 Participation and Approval

Document review and background research is used as means of validation for participation requirements.
The project participants of the proposed project are:

- Eiam Rung-Ruang Renewable Co., Ltd. approved by "Thailand" DNA, through the Letter of Approval of "Thailand" dated 2012-01-25 /17/.
- Swiss Carbon Assets Ltd. approved by the Annex I DNA, through the Letter of Approval of "Switzerland" /18/ dated 2011-11-28.

Project participants are listed in a tabular form in section A.3 of the PDD and this information is consistent with the contact details provided in Annex I of the PDD. No entities other than those approved as project participants are included in these sections of the PDD.

The Letter of Approval of "Thailand" is received from the project participant, which confirms that:

- "Thailand" is a party to Kyoto Protocol;
- The participation “Eiam Rung-Ruang Renewable Co., Ltd.” is voluntary;
- The project complies with the requirements and contributes to sustainable development of "Thailand".

The Letter of Approval of "Switzerland" for Swiss Carbon Assets Ltd. has also received from the project participant, which confirm that:

- "Switzerland" is a party to Kyoto Protocol;
- The participation of Swiss Carbon Assets Ltd. is voluntary.

The proposed project can be found in "Thailand" DNA’s database (http://www.tgo.or.th/english/index.php?option=com_content&view=frontpage&Itemid=29). In this database the status of it is indicated as “approved”. The name of project and name of project owner in database are consistent with information in LOA of "Thailand" submitted to the DOE. Thus it is confirmed that the "Thailand" approval /17/ received is authentic.

The authenticity of LOA /18/ of "Switzerland" for Swiss Carbon Assets Ltd. is confirmed through searching on-line list “Projects approved by this DNA as of Date” on DNA’s website (the information available at official website of Federal Office for the Environment FOEN, Climate Division, Switzerland *(http://www.bafu.admin.ch/emissionshandel/05556/05558/index.html?lang=en)*. The project can be found in the list and the company name, project name, issued date indicated in it are consistent with the information on "Switzerland" LOA submitted.

By reviewing the latest version of the completed Modalities of Communication Form (F-CDM-MOC) for the project activity /4/ (dated 2011-08-09) which is signed by both project participants, the GLC’s validation team was able to confirm that this form is correctly completed.

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The project fulfils all relevant requirements.

5.2 Project Design Document

The project assessment confirmed that the latest version of the small scale PDD form, version 03 /51/ and its respective guidance, version 05 /13/ was applied.

5.3 Project Description

Document check, physical inspection, follow-up interview, and background research are used as means of validation for project design.

The project involves methane recovery from the UASBs which are a part of the project activity. In addition to this it includes an acidification pond before the UASB to treat the wastewater. The captured biogas will be consumed by the project activity components i.e. two numbers of gas engines (2 units x 1.56 MW_{el}) and a thermal oil boiler (4.651 MW_{th}) /52 /. In case of emergency and excess amount, the biogas would be flared in the enclosed flare system which has an installed capacity 1,000 m^3/hr /53/. The gas engines are expected to export an electricity of 2.8 MWe under the VSPP power purchase agreement /16/ as per the PPA agreement with the PEA. Basically the project avoids and captures the methane emissions which would have happen in the absence of the project activity through the wastewater treatment in the five anaerobic lagoons. Similarly in the absence of the project activity electricity would have been generated by the fossil fuel based grid and the thermal energy would have been generated by combusting the fuel oil (FO). The wastewater is generated in a 350 ton/day starch manufacturing plant. The plant is expected to operate for 240 days in a year. Validation team has learned that the UASB was commissioned in January 2011 and biogas was used as fuel in the boiler from February 2011/54/, though it was found not fully operational at the time of validation site visit. Moreover, the second gas engine is expected to be installed in 2012 as referred in the PDD. In the project activity the wastewater is sent to acidification pond followed by UASB. After that it will be sent to the anaerobic lagoons. PP has adequately presented the project description and the applied technology transparently in section A.4.2 of the PDD. At the time of site visit the project was not fully operational, it was found that a temporary pipe is used to send the excess wastewater to the sump pit which collects the wastewater before it is sent to the anaerobic lagoons.

Validation team confirms that the project activity is a small scale project activity and not a de-bundled component of a larger project activity as there is no other small scale project activity with the same project participant, and in the same project category, and registered within the previous two years, and whose project boundary is within 1 km of the project boundary of the proposed small scale activity at the closest point.

Table 5.1: Project Location details:

Project Location details	
Host Country:	Thailand
City, region:	Nonghuarat sub district, Nongbunmak district, Nakornratsima province in Thailand.
Latitude:	14.731417
Longitude:	102.393208

The project activity is a green field project and it involves the introduction of a sequential wastewater treatment system into the wastewater treatment system. It does not involve any retrofit to the existing installation or process. Validation team has conducted a site visit to the project site. Based on the technical and local expertise validation team confirms that as illustrated in the PDD, a gas engine is expected to be installed in 2012 and remaining all the project activity components were installed. In addition to this validation team has identified that a temporary pipe arrangement was made in the project to discharge the excess water to the sump pit from the coarse screens. CAR 4 was raised and PP has responded that this temporary arrangement would be removed after the complete installation of the project activity components. It has to be noted at the time of site visit, the project was not fully implemented. Due to that validation team could not assess this point and hence this CAR is converted to FAR. During first verification, the DOE is requested to check whether a temporary pipe arrangement is still there.

The technology employed is domestic except the gas engines which were obtained from a German manufacturer. The project contributes to sustainable development of the host country. No ODA is involved in project financing.

A clear and sufficient description of the project activity is provided in the PDD, covering all relevant aspects. Precise nature of the project activity and the technical aspects of its implementation are presented in an understandable manner. All information regarding project design in PDD is consistent with the result of on-site inspection and document check.

5.4 Baseline and Monitoring Methodology

5.4.1 Applicability of the Selected Methodology to the Project Activity

Through document check and background research it is verified that the project has applied valid versions of an approved CDM baseline and monitoring methodology as well as approved CDM tools: AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17).[/11/ /12/ /15/] Grid connected renewable electricity generation:) and "Tool to calculate the emission factor for an electricity system" (version 02.2.1) [/50/], "Tool to determine project emissions from flaring gases containing methane" (EB

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28, Annex 13) /21/ and "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) /14/.

The project produces and supplies the electricity to the PEA which distributes the electricity /16/ which is dominated by fossil-fuel based grid, thus the electricity generated by the proposed project activity displaces electricity generated by fossil-fuel power plants in the grid. It also avoids the fossil fuel emission that would have been generated to produce the thermal energy in the boiler.

Assessment of applicability conditions of AMS.III-H methodology /11/:

- It has to be noted that the starch factory which supplies the wastewater to the project activity was constructed and implemented in parallel with the project activity. Hence, it is considered as a green field project activity. As illustrated in the PDD, the applicability condition 1 (f) is suitable to the project activity. The project involves the introduction of a UASB into the wastewater anaerobic treatment system (sequential stage of wastewater treatment with biogas recovery and combustion, without sludge treatment to an anaerobic wastewater treatment system without biogas recovery).

- As required by the methodology the anaerobic lagoons would be of depth more than 2 meters, without aeration. Validation team has reviewed the provided design document and confirms the depth of the same. The ambient temperature was found more than 15ºC throughout the year /49/, on a monthly average basis. The minimum interval observed between two consecutive sludge remove events was more than 30 days /34/.

- The recovered biogas is used to produce thermal or mechanical and electrical energy directly. This is evident as the project activity consists of the installation of the gas engines to generate the electricity and the thermal oil boiler to produce the thermal energy.

- The aggregate annual emission reductions resulted due to this project measure is less than 60,000 t CO_2e.

- The location of the wastewater treatment plant as well as the source generating the wastewater is clearly described in the latest version of the PDD /1/.

- All other applicability conditions are not relevant to the current project activity.

Assessment of applicability of the AMS.I.D methodology /12/

- The applied methodology is suitable to the project activity as it is producing renewable electricity by combusting the biogas in the gas engines and the electricity is supplied to the regional grid of Thailand.

- The project is neither a replacement nor a retrofit to qualify as a small scale project activity. The capacity of the project activity is less than the required threshold. Hence it is clear the applied methodology is suitable to the project activity and it meets all the relevant applicability conditions.

-

Assessment of applicability of AMS.I.C methodology /15/:

- The applied methodology is suitable to the project activity as it consumes the biogas and produces thermal energy by applying the renewable energy technologies.

- The project does not involve any co-generation activity. Moreover as required by the methodology the total thermal energy generation capacity of the project equipment is less than 45 MW_{th}. Thermal energy produced by the project activity is utilised to heat the thermal oil which is required in starch manufacturing process. The component of project activity is not a green-field project activity. It is neither a retrofit nor a modification of the existing facility. Validation team has performed a visual site inspection during the on –site visit conducted to the location of the project activity. Validation team has checked the above mentioned points during the site visit and confirms that the project activity meets all the relevant applicable conditions of this applied methodology AMS.I.C.

- All other remaining conditions are not relevant to the project activity.

Based on the document review, on site visit and the interviews conducted during the on site visit validation team confirms that the project activity meets all the relevant applicable conditions of all the applied three methodologies.

5.4.2 Project Boundary

As prescribed by the methodologies the assessment of the project boundary is discussed below:

As Per the applied AMS. III.H (version 16) /11/ methodology, the boundary should include the entire physical and geographical site where the wastewater treatment is taking place in the baseline and project situations. Thus it encompasses all the facilities affected by the project activity including sites where processing, transportation and application or disposal of the waste products as well as the biogas takes place.

As per the applied AMS.I.D (version 17) /12/, project boundary of the project is identified as the physical, geographical site of the renewable generation source. The project supplies electricity to the regional grid of Thailand under the VSPP PPA. /16/ PP has adequately described the project boundary in section B.3 of the final version of the PDD.

As per the applied AMS.I.C (version 19) /15/ methodology, the boundary includes all plants generating thermal energy and where the biogas is fired and the energy is consumed in the plant itself. It also includes the site of the anaerobic digester where the biogas is recovered and utilized to produce the thermal energy.

Through document review and on site visit it is verified that the identified project boundary is in compliance with all the applied methodologies and is sufficiently justified.

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5.4.3 Baseline Identification

The baseline is illustrated in the PDD is in line with the applied methodologies AMS.III.H (version 16), AMS.I.C (version 19) and AMS.I.D (version 17) /11/ /12/ /15/.

AMS-III.H methodology /11/: The project activity is a new green-field project activity. The identified baseline scenario is 'wastewater treatment through anaerobic open lagoon system without methane recovery'. Wastewater treatment system through open lagoon system is a very common method of handling wastewater in Thailand. This method of treatment is simple and does not involve complicated technology. The treatment system is also in compliance with local environmental regulations. The Sectoral and local expert of GLC confirms that the identified baseline scenario is appropriate for the project activity/24/.

The identified baseline scenario is inline with the applied methodology, AMS III.H (version 16). One of the applicability conditions met by the project activity is "*introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery (e.g. introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery*)".

From the document review and the opinion of GLC's Sectoral & local expert, it is confirmed that the identified baseline scenario is reasonable and justifiable and is inline with the approved baseline methodology. It is also discussed in detail in section 5.5.2.

As per Para 10), 11) and 12) for AMS.I.D (version 17) /12/, the baseline emission factor is calculated as a combined margin (CM) emission factor consisting of the combination of operating margin (OM) and build margin (BM) of the Thailand national grid in accordance with the "Tool to calculate the emission factor for an electricity system" /50/.

As per para 17 of the applied methodology AMS.I.C /15/, "For renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced". Similarly most of the plants were using fossil fuel to produce thermal energy and to meet their thermal energy requirements.

PP has provided information on the relevant policies in the PDD section B.5 and also presented transparently the subsidy provided by the Energy Policy and Planning Office (EPPO), Ministry of Energy in December 2008. As per EB 22 annex 3, E- polices which have come into force after 2001 need not to be considered as the policies which may lead to perverse benefits. Nevertheless, this funding does not lead to any perverse benefits as it is after 2001. Moreover, as declared by the PP this subsidy involves little portion of the total project investment and the benefit will be provided in a phased manner only after the implementation of the project.

According to the applied methodology AMS-III.H version 16, AMS-I.D version 17 and AMS.I.C version 19 /11/ /12/ /15/, the prescribed baseline scenario and no further analysis is required in identification of alternatives.

The validation team confirms that the most reasonable baseline scenario has been correctly applied, and the description of baseline identification in the PDD is transparent and verifiable.

Through document review it is verified that the baseline scenario is identified according to the methodology; and in regard to item 87 of VVM /5/, GLC hereby confirms the following statements:

a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

5.4.4 Algorithms / Formulae used to Determine Emission Reductions

The emission reductions are determined is done as per applied methodologies AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17). /11/ /12/ /15/

The ERy of the project activity during the crediting period is the difference between the baseline emission (BEy) and the sum of project emission (PEy) and leakage.

Baseline Emission:
As per the applied methodologies AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17)., /11/ /12/ /15/ baseline emissions are calculated.

As per AMS. III.H methodology /11/: Baseline emissions include Methane emissions from the baseline wastewater treatment system which would have emitted in the absence of the proposed CDM project activity:

As per para 28 (2(a)) of the applied methodology /11/ mentioned above PP has calculated the COD baseline removal efficiency. A baseline campaign study was conducted by the manufacturer who has sufficient expertise in the sector. As discussed in section 5.4.1 the project is considered as a green field project. However, there was a delay in the project implementation; the starch factory was commissioned during November 2009 while the project activity yet to be completely commissioned. Therefore anaerobic open lagoon system was employed to treat the wastewater. PP has conducted the baseline campaign study in this open anaerobic lagoon system to determine the baseline COD removal efficiency. Hence it is assessed as the considered baseline removal efficiency pertinently meets the

requirements of paragraph 28 (2(a)). It has to be noted that the applied values are more realistic and also inline with the requirements of the applied methodology.

The amount of wastewater flow and COD inflow values were found reasonable and PP has transparently provided an explanation on the same in section B.6.3 of the PDD. Assessment of all the ex-ante parameters available at the time of validation is provided in table 5.2.

As per AMS.I.D methodology: the base emissions are calculated as net electricity output $EG_{BL,y}$ multiplied by the emission factor EF.

The parameter values and calculation approaches are all summarized in the report "The Study of emission factor for an electricity system in Thailand 2009" published by Thai DNA in 2011/42/. The calculation of the project strictly follows this official calculation and has got the same result.

This official grid emission published by Thai DNA/42/ was calculated based on version 02 of the "Tool to calculate the emission factor for an electricity system" and using the latest data available at the time of the Global Stakeholder Consultation of the project. Validation team confirms that the grid emission factor calculated based on the latest version of the "Tool to calculate the emission factor for an electricity system" (version 2.2.1)/50/ remains the same when applying the data available at the time of the GSC.

Off-grid power plants are chosen not to be included in the EF calculation.

$EF_{OM,y}$ calculation: Due to the fact that the low-cost/must-run resources constituting less than 50% of the total grid generation and that the data for "Dispatch Data Analysis" is not available, the simple OM emission factor calculation method is applied. The OM factor is calculated considering generation sources serving the system (not including the low-cost and must-run power plants) and three years average data (2007-2009). The $EF_{OM,y}$ is calculated to be 0.6147 t CO_2e/MWh and will not be changed during the first crediting period. The build margin emission factor is calculated from the most recently built power plants as required by the applied tool as 0.5477 t CO_2e/MWh. They are all publicly available at the time of GSP.

Thai DNA has published the emission factor values and are publicly available at http://www.tgo.or.th/download/publication/GEF/2009/GEFReport_ENrevise1.pdf/42/. In accordance with the Tool to calculate the emission factor for an electricity system (version 02.2.1)/50/, weight factors of $w_{OM} = w_{BM} = 0.5$ have been used and the resultant electricity ex-ante baseline emission factor (EF) works out as 0. 5812 t CO_2e/MWh. Validation team has assessed the document and found that PP has considered the emission factor as per the publicly available and reliable data.

The validation team is convinced of the result of the emission coefficient calculation. Assessment of the ex-ante parameters available at the time of validation is provided in table 5.2. Based on the quantity of available biogas to the gas engines and the efficiency of gas engines, PP has estimated the power generation in order to determine the emission reductions. It is deemed to be reasonable.

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AMS.I.C methodology: Baseline emissions are calculated by multiplying the net quantity of heat with CO_2 emission factor of the fossil fuel used in the baseline plant. This would be divided by the efficiency of the baseline plant which consumes the fossil fuel in the absence of the project activity.

PP has considered the efficiency of the baseline boiler as 100% which is a default value as per the applied methodology and it is also discussed in table 5.2 below. The CO_2 emission factor is obtained from the IPCC /41/. Assessment of the ex-ante parameters available at the time of validation is provided in table 5.2. The total quantity of thermal energy is estimated from the amount of expected biogas consumed by the boiler. Validation team has reviewed the document provided by the PP related to the efficiency of the baseline plant and concludes that provided the ex-ante emission reduction calculations are reliable and verifiable.

Project Emission:

Project emissions from the methane recovery component as per the applied AMS-III.H methodology include the following:

1. Emissions from the electricity consumption: During site visit, it was noted that the main power supply is from the grid. The capacity of all the electrical equipments is found as 260 kW and the total electricity consumption is estimated as 2509.6 MWh/year. Validation team has reviewed the capacity of all the project activity electrical equipments. The *ex-post* project emissions will be monitored through the electricity meters to determine the kWh consumed multiplied with the respective emission factors determined *ex-ante*. There is no fossil fuel consumption due to the project activity.

2. Emissions from the wastewater treatment systems affected by the project activity not equipped with the biogas recovery in the project situation: The quantity of project activity emission from this source is dependent upon the volume of wastewater treated in the year and the chemical oxygen demand removed by the UASB ($CODy_{,removed,j}$). Assessment of ex-ante parameters available at the time of validation is provided in table 5.2.

3. Emissions on account of the inefficiencies in the capture systems: The formulae to calculate these emissions are presented in section B.6.1 of the PDD. Assessment of ex-ante parameters required to calculate the emissions due to inefficiencies in the capture system are included in table 5.2.

4. Methane emissions due to incomplete flaring: Flaring emission will be calculated as per the "Tool to determine the project emissions from flaring gases containing methane". Section B.6.1 of the PDD adequately describes the calculation of projects emissions due to incomplete flaring.

There are no emissions from the sludge treatment systems as the project does not include any sludge treatment systems. Similarly there are no emissions from degradable organic carbon as there are no emissions from the wastewater as it is not discharged to river, sea or lake.

As per the applied AMS.I.C methodology the project emissions include the emissions due to the combustion of the fossil fuel.

As per AMS.I.D /12/ methodology there are no project emissions as it is renewable component of the project activity.

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Leakage emissions:
The equipments of the project are not transferred from another activity, thus according to methodology leakage is not to be considered.

In conclusion, all values used in the PDD to calculate emission reductions are considered reasonable in the context of the proposed CDM project activity and calculation approach is correct.

Table 5.2: Assessment of the parameters that are determined ex-ante:

S.No	Parameters	Value	Assessment
1.	Methane producing capacity of the COD in wastewater	0.25 kg CH_4/kg COD	This value is taken from the applied methodology AMS.III.H /11/.
	Model correction factor to account for model uncertainties (UF_{BL})	0.89	This value is taken from the applied methodology AMS.III.H /11/.
2.	Model correction factor to account for model uncertainties (UF_{PJ})	1.12	This value is taken from the applied methodology AMS.III.H /11/.
3.	Methane correction factor for baseline anaerobic wastewater treatment systems	0.8	As per the Table provided in the applied methodology the pre-project was containing anaerobic lagoons without methane recovery /11/. Hence the chosen value is appropriate.
4.	Methane correction factor for project wastewater treatment system	0.8	As per the Table provided in the applied methodology the pre-project was containing anaerobic lagoons without methane recovery /11/. Hence the chosen value is appropriate.
5.	COD removal efficiency	87. 27 %	PP has conducted the baseline campaign to estimate the baseline COD removal efficiency and the study was conducted by the manufacturer. Validation team has assessed other registered projects and found this value is reasonable /35/.
6.	Capture efficiency of the biogas recovery equipment in the wastewater treatment systems	0.9	This value is also taken from the applied methodology /11/.
7	CO_2 emission factor for the grid	0.5812 t CO_2/MWh	This data is published by the Thai DNA and the value is publicly available /42/.

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8.	CO_2 emission factor of fuel type k combusted in the boiler	77.4 t CO_2/TJ	This value is taken from the IPCC which is reliable and publicly available /41/.
9.	Net Calorific Value of fossil fuel combusted in the boiler	40.4 GJ/tonne	This value is also taken from the IPCC and is publicly available and reliable /41/.
10.	Efficiency of the bunker oil fired boiler used in the pre-project activity	100 %	PP has considered the default efficiency of 100% inline with para 30 of the applied AMS.I.C methodology (version 19). /15/

Calculation of Emission Reductions:

As per para 34 of AMS.III.H (version 16) /11/ ex-post emission reductions should be calculated in any year should be the lowest of the following: (a) Emission reductions calculated using the COD approach ex-post (b) Emission reductions calculated using biogas approach. The same is also explained section B.6.3 of the PDD.

5.5 Additionality of the project activity

5.5.1 Prior Consideration of the Clean Development Mechanism

PP has chosen the starting date of the project as 2008-05-17 /47/. Through document check, the validators hereby confirm that 2008-05-17 is the earliest date of project construction, implementation or real action (the earliest device purchase contracts are signed on 2008-05-17 /47/), in compliance with the latest glossary of CDM terms.

Project start date is prior to the date when the project was published for global stakeholder comments (2011-07-09 /2/).
a) Awareness of CDM till the project starting date:

Milestone	Date	Assessed Documents
Establishment of Eiam Rungruang Industry Co.,Ltd. for producing native starch	2007-05-01	/47/
Technical proposal from Papop Co.,Ltd., to Eiam Rung-Ruang Biotech Co.,Ltd. including CDM application services **(Proof of early consideration)**	December 2007	/27/
Meeting to discuss the implementation of biogas project under consideration of CDM	2008-02-12	/29/
Signing contract for the project activity between Papop Co.,Ltd and Eiam Rung-Ruang Biotech Co.,Ltd. including CDM application services **(Project start date)**	2008-05-17	/48/

b) Serious and real actions to secure the CDM status after the project start date:

Milestone	Date	Asssessed Documents
Establishment of Eiam Rung-Ruang Renewable Co.,Ltd. for biogas operation	2008-12-08	/43/
Contract with EPPO for subsidy	2008-12-16	/64/
South Pole Carbon Asset Management Ltd. submitted a first CDM proposal to Eiam Rung-Ruang Biotech Co.,Ltd. for purchase of CERs.	2009-02-04	/57/
First Payment paid to Papop Co.,Ltd. for construction of the biogas system	2009-05-15	/44/
Loan approval letter obtained from the bank	2009-09-30	/58/
Proposal for CDM consulting services from CDM Consultant Company	2010-01-26	/59/
Second proposal for developing the project under CDM from South Pole Carbon Asset Management Ltd.	2010-06-30	/60/
Signing of emission reduction purchase agreement between Eiam Rung-Ruang Renewable Co.,Ltd. and	2010-11-18	/61/

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Swiss Carbon Assets Ltd., a subsidiary of South Pole Carbon Asset Management Ltd.		
Commissioning of the biogas system	2011-01-18	/62/
Signing proposal for the validation services	2011-06-14	/63/
PDD webhosted on UNFCCC	2011-07-09	/2/

The project start date is before 2008-08-02, thus it is an existing project activity according to the categorization in "Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM", Version 04 /08/. PP has submitted the documents presented in the table below to the validation team to demonstrate that the PP is aware of CDM before the project start date and also PP has taken the serious actions to secure the CDM status. From the above table it is evident PP has taken serious actions to secure CDM status as the gap between each event is less than 2 years and it is inline with the required guidelines. After assessing all the documents referred in above stated table, the GLC's validation team confirms that the proposed CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

5.5.2 Identification of Alternatives

Paragraph 105 of the CDM Validation and Verification Manual (version 01.2) /5/ states that "the PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required".

The applied methodology AMS.III.H version (16) /11/ does not prescribe the baseline scenario instead refers to the General Guidelines to SSC CDM methodologies. As the project activity is a green-field project, the most plausible baseline scenario has been demonstrated in accordance with the guidance provided in paragraph 19 of "General Guidelines to SSC CDM methodologies" (version 17) /24/.

The following alternatives have been identified by the project participants:

Alternative-1: Methane recovery using an anaerobic digester and utilisation for heat generation (proposed project without CDM assistance)

Alternative-2: Open anaerobic lagoon-based wastewater treatment system

Alternative-3: Aerobic wastewater treatment system

Alternative-4: Direct discharge to water bodies

Alternative-5: Methane recovery using anaerobic digester and flaring

All the alternatives have been discussed in an appropriate manner in the PDD. Alternative-4 does not comply with the host country's environmental regulations. Hence, it cannot be considered as a baseline scenario. Alternatives 3 & 5 involve high investment and O & M cost for installation of air blowers and the energy required to operate them /66/, yet there would be no financial returns from the project activity. Therefore, alternatives 3 & 5 are not viable options; they cannot be considered as baseline scenario.

Alternative-1 involves high initial investment. The advantage of alternative-1 is that biogas can be recovered and used for energy generation purposes. Even considering the financial returns of the project, it is not economically attractive to implement the project. However, several projects of this kind have been implemented in both existing and new facilities in the host country only in view of carbon revenues. Therefore, it is clear that the alternative-1 is financially not feasible without CDM revenues and hence, it cannot be considered as baseline scenario.

Alternative-2 has been and is a common method of treating wastewater in similar industrial facilitates in the host country. The open lagoon treatment system is cost effective and the technology is not complicated compared to the technology of biogas capturing. This method of wastewater treatment also complies with local environmental regulations.

The description of alternatives has been provided in the PDD in a transparent manner and the validation team has crosschecked the information presented in the PDD from the appropriate sources. Hence, based on the background information search and the technical expertise of GLC, the validation team is of the opinion that identified alternatives are appropriate and the description to identify the most plausible baseline scenario is transparent.

As per one of the applied methodologies AMS.I.D /12/ the project activity does not require identification of alternatives. The applied methodology AMS.I.C /15/ includes a description of baseline scenarios for the cogeneration (both power and steam). The current project activity includes only thermal energy component and is not a cogeneration project. Hence, it is not required to identify the alternatives and the baseline is transparently described above in section 5.4.3.

5.5.3 Investment analysis

PP has applied the barrier analysis which is descried in section 5.5.4 and did not apply the investment analysis to demonstrate the additionality of the project activity.

5.5.4 Barrier Analysis

Additionality has been demonstrated using barrier analysis according to the Attachment A to Appendix B of the "Simplified Modalities and Procedures for Small-Scale CDM Project Activities" /22/. As per attachment A to appendix B, PP should apply one of the barriers to demonstrate the additionality. Assess to finance barrier has been identified as the barrier to implement the project activity. The access to finance barrier of the project activity has been demonstrated as per the guidance provided in the "Non-binding best practice examples to demonstrate additionality for SSC project activities" (Annex 34 of EB 35 report /23/).

PP has chosen the "access to finance barrier" to demonstrate the additionality of the proposed project activity. As per the non –binding best practice guidance in order to demonstrate the access to finance barrier, *"**Access-to-finance barrier**: the project activity could not access appropriate capital without consideration of the CDM revenues; Best practice examples include but are not limited to, the demonstration of limited access to capital in the absence of the CDM, such as a statement from the financing bank that the revenues from the CDM are critical in the approval of the loan."*

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As outlined in the PDD PP has approached the "Kasikorn Bank" for loan to implement the project activity during June 2008, just after the project start date. After the initial discussions the loan was rejected due to the risk of under performance of biogas plants and the project technology during August 2008. Validation team has reviewed the submitted letter from the bank and is able to confirm that the loan was rejected from the "Kasikorn bank" /19/. Then PP has approached another bank "Krung Thai Bank" to obtain the loan. The loan was approved by Krung Thai Bank during September 2009 considering CDM revenues. This is confirmed based on the letter obtained from the bank./20/. With the assistance of the local sectoral expert validation team has understood that the CDM benefit is vital in securing the loan from the bank. It is noteworthy that there is a gap of 4 months between the first payment to the manufacturer and the loan approval date (kindly refer to the table b in section 5.5.1). A finding was raised (CL 7) to address this issue. In response to the CL, PP has described in the PDD that about 13 % of the total project cost was paid to the manufacturer prior to loan approval /44//65/. PP has availed subsidy of 10 Million Thai Bahts from EPPO. The signed contract document was made available to the validation team./64/ . The first payment was made based on equity and subsidy. It is deemed important that the upfront payment made by the PP has convinced the bank on the seriousness of the PP towards the project activity and approval of the loan.

In addition to this PP has also considered the guidelines provided in "Guidelines for objective demonstration and assessment of barrier" EB 50, annex 13 /31/. A transparent description is provided in section B.5 of the PDD. It was found that either Eiam Rungruang Industry Co., Ltd. or Eiam Rungruang Renewables Co., Ltd. is not the subsidiary of the multinational group company. As outlined in the PDD, the Project Participant Eiam Rungruang Industry Co., Ltd. is clearly owns a small and medium scale industry. This has been confirmed after verifying the publicly available national criteria on the small and medium industries /57/.

As described above and also as per para. 6 of the EB 50, annex 13, CDM benefits were considered as decisive while approving the loan for the project activity and the validation team is able to confirm the same after verification the provided loan rejection and approval letters.

Based on the above mentioned facts and evidences, the validation team confirms that the proposed project activity faces a barrier due to lack of "*Access-to-finance"*. It is also confirmed that the revenues from CDM help to alleviate the barrier.

5.5.5 Common Practice Analysis

Common practice analysis is not required for small scale project activities; hence it is not discussed further either in the PDD or in the report.

After the above stated thorough assessment from section 5.5.1 to 5.5.5, validation team concludes the project is additional as it meets all the addiotinality requirements.

5.6 Monitoring Plan

The monitoring plan is in line with AMS-III.H "Methane recovery in wastewater treatment" (version 16) /11/, AMS.I.C "Thermal energy production with or without electricity" (version 19) /15/ and AMS-I.D "Grid connected renewable electricity generation" (version 17) /12/.

Para 37 of the AMS.III.H methodology lists all the required monitoring parameters and PP has presented all the required monitoring parameters in section B.7.1 of the PDD. The required monitoring parameters as per all the applied methodologies are as follows:

- Flow of wastewater, COD of untreated and treated wastewater, amount of biogas produced, consumed in the gas engines and the boiler, methane content of the biogas, amount of sludge generated by the project wastewater treatment, amount of electricity produced in the gas engines, Quantity of thermic fluid produced in the boiler, volumetric flow rate of the residual gas in dry basis at normal conditions in the hour *h*, volumetric fraction of component methane in the residual gas in the hour *h,* temperature in the exhaust gas of the flare, flare efficiency and quantity of the fossil fuel combusted in the thermal oil boiler.

As described in the PDD, the reading from the flow meters and the flaring equipment are recorded daily in the log books and transferred to the excel sheet. Moreover, these flow meters are integrated with the SCADA system for cross check. This log sheets are used to prepare the monthly reports which will be used to calculate the emission reductions. COD measurements are taken by collecting the multiple samples and daily readings are taken using a composite sample. The energy exported to the grid is measured by the PEA meters and PEA is responsible for their installation and calibration. It was informed to the validation team that data would be checked by the plant senior personnel on a regular basis to ensure the quality of the system.

Through document check and interview it is verified that the monitoring plan described in PDD provides sufficient information, is in compliance with the methodologies and all the monitoring arrangements are feasible within the project design and project participant's competence.

Validation team confirm that all the installed meters possess good level of accuracy. All the metering devices are calibrated on a regular basis as per the supplier recommendations as there are no national or Sectoral standards for calibration available. The energy meters would be calibrated once in a year by the PEA /16/. In case if the manufacturer recommendations are not available, it would be calibrated at least once in 3 years inline with the 'General Guidelines to SSC CDM methodologies' (version 17) /24/.

5.7 Stakeholder Consultation

Based on the document review and on-site validation interviews with the local stakeholders validation team understands that the PP has invited the relevant stakeholders for consultation prior to the start of validation. In addition to this PP has also conducted a more detailed local stakeholder consultation in order to meet the Gold Standard requirements. PP has provided the list of participants and minutes of meeting details to the validation team /38/. The details of the stakeholders and the comments from them is also considered which is also transparently presented in section E of the final version of the PDD.

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The local stakeholders were quite positive about the project as it is reducing the odour prior to the project activity and producing the renewable electricity. Validation team confirms that the local stakeholders' consultation was conducted adequately to meet the local stakeholder consultation requirement.

Germanischer Lloyd Certification GmbH published the project documents on UNFCCC's website http://cdm.unfccc.int/Projects/Validation/DB/HD5K8JLLESVY7BCOAQ37SFZPRG8RZF/view.html on 2011-07-09 and invited comments within the period from 2011-08-07 by Parties, stakeholders and non-governmental organisations. The response to the stakeholders is presented in the below table:

Stakeholder Comment	Project Participants Response	GLC Assessment
Comment 1 DOE to be more careful so that this is a genuine CDM project. What is the exact project cost? The project cost is covering what? Each value considered must be validated with proof. The machinery is second hand purchased or fresh and new from an OEM? In either case DOE to check all the quotations, proposals, purchase orders, invoices, way bills, transport bills, proof of payments like bank statements. DOE to check with banks by way of written confirmation the amount transacted, to whom the money is paid, when the money is paid, is the party paid is the correct party as shown in the purchase orders. It may so happen that the values, party names, dates are fabricated and misrepresented in this project. DOE should terminate their contract for this project immediately. This is the only way out to protect the value of CDM process. If the PP is purchasing second hand or second quality equipment and inflating the purchase order values and invoices, this must be probed thoroughly and real values to taken for additionality calculation. Then I'm sure the additionality is not there at all in such a situation.	The reliable evidence to support the additionality of the project activity has been provided to the DOE during the validation according to relevant CDM guidelines and rules. The project has given the evidence which could justify that all the equipments used in the proposed CDM project activity are newly purchased and not second hand machinery. Financial and technical information used for determination of additionality of the proposed project activity, were carefully cross-checked by the DOE as per relevant CDM rules and validation requirements (see details in final validation report). Hence, the accusations raised in these comments are groundless. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example the "Luz de Mar – Pintado Wind	GLC's validation team has checked the techno-economical proposal, purchase orders/27//44/ and the contract document between the project owner and the technology supplier/48/ to validate the project cost. The value mentioned in these documents is consistent. Therefore, the validation team based on sufficient document evidence and its Sectoral expertise confirms that cost of the project is deemed reasonable. From the document review and onsite observations, it is confirmed that all the project equipments are new.

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Stakeholder Comment	Project Participants Response	GLC Assessment
	Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	
Comment 2 How is the base line defined in this project? Is Base line hypothetically defined with no proper evidences and proper justification? In such case, DOE cannot take the base line as suggested by the PDD. Please check that there are real emission reductions beyond the real and factual base line. It may so happen that this project qualifies for no CER's. DOE cannot assume values and things as giving by this PP. Whatever values are considered throughout the project in all documents including the real DPR (not the one prepared for CDM, the one given to the banks and others), they must be validated, verified and double checked. Do not ask PP for DPR. Ask the parties who have been given DPR by the PP. Get directly from the bank and others by each page of the DPR and Feasibility report signed. Such document can be considered as a real DPR or FR. UNFCCC CDM process cannot be degraded by fabricating and misinterpreting the project base line and additionality.	Baseline determination of the proposed project activity has been defined according to the applied methodologies in a conservative manner. Technical information used for determination of the baseline scenario, were carefully cross-checked by the DOE as per relevant CDM rules and validation requirements (see details in final validation report). Hence, the accusations raised in these comments are groundless. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html).	Based on background search and Sectoral and local expertise of GLC, the validation team confirms that the baseline scenario identified in the PDD is appropriate and is inline with the applied methodology. Wastewater treatment through open lagoon system being economically viable and not complicated, it is widely employed for the treatment of industrial wastewater in Thailand. Further, the quality of water treated through this method also meets the requirements of local environmental regulations. However, several of the existing treatment systems were converted into reactor based covered lagoon systems (such as UASB systems) in view of CDM revenues.

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Stakeholder Comment	Project Participants Response	GLC Assessment
	The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	Validation team confirmed the baseline as open anaerobic lagoons during the validation site visit. Moreover, it is quite evident that it is a spam from the PP response provided in the adjacent column.
Comment 3 Has the PP considered the CDM revenues while envisaging the project? Without CDM the project was not viable, is it right? This project is having a debt component? Then how bankers or lenders gave the loan? Have the bankers or lenders considered the CDM revenues while agreeing to give loan to these projects? If not this project should be rejected right away by DOE by terminating the contract forthwith. If yes, where is the proof? What is the date of the evidence document from bank? Is this document printed now a days or earlier. DOE to independently check the same. If the document is available from Bank it must be checked from all angles so that it is genuine and not forged and date changed by putting back dated. This is normally done, DOE to be aware of this please. Please check the communication the PP had during that time with banks, emails and postal receipts and the weights and dates mentioned on the receipts. Do not believe in courier bills and receipts since these can be cooked up easily. Insist on government owned postal service receipts only. If the project is fully equity project then on what basis the PP has invested full equity in to	The project has followed the "Non-binding best practice examples to demonstrate additionality for SSC project activities", Annex 34, EB35 and "the Guidelines for Objective Demonstration and Assessment of Barriers", Annex 13, EB 50 in order to show that the proposed project activity would not have occurred in the absence of CDM revenue. Furthermore, the "guidelines on prior consideration" have also been applied. Financial and technical information used for determination of additionality and prior consideration of the proposed project activity, were carefully cross-checked by the DOE as per relevant CDM rules and validation requirements (see details in final validation report). Hence, the accusations raised in these comments are groundless. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example	The validation team has thoroughly checked all the relevant documents. Based on the document check and analysing the loan rejection and loan approval letters, validation team is able to confirm that the submitted documents are genuine, authentic and reliable. The validation team has checked the loan approval document from the bank and therefore it is confirmed that the information is correct. Please also refer to CAR 8 and 9.

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Stakeholder Comment	Project Participants Response	GLC Assessment
the project while considering the CDM revenue? DOE to check the same in detail and bring out the facts. Is there any past record of this PP to invest or not to invest at returns what he is talking about in this project? Proper evidences must be reviewed and digged out by the DOE and take decision on the project based on established facts. Do not ask documents from PP, DOE to collect the same from different sources to do independent evaluation.	the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	
Comment 4 Is the project equipment purchased second hand equipment or sourced from cheap foreign sources? If yes, the issue must be probed by DOE since invoices will invariably be inflated and forged. Total project costs mentioned by PP will not be the same as originals. Hence no additionality. These facts must be probed in full by DOE by checking all documents and money transactions along with bank statements and certified accounts by a legally acceptable financial analyst.	The reliable evidence to support the additionality of the project activity has been provided to the DOE during the validation. The project has given the evidence which could justify that all the equipments used in the proposed CDM project activity are newly purchased and not second hand machinery. Financial and technical information used for determination of additionality of the proposed project activity, were carefully cross-checked by the DOE as per relevant CDM rules and validation requirements (see details in final validation report). Hence, the accusations raised in these comments are groundless. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the	The validation team confirms this based on the site visit observations and document review that all the project equipments are newly purchased. Implementation of the project activity was almost completed except the installation of another gas engine at the time of site visit. GLC has validated the project activity strictly inline with the latest version of the VVM.

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Stakeholder Comment	Project Participants Response	GLC Assessment
	comments above (see for example the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	
Comment 5 From DOE side which auditor has done marketing and business development for acquiring this business of validating this project? With whom he or she was co-ordinating at PP or CER buyer? The same person who has done the marketing and business development to acquire the business do validation or participate in any manner what so ever in the validation process? One cannot do like that. It is against the accreditation rules and norms followed since ages. DOE should send auditors from different offices or countries to do this validation audit. DOE must take care of impartiality and accreditation rules. Due to the targets set by the DOE managements auditors are doing marketing and meeting clients and giving promises that the project will be taken care. Is it acceptable and fair? This must be stopped. No auditor should do marketing. Only non-auditing staff should do marketing. DOE to ensure the same please.	No conflict of interest has been identified since the contract acquisition/negotiation between the DOE and the PPs has been conducted by different persons located in different offices. Question to be further addressed by the DOE. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear	GLC has a separate team for marketing activities located at Hamburg office in Germany. GLC's auditors never involve in any kind of marketing activities. The auditors involved in the validation this project activity are from GLC's Mumbai office in India. Table 2-1 may please be referred for the validation team members. Impartiality is strictly safeguarded at GLC. Conflict of interest is checked prior to assigning team members for the project. GLC has developed a standard validation protocol /36/ inline with the principles of accreditation

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Stakeholder Comment	Project Participants Response	GLC Assessment
	reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	standard and VVM. The documents are circulated to all the newly joined auditors and also made available for all the auditors through GLC's webpage. Therefore, the impartiality is highly safeguarded.
Comment 6 If applicable only: Is these machines, equipment was a part of any bundle of CDM activity envisaged and developed earlier. DOE to check the same through independent sources also. Once some bundles are non-additional and getting negative validation from a DOE, PP is rolling out the same project as an individual project which is not a CDM project at all. DOE to verify the same from independent sources and also take undertaking in the form of an affidavit from the PP's that any misrepresentation or false statement with respect this would attract strict legal action from UNFCCC and DOE. Furthermore the registered project must be de-registered in case of any future findings contradicting the submissions made by the project owner.	PDD demonstrates that the project activity is not a de-bundled component using the "Guidelines on assessment of debundling for SSC project activities", version 03, EB54 (Annex 13)". In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	The validation team based on its background search confirms that neither the project activity nor the project equipments are part of any bundled CDM project activity. Therefore, the comment is not relevant to the project activity.
Comment 7 DOE to ensure that the PDD values are consistent and ensure that the	Financial and technical information used for determination	As discussed in the above comments 1 and 3 validation team confirms

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Stakeholder Comment	Project Participants Response	GLC Assessment
CDM project is a genuine project. DoE to check the Detailed Project Report and Feasibility Report which is submitted to the other agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also. Careful study must be done so that the DPR/FR is not in different versions made and submitted with different purposes to different agencies, which is totally unacceptable, illegal and unethical. Project owner should show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE at face value, but must be checked independently. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE. DPR/FR values must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts.	of additionality of the proposed project activity, were carefully cross-checked by the DOE as per relevant CDM rules and validation requirements (see details in final validation report). Hence, the accusations raised in the comments above are groundless. In addition, these comments are a spam message, which was sent to more than 200 other proposed CDM project activities, which can easily verified by a google search using text elements of the comments above (see for example the "Luz de Mar – Pintado Wind Farm" in Uruguay as a concrete example - http://cdm.unfccc.int/Projects/Validation/DB/NTUHCH5H83DF0FWPCWFG4WL4AF4O7R/view.html). The fact that exactly the same comment was sent to very different CDM projects in different countries and the lack of any clear reference to the PDD of the proposed project activity, shows that its content is not specific to the proposed CDM project activity.	that all the required documents were duly checked during the validation assessment. Validation team confirms after the thorough check that PP has submitted all the genuine and authentic documents to demonstrate the additionality of the project activity.

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Stakeholder Comment	Project Participants Response	GLC Assessment
DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant. DOE must not entertain this project any more if found the DPR/FR is tampered with at any point in time. PP can not give different DPR's and FR's. They must submit only the one given to Banks and other agencies while obtaining loans and decision making time.		

5.8 Environmental Impacts

In Thailand, Environmental Impact Assessment is not required for project activities which produce biogas from the wastewater treatment facilities in starch manufacturing industries /37/. However, initial environmental evaluation shall be conducted as a part of the requirement of the Thai DNA. Hence, PP has conducted initial environmental evaluation and prepared an initial environmental evaluation (IEE) report and also submitted the report to the validation team /39/. Validation team has reviewed the IEE report and understood that it includes all the preventive and mitigation measures to care of the negative impacts on the environment. As referred in the PDD, PP will take all the recommended measures provided by the Thai DNA.

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6. VALIDATION OPINION

Germanischer Lloyd Certification GmbH has performed a validation of “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” in "Thailand". The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided Germanischer Lloyd Certification GmbH with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Germanischer Lloyd Certification GmbH for registration.

The project applies AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17).: “Methane Recovery in Wastewater Treatment”, “Thermal energy production with or without electricity” and “Grid connected renewable electricity generation”, The methodologies have been correctly applied and the assumptions made for the selected baseline scenario are sound. By recovering the methane from the wastewater treatment system and using it in the gas engines and thermal oil boiler the project displaces fossil-fuel based electricity with electricity generated from a renewable source and also displaces fossil fuel-based thermal energy with thermal energy generated from a renewable source. Moreover, in the absence of the project activity the methane would have released into the atmosphere. The project results in reductions of 56,248 t CO_{2e} emissions per year that are real, measurable and give long-term benefits to the mitigation of climate change.

Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

No relevant negative environmental impacts are expected from the implementation of the project activity. A global and local stakeholder consultation was conducted.

In summary, it is GLC’s opinion that “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” in "Thailand", as described in the revised project design document of “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” (version 2.3), meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the following methodologies : AMS.III.H, (version 16), AMS.I.C (version 19) and AMS.I.D (version 17).: “Methane Recovery in Wastewater Treatment”, “Thermal energy production with or without electricity” and “Grid connected renewable electricity generation”. Hence, GLC will request the registration of the “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” as a CDM project activity.

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Mumbai, 2012- 04-12

Assessment Team Leader

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7. REFERENCES

The following table outlines the documentation reviewed during the validation:

Item	Document
/1/	South Pole Carbon Asset Management Ltd.: Final Project Design Document (PDD) of the proposed CDM project activity "Eiamrungruang Waste Water Treatment and Biogas Utilization Project", version 2.3, 2012-04-12.
/2/	South Pole Carbon Asset Management Ltd.: Webhosted Project Design Document (PDD) of the proposed CDM project activity ""Eiamrungruang Waste Water Treatment and Biogas Utilization Project", version 1, 2011-07-05. Available online at http://cdm.unfccc.int/Projects/Validation/DB/HD5K8JLLESVY7BCOAQ37SFZPRG8RZF/view.html
/3/	South Pole Carbon Asset Management Ltd: Spreadsheet with ex-ante estimations of emission reductions (file name: ERR- ER Calculation-2012.04.05.xls)
/4/	Swiss Carbon Assets Ltd. and Eiam Rung-Ruang Renewable Co.,Ltd. Completed modalities of communication (MoC), version 01.4, 2011-08-09.
/5/	CDM EB: Validation and Verification Manual (version 01.2)
/6/	IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Reference Manual. 2006.
/7/	CDM EB: Glossary of CDM Terms (Version 06).
/8/	CDM EB: Guidelines on the demonstration and assessment of prior consideration of the CDM (version 4), EB 62 Report Annex 13.
/9/	ISO 14064-2:2006 - Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements
/10/	ISO 14064-3:2006 - Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
/11/	CDM-EB: Indicative simplified baseline and monitoring methodology for selected small-scale CDM project activity, AMS III.H. –"Methane recovery in wastewater treatment" (version 16)
/12/	CDM-EB: Indicative simplified baseline and monitoring methodology for selected small-scale CDM project activity, AMS I.D –"Grid connected renewable electricity generation" (version 17)
/13/	CDM-EB: Guidelines Project Design Document (CDM-SSC-PDD) and the Proposed new baseline and monitoring methodologies (CDM-SSC-NM). Version 05.
/14/	CDM-EB: Tool to calculate baseline, project and/or leakage emissions from electricity consumption. Version 1
/15/	CDM-EB: Indicative simplified baseline and monitoring methodology for selected small-scale CDM project activity, AMS I.C –"Thermal energy production with or without electricity" (version 19)
/16/	PEA & Eiam Rung-Ruang Renewable Co., Ltd: Power Purchase Agreement for the project

activity “Eiamrungruang Waste Water Treatment and Biogas Utilization Project” dated 2009-07-14.

/17/ Thai Government Office : Letter of Approval (LoA) for the proposed CDM project activity ““Eiamrungruang Waste Water Treatment and Biogas Utilization Project” dated 2012-01-25.

/18/ DNA of Annex – 1 country: Switzerland : Letter of Approval (LoA) for the proposed CDM project activity ““Eiamrungruang Waste Water Treatment and Biogas Utilization Project” dated 2011-11-28.

/19/ Kasikorn bank: Loan rejection Letter stating the reason and the PP has applied for a loan during June 2008 to August 2008 dated 2011-09-11.

/20/ Krung Thai bank: Letter stating the decisiveness of CDM in approving the loan dated 2011-08-21.

/21/ CDM EB: Tool to determine project emissions from flaring gases containing methane (EB 28, Annex 13)

/22/ CDM-EB: Attachment A to Appendix B of the “Simplified Modalities and Procedures for Small-Scale CDM Project Activities”

/23/ CDM-EB: Non-binding best practice examples to demonstrate additionality for SSC project activities (EB 35, Annex 34)

/24/ CDM-EB: General Guidelines to SSC CDM methodologies (version 17)

/25/ Eiam Rung-Ruang Renewable Co., Ltd: Proof of registration of the company dated May 2007.

/26/ Eiam Rung-Ruang Renewable Co., Ltd.: Copy of the training record of the year 2011.

/27/ PAPOP: Technical proposal dated December 2007.

/28/ Thai Steam Service & Supply Co., Ltd.: Certificate on the efficiency of the boiler dated 2011.

/29/ Eiam Rung-Ruang Renewable Co., Ltd: Board Resolution dated 2008-02-12.

/30/ MSW Power Systems Co. Ltd.: Technical specifications & Statement on the lifetime of the gas engines dated 2011-08-16.

/31/ CDM-EB: Guidelines for objective demonstration and assessment of barriers, EB 50, Annex 13.

/32/ Calibration reports of all the monitoring equipments such as wastewater flow meter, gas flow meters, methane analyser and calorimeter for the year 2011.

/33/ Eiam Rung-Ruang Renewable Co., Ltd: Annual report for the financial years 2009 and 2010.

/34/ Eiam Rung-Ruang Renewable Co., Ltd: Layout of the lagoons of the project activity.

/35/ Eiam Rung-Ruang Renewable Co., Ltd: Baseline COD campaign data which is used to calculate the baseline COD removal efficiency.

/36/ Eiam Rung-Ruang Renewable Co., Ltd: Operational Manual of the project activity.

/37/ Thai Environmental Impact Evaluation Bureau: The list of industries which require EIA are provided on the website available at http://www.onep.go.th/eia/.

/38/ Eiam Rung-Ruang Renewable Co., Ltd: Invitation letters to the local stakeholders dated 2011-05-11

/39/ Eiam Rung-Ruang Renewable Co., Ltd: Copy of the IEE Report.

/40/ Eiam Rung-Ruang Renewable Co., Ltd: COD measurement procedures.

/41/ IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Manual. Dated 2006. Available online: http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml

/42/ Thai national grid emission factor data published by Thailand DNA "The Study of emission factor for an electricity system in Thailand 2009" and is available at http://www.tgo.or.th/download/publication/GEF/2009/GEFReport_ENrevise1.pdf

/43/ Establishment of Eiam Rung-Ruang Renewable Co. Ltd. dated 2008-12-08.

/44/ Proof of first payment paid to Papop by Eiam Rung-Ruang Renewable Co., Ltd for the construction of biogas system dated 2009-05-15.

/45/ South Pole Carbon Asset Management Ltd.: First CDM proposal submitted by South pole to Eiam Rung-Ruang Biotech Co., Ltd. dated 2009-02-04.

/46/ Signing of the contract for Validation Services dated 2011-06-14.

/47/ Eiam Rungruang Industry Co., Ltd.: Establishment of Eiam Rungruang Industry Co., Ltd. dated 2007-05-01.

/48/ Eiam Rung-Ruang: Proof of Project start date: Signing of contract for the project activity between Papop Co., Ltd. and Eiam Rung Ruang dated 2008-05-17.

/49/ Energy Policy and Planning Office, Ministry of Energy: Average ambient temperature data publicly available at http://www.e-report.energy.go.th/weather.html.

/50/ EB : "Tool to calculate the emission factor for an electricity system" (version 02.2.1)

/51/ CDM EB: The latest version of the small scale PDD form, version 03.

/52/ Thai Steam Sevices company Ltd. : Technical specifications of the thermic oil boiler

/53/ BKE Co., Ltd.: Technical specifications of the enclosed flaring equipment

/54/ Eiam Rungruang Industry Co., Ltd.: Proof of Project's commissioning dated 2011-02-10.

/55/ Statement from the manufacturer on the efficiency of the bunker oil fired boiler

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/56/ Categorization of small and medium industries as provided by SME development bank of Thailand : publicly available at http://www.fsa.go.jp/frtc/kenkyu/event/20080430/08e.pdf
/57/ South Pole Carbon Asset Management Ltd.: CDM proposal to Eiam Rung-Ruang Biotech Co.,Ltd[1]. for purchase of CERs dated 2009-02-04.
/58/ Second loan approval letter from the bank dated 2009-09-30.
/59/ Eiam Rung-Ruang Renewable Co.,Ltd.: Proposal obtained regarding the CDM consulting services from a CDM Consultant Company dated 2010-01-26
/60/ South Pole Carbon Asset Management Ltd.: Second proposal for developing the project under CDM from South Pole Carbon Asset Management Ltd. dated 2010-06-30.
/61/ Eiam Rung-Ruang Renewable Co.,Ltd.: and Swiss Carbon Assets Ltd., a subsidiary of South Pole Carbon Asset Management Ltd. : Emission reduction purchase agreement dated 2010-11-18.
/62/ Eiam Rung-Ruang Renewable Co.,Ltd. : Commissioning of biogas system dated 2011-01-18.
/63/ Germanischer Lloyd: Contract for the validation services dated 2011-06-14.
/64/ Contract with EPPO for subsidy dated 2008-12-16.
/65/ Eiam Rung-Ruang Renewable Co.,Ltd. Updated actual investment cost of the project activity. May 2011.
/66/ Anaerobic versus aerobic treatment in the U.S.A, W.W. Eckenfelder, J.B. Patoczka and G.W. Pulliam

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[1] Although Eiam Rung-Ruang Renewable Co Ltd (the project participant) was established in Dec 2008, South Pole sent their proposal in the name of Eiam Rung-Ruang Biotech Co Ltd as they were not aware that a new company was established.

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Persons interviewed:
List of persons interviewed as part of the validation, or persons contributed with other information that are not included in the documents listed above are listed in Section 3.2.

ANNEX A: VALIDATION QUESTIONNAIRE AND RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS (FINDINGS'S LIST)

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
1. APPROVAL				
1.1. Please indicate all project participant (PPs) involved in the CDM project and define the host and the investor Country.		PP 1: Eiam Rung-Ruang Renewable Co., Ltd. PP 2: Swiss Carbon Assets Ltd. Host country: Thailand Investor country: Switzerland However, the LoAs from both the PPs are pending.	CAR 1	OK
1.2. Have the DNA of each Party indicated as being involved provided a written letter of approval? *(This letter has to confirm the following issues)*	VVM 45	Written Letter of Approvals (LoAs) from both the parties are pending. Host country: Thailand Investor country: Switzerland	CAR 1	OK
1.2.1. Is every Party a Party to the Kyoto Protocol?	VVM 45 a	Yes, Both the parties are party to the Kyoto Protocol. Host country: Thailand Investor country: Switzerland	OK	OK
1.2.2. Is the participation voluntary?	VVM 45 b	The participation is Voluntary from both the parities from the below stated host countries. Host country: Thailand Investor country: Switzerland	OK	OK
1.2.3. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host party/country? *(Please specify how this requirement was validated e.g. interview with relevant authority and review of the*	VVM 45 c + 125	The LoAs of both parties are pending from the DNA of the host Party. This will be confirmed only after the submission and review of the LoA.	CAR 1	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
original document)				
1.2.4. Will the project create other environmental or social benefits than GHG emission reductions?		Yes, the project creates other environmental or social benefits. However, this will be confirmed only after the submission of LoA.	OK	OK
1.2.5. Is the project title and the version tag of the currently validated PDD identical with the one mentioned in the LoA(s)? *In case a LoA refers to a specific PDD version, the LoA has to be renewed if the PDD version was updated during the validation.*	VVM 45 d	Refer section 1.2.1	CAR 1	OK
1.2.6. Is the project title of the proposed CDM activity submitted to the UNFCCC for registration in every document correct?		Yes, the project title of the proposed CDM project activity submitted to the UNFCCC for registration in every document is correct.	OK	OK
1.3. Are the letters of approval of the DNAs authentic for the proposed CDM project activity? *Please indicate how this has been verified (e.g. review of the original document and interview with the DNA, was the letter submitted by the DNA directly)*	VVM 47	Refer section 1.2.1	CAR 1	OK
1.4. Was the letter submitted by the project participants or by the DNA directly?		Refer section 1.2.1	CAR 1	OK
2. PARTICIPATION				
2.1. Are the PPs listed in a tabular form in section A.3 of the PDD?	VVM 52	Yes, the PPs are listed in tabular form in section A.3 of the PDD.	OK	OK
2.2. Is the listed information in the table consistent with the contact details provided in Annex I of the PDD?	VVM 52	Yes, The names of the PPs stated in section A.3 were verified and found consistent with the Annex -1.	OK	OK
2.3. Has the participation of each PP been approved by at least one party involved, either in a letter of approval or	VVM 52	Refer section 1.2.1	CAR 1	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
in a separate letter?				
2.4. Please review whether any other entities other than those approved as PPs are included in these sections of the PDD. Only actual PPs should be listed here.	VVM 52	There are no entities other than those stated in the webhosted PDD. Still the LoAs are pending to confirm the same. Refer section 2.1	CAR 1	OK
3. PROJECT DESIGN DOCUMENT (PDD)				
3.1. Was the PDD prepared in accordance with the latest template and guidance from the EB? *Please refer also to* http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html	VVM 55	Yes, PDD is prepared in accordance with the available latest template version 03 on the UNFCCC web page. This was checked by the validation team during the desk review.	OK	OK
3.2. Is the PDD in accordance with the applicable CDM requirements for completing PDDs and is the PDD duly completed? *Please refer also to* http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html	VVM 56	The submitted webhosted PDD does not include the information of following aspects. : The provided project description is not clear with respect to the following points in section A.2 of the project design document (PDD) for the sake of transparency : - Technical specifications of the wastewater treatment system and the project activity equipments. - The lifetime of the thermic oil boiler - Operational status of the plant such as commissioning date and the average number of working days. - How much of the electricity is imported to the grid. In section B.8, the name of the responsible entity is stated as Swiss Carbon Assets Ltd. However, during the site visit PP has informed that the responsible entity for the baseline study is Southpole Carbon Asset Management Ltd. Hence, it needs to be corrected.	CAR 2 CAR 16	OK OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		For the sake of transparency and completeness, PPs are requested to justify the following statements referred in the additionality justification in section B.5 of the webhosted PDD : • How the project is a small and medium scale industry. • As per the provided Table 5 in the PDD, it is evident that the project is part of the group company *'Eiam rungruang Industry Co., Ltd. and could also be funded.*. Thus it indicates that the project could be funded by a group company.. Kindly substantiate how the access to fiannce is a barrier to the project activity.	CL1	OK
4. PROJECT DESCRIPTION				
4.1. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? *Please specify and provide a brief description.*	VVM 58	The provided project description should be improved with respect to the following points : Kindly refer section 3.2.	CAR 2	OK
4.2. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Coordinates should be given in both possible formats: Decimal degree format as: Lat: 31.125833 Lon: 30.125833 Degrees Minutes Seconds format as: Lat: 31° 07'33" N		Yes, the information related to the location of the project activity is clearly stated in section A.4.1.4 of the PDD and it also includes the longitude and latitude In the degrees minutes and seconds format.	OK.	OK

QUESTION / VVM REQUIREMENT		Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
	Lon: 30° 07' 33"E				
4.3.	How is it ensured and/or demonstrated that the PPs are entitled to implement the project at this site (ownership, licenses, contracts etc.)?		PP has submitted the business license and other essential approvals obtained from the local regulatory bodies.	OK	OK
4.4.	Is the required form for the indication of projected emission reductions correctly applied (please refer to section A.4.4. (for large scale (LSC)) or A.4.3. (for small scale (SSC)) in the PDD)?		Yes, the required form for the indication of project emission reductions is correctly applied in section A.4.4 of the SSC PDD.	OK.	OK
4.5.	Are the figures provided consistent with other data presented in the PDD?		The figures provided are consistent with other data presented in the final latest version of the PDD.	OK	OK
4.6.	Is public funding from an Annex I country used by the project?		As per section A.4.4 of the webhosted PDD there is no public funding from the Annex –I country for the project activity and the same was confirmed again during the site visit.	OK	OK
4.7.	If public funding is granted was a written confirmation from the relevant Annex I country DNA provided with the content that such funding does not result in a diversion of official development assistance (ODA)?		NA		OK
4.8.	Is the information concerning the diversion of ODA provided in Section A.4.5. (for LSC) or A.4.4. (for SCC) of the PDD consistent with Annex 2?		Yes, the information concerning the diversion of ODA provided in section A.4.4 is consistent with Annex 2.	OK	OK
4.9.	Is the assumed crediting time clearly defined and reasonable (either renewable: 3 x max. 7 years or fixed: once max. 10 years)?		Yes, the assumed crediting period is clearly defined as 7 years renewable. The lifetime of the project is defined as 15 years and it will be renewed after 7 years which is reasonable.	OK	OK
4.10.	Please specify whether the current project is realized in existing facilities or utilizes existing equipment (brownfield), as well if it falls within one of the following	VVM 60	With reference to project description provided in section A.2 of the PDD, the starch plant implementation took place by November 2009. As per the chronology of events	CL 6	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
categories for which a physical site inspection is mandatory and indicate the date of the site visit: ➢ Large scale projects (LSC) ➢ Non-bundled SSC projects with emission reductions exceeding 15,000 tonnes per year; ➢ Bundled SSC projects, each with emission reductions not exceeding 15,000 tonnes per year; in such case the number of physical site visits may however be based on sampling, if the sampling size is appropriately justified through statistical analysis.		provided in section B.5 start date of the project activity is 17 May 2008. Thus it is clear both events took place in parallel. However, the project is considered as an existing project in section B.2 which is not clear. . The current project is a green-field project falls within non-bundling SSC projects with emission reductions exceeding 15,000 tonnes per year.		
4.11. In case a site inspection has been conducted, does the description in the PDD reflect the proposed CDM activity?		During the site visit, it was found that the geographic coordinates stated in the webhosted PDD are not correct and hence it needs to be corrected in section A.4.1.4 of the PDD. For the sake of transparency and completeness PPs are required to to revise section B.3 of the webhosted PDD in order to address the following points : • During the site visit it was found that the wastewater from the UASB and excess wastewater from the fine screens is stored in a new open pond before sending it to the pre anaerobic lagoons. Hence it shall be included in the project boundary and the project emissions due to the wastewater should be accounted in the estimation of ex-ante emission reductions. • All facilities such as processing, transportation affected by the project activity are included in the	CAR 3 CAR 4	OK OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		PDD. However it does not include the disposal of sludge in the flow sheet presented in section B.3 of the PDD as required by the methodology..		
4.12. In case it is decided that no site visit should be conducted, were designs or feasibility study reports (FSR) available for review? If yes, is the project description consistent with them? If none of these documents was available, please conduct a comparison analysis to equivalent projects (i.e. project type, applied methodology, location,..) ?	VVM 62	There is no FSR for this project activity. PP has submitted proposal copy provided by the manufacturer for review.	OK	OK
4.13. If no physical site inspection was undertaken how the project description was assessed for appropriateness and what is the outcome?	VVM 62	Kindly refer to section 4.11	CAR 4	OK
4.14. In case the CDM project activity involves the alteration of an existing installation or process are the differences between the project activity and the pre-project situation clearly defined in the project description?	VVM 63	Kindly refer to section 4.11	CAR 4	OK
4.15. Are the CDM project activity process flow charts, illustrative descriptions or comparable documents available and do they contribute to a better understanding of the project activity?		All the required relevant documents were submitted during the validation assessment.	OK	OK
5. APPLICABILITY OF BASELINE AND MONITORING METHODOLOGY				
5.1. Does the PDD clearly state the latest and valid version of the methodology (ies) and the tools? Is the methodology or any tool correctly quoted? *(Please compare the methodology or any tools applied with the actual text of the applicable version of the methodology or tools and review whether e.g. the most current version was applied, all elements were*	VVM 69	Yes, the PDD clearly states the latest and valid version of the applied methodologies as follows: • AMS III.H: "Methane Recovery in Wastewater Treatment" (Version 16) • AMS I.C: "Thermal energy production with or without electricity" (Version 19)	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
considered, etc.).		• AMS I.D: "Grid connected renewable electricity generation" (Version 17) Tools as follows: • "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion", version 02. • "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 01; • "Tool to determine project emissions from flaring gases containing methane", version 01; • "Tool to calculate the emission factor for an electricity system", version 02.2.1		
5.2. Please list all applicability criteria of the approved methodology or any other tool or other methodology component referred to therein.	VVM 70	The applicability criteria for the applied methodology AMS.III.H. : 1. This methodology comprises measures that recover biogas from biogenic organic matter in wastewater by means of one, or a combination, of the following options: (a) Substitution of aerobic wastewater or sludge treatment systems with anaerobic systems with biogas recovery and combustion; (b) Introduction of anaerobic sludge treatment system with biogas recovery and combustion to a wastewater treatment plant without sludge treatment; (c) Introduction of biogas recovery and combustion to a	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		sludge treatment system; (d) Introduction of biogas recovery and combustion to an anaerobic wastewater treatment system such as anaerobic reactor, lagoon, septic tank or an on site industrial plant;1 (e) Introduction of anaerobic wastewater treatment with biogas recovery and combustion, with or without anaerobic sludge treatment, to an untreated wastewater stream; (f) Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery (e.g. introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery). ;;;;;;; ;;;;;;;…… 12. New facilities (Greenfield projects) and project activities involving a change of equipment resulting in a capacity addition of the wastewater or sludge treatment system compared to the designed capacity of the baseline treatment system are only eligible to apply this methodology if they comply with the relevant requirements in the .General guidelines to SSC CDM methodologies. In addition the requirements for demonstrating the remaining lifetime of the equipment replaced, as described in the general guidelines shall be followed. 13. The location of the wastewater treatment plant as well as the source generating the wastewater shall be uniquely		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		defined and described in the PDD. 14. Measures are limited to those that result in aggregate emissions reductions of less than or equal to 60 kt CO_2 equivalent annually from all Type III components of the project activity. AMS.I.C methodology : 1. This methodology comprises renewable energy technologies that supply users1 with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel. **Applicability** 2. Biomass-based cogeneration systems are included in this category. For the purpose of this methodology .cogeneration. shall mean the simultaneous generation of thermal energy and electrical energy in one process.2 Project activities that produce heat and power in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of cogeneration project. ;;;;…… …….. 13. If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis i.e. without using a Type III component of		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions. 14. Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources provided: (a) Charcoal is produced in kilns equipped with methane recovery and destruction facility; or (b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology AMS-III.K.7 Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g. source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature. AMS.I.D Methodology : 1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave,		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		wind, geothermal and renewable biomass:1 (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling. 2. Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A2) applies is included in Table 2. ;.....;;;;;;…….. …… 7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units. 8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.		
5.3. Please review and assess whether the project activity meets these criteria. *(Please clearly describe the steps taken to assess the information provided by the PDD against these criteria, e.g. validating the documentation referred to in the PDD and by verifying that its content is correctly quoted and interpreted in the PDD)*	VVM 70	Assessment of applicability conditions of AMS.III-H methodology: • As illustrated in the PDD, the applicability condition 1 (f) is suitable to the project activity. The project involves the introduction of a UASB into the wastewater anaerobic treatment system (sequential stage of wastewater treatment with biogas recovery and combustion, without sludge		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		treatment to an anaerobic wastewater treatment system without biogas recovery). • As required by the methodology the anaerobic lagoons in the absence of the project would be of depth more than 2 meters, with out aeration. Validation team has reviewed the provided design documents and confirms that that depth of the same. By and large the ambient temperature was found more than 15ºC throughout the year /49/, on a monthly average basis. The minimum interval observed between two consecutive sludge remove events was more than 30 days. • The recovered biogas is used to produce thermal or mechanical and electrical energy directly. This is evident as the project activity consists of the installation of the gas engines to generate the electricity and the thermal oil boiler to produce the thermal energy. • The aggregate annual emission reductions resulted due to this project measure is less than 60,000 t CO_2e. • The location of the wastewater treatment plant as well as the source generating the wastewater is clearly described in the latest version of the PDD.		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		• All other applicability conditions are not relevant to the current project activity. Kindly refer to section 4.10, CL 6. Assessment of applicability of the AMS.I.D methodology • The applied methodology is suitable to the project activity as it is producing renewable electricity by combusting the biogas in the gas engines and the electricity is supplied to the regional grid of Thailand. • The project is neither a replacement nor a retrofit to qualify as a small scale project activity. The capacity of the project activity is less than the required threshold. Hence it is clear the applied methodology is suitable to the project activity and it meets all the relevant applicability conditions. Assessment of applicability of AMS.I.C methodology: • The applied methodology is suitable to the project activity as it consumes the biogas and produced the thermal energy by applying the renewable energy technologies. • The project does not involve any co-generation activity. Moreover as required by the methodology	CL 6	

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		the total thermal energy generation capacity of the project equipment is less than 45 MWth. The component of project activity is not a green-field project activity. It is neither a retrofit nor a modification of the existing facility. Validation team has performed a visual site inspection during the on –site visit conducted to the location of the project activity. The steam produced by the project activity is consumed by the starch manufacturing process of the plant. Validation team has checked the above mentioned points during the site visit and confirms that the project activity meets all the relevant applicable conditions of this applied methodology AMS.I.C. • All other remaining conditions are not relevant to the project activity.		
5.4. Please check whether comparable information is available from other sources and if yes cross check with the PDD in order to assess the applicability of the methodology.	VVM 70	PP has submitted all the relevant information and data to the validation team and validation team is convinced with the justification provided by the PP.	OK	OK
5.5. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM 70	No, the project activity is not expected to result in emissions other than those that are allowed by the applied methodologies.	OK	OK
5.6. Is the project activity a SSC project activity? *(If not please continue with question 5.12., if yes please answer also the specific SSC questions 5.7. to*		Yes, the project activity is a SSC project activity.	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
5.12.)				
5.7. Does the project activity qualify within the thresholds of the three possible types of SSC project activities? Does it include more than one component; for example, a type III methane recovery component activity and a type I electricity component activity?	VVM 135	Yes. During document review, it was assessed whether the project could qualify with in the threshold of the applied three methodologies which falls in type I and type III categories. It was found that the project meets the threshold of all the applied methodologies.	OK	OK
5.8. Does the project activity conforms to one of the approved SSC categories and applies the relevant tool or methodology? Are the SSC methodologies applied in conjunction with the general guidance to the methodologies, which provides guidance on equipment capacity, equipment performance, sampling and other monitoring-related issues?	VVM 135	Section B.1 of the PDD, lists all the applied methodologies and applied tools.	OK	OK
5.9. Is the project activity not a debundled component of a LSC project, in accordance with the rules defined in appendix C of the simplified modalities and procedures for SSC CDM project activities?	VVM 135	No. the project activity is not a debundled component of ant LSC project.	OK	OK
5.10. Is an assessment of the environmental impacts of the proposed CDM project activity required by the host Party? If so, is the EIA available and in compliance with the regulations? *Please specify how this requirement has been verified (e.g. review of local regulations, interviews with local authorities).*	VVM 135	As per the host country environmental regulations, EIA is not required for biogas production from the wastewater of the starch manufacturing process.	OK	OK
5.11. Please indicate if the proposed SSC project activity meets the requirements of the simplified modalities and procedures for SSC CDM project activities?	VVM 134	Kindly refer to section 5.3	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
5.12. Final conclusion: Based on the assessment of 5.1. to 5.11. are the baseline and monitoring methodologies selected by the PP in compliance with the methodologies previously approved by the EB?	VVM 65	Kindly refer to section 5.3	OK	OK
6. PROJECT BOUNDARY				
6.1. Please describe the project boundary of the selected baseline methodology.		Project boundary is as follows as per the applied methodologies : AMS.III.H : 1. The project boundary is the physical, geographical site where the wastewater and sludge treatment takes place, in the baseline and project situations. It covers all facilities affected by the project activity including sites where processing, transportation and application or disposal of waste products as well as biogas takes place. 2. Implementation of the project activity at a wastewater and/or sludge treatment system will affect certain sections of the treatment systems while others may remain unaffected. The treatment systems not affected by the project activity, i.e. sections operating in the project scenario under the same operational conditions as in the baseline scenario (e.g. wastewater inflow and COD content, temperature, retention time, etc.), shall be described in the PDD, but emissions from those sections do not have to be accounted for in the baseline and project emission calculations (since the same emissions would occur in both baseline and project scenarios). The assessment and identification of the systems affected by the project activity will be undertaken *ex ante*, and the PDD	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		shall justify the exclusion of sections or components of the system. The treatment systems (lagoons, reactors, digesters, etc.) that will be covered and/or equipped with biogas recovery by the project activity, but continue to operate with the same quality of feed inflow, volume (retention time), and temperature (heating) as in the baseline scenario, may be considered as not affected i.e. the methane generation potential4 remains unaltered. AMS.I.C Methodology : The spatial extent of the project boundary encompasses: (a) All plants generating power and/or heat located at the project site, whether fired with biomass, fossil fuels or a combination of both; (b) All power plants connected physically to the electricity system (grid) that the project plant is connected to; (c) Industrial, commercial or residential facility, or facilities, consuming energy generated by the system and the processes or equipment affected by the project activity; AMS.I.D. Methodology : The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system10 that the CDM project power plant is connected to.		
6.2. Is the delineation of the project boundary in the PDD	VVM	AMS.III. H Methodology :		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
correct and does it meet the requirements of the selected baseline methodology? *(Please indicate how this requirement has been assessed, e.g. based on comparison of PDD and physical settings during the onsite visit)*	78	Refer to section 4.11 With reference to CAR 4 above, During the site visit it was observed that PP is discharging the excess wastewater from the corase screens to the sump through a temporary pipe. PP has indicated that the temporary pipe which is used to discharge excess wastewater to the sump will be removed after the project is fully operational. As the project is not fully operational now, validation team recommends this point has to be verified during the first periodic verification by the verification entity. AMS.I.C Methodology : PDD includes all the project equipments generating the electrical and thermal energy as required by the methodology. AMS.I.D Methodology : PDD adequately describes the project boundary according to the methodology.	CAR 4 FAR 1	OK
6.3. Have all sources and GHGs required by the methodology been included within the project boundary? *(Please list the sources and GHG's and confirm for each that they are included)*	VVM 78	All the sources and GHGs are not required to be presented in the PDD. However, PP has included a table showing all the GHG sources.	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
6.4. Is a flow diagram included in the PDD which provides a clear understanding of all sources and GHG?		Kindly refer section 6.3 above.	OK	OK
6.5. Does the methodology allow PPs to choose whether a source or gas is to be included within the project boundary? *Please indicate the gases.*	VVM 78	No. None of the applied methodologies require the inclusion of GHG sources and gases in the PDD as a part of the project boundary.	OK	OK
6.6. How was this choice been justified by the PP and is the justification reasonable? *(Please list the justification for each choice, present a comment whether it seems reasonable and provide information how the assessment was conducted e.g. assessment of supporting documentation, etc.)*	VVM 78	Refer section 6.5	OK	OK
7. BASELINE IDENTIFICATION				
7.1. Are there any procedures in the methodology to identify the most reasonable baseline scenario? *(Please list them and review whether they were applied correctly)*	VVM 81	The project applies three baseline methodologies and the baseline scenario is described below as per the each applied methodology : Kindly refer to section 4.10, CL 6 The baseline is the anaerobic lagoon system to treat the wastewater. Para 18 of the methodology is suitable and is applied to calculate the baseline emissions. AMS.I.C : The baseline for the project activity is the consumption of residual oil which was used to produce steam in the pre-project activity. Baseline emissions are calculated as per para 22 of the applied methodology.	CL 6	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		AMS.I.D : As per para 10 of the applied methodology baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of generation sources into the grid.		
7.2. Does the applied methodology require the use of tools to establish the baseline scenario? *(If yes please list them and review whether they were applied correctly)*	VVM 81	No. None of the applied methodologies require the use of tools to establish the baseline scenario.	OK	OK
7.3. In case of any inconsistencies between the methodology and a tool please note that the guidance of the methodology supersedes the tool and review whether the PP has correctly applied this principle correctly.	VVM 81	There are no inconsistencies found between the methodology and the applied tool. Hence this guideline is not relevant for this project.	OK	OK
7.4. If the methodology requires to consider several alternative scenarios to identify the most reasonable baseline scenario which were considered by the PP?	VVM 82	Kindly refer to section 7.1, 4.10, CL 6	CL 6	OK
7.5. Are the scenarios considered reasonable and justified? Please indicate how this requirement has been assessed. (following 7.4)	VVM 82	Kindly refer to section 7.1, 4.10, CL 6	CL 6	OK
7.6. Were any reasonable alternative scenarios excluded? If so please list them and validate why they are excluded. (following 7.4)	VVM 82	Kindly refer to section 7.1, 4.10, CL 6	CL 6	OK
7.7. Please describe how the validation of baseline	VVM	Kindly refer to section 7.1, 4.10, CL 6	CL 6	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
scenario determination is done and describe the findings, with details of the assessments regarding the reasonableness, correctness and appropriateness of: a) assumptions, calculations and rationales used for determining the baseline scenario; b) documents and sources quoted and interpreted in PDD for baseline determination; c) information provided in the PDD for baseline determination, compared to information from other verifiable and credible sources, such as local expert opinion if available.	83			
7.8. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity (including "relevant national and/or sectoral policies and circumstances"; e+/e- rule)? *(Please list the considered requirements and comment respectively and refer to EB 53 Annex 32 before answering the question)*	VVM 84	Information related to the national and/or sectoral policies relevant to the baseline scenario is not presented in the PDD which is required as per the CDM SSC PDD guidelines. PPs to provide this information and any other subsidy provided by the government to encourage the GHG emission reduction projects in section B.5 of the PDD.	CAR 7	OK
7.9. Does the PDD contain a description of the technology that would be employed in the absence of the CDM project activity?	VVM 85	Yes, the PDD contains the description of the technology that would be employed in the absence of the CDM project activity. This was checked by the validation team during the document review.	OK	OK
7.10. In case the grid-factor was applied ex-ante to determine the baseline emissions and/or the project emission, please review whether this emission factor is still valid.		Grid emission factor applied is ex-ante. This value is published by the Thai DNA (TGO) and is publicly available.	OK	OK
7.11. Final conclusion: Does the PDD provide a verifiable description of the identified baseline scenario?	VVM 85	Kindly refer to section 7.1, 4.10, CL 6	CL 6	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
(*Please provide and specify a statement)*				
8. ALGORITHMS AND/OR FORMULAE USED TO DETERMINE EMISSION REDUCTIONS				
8.1. What are the parameters applied in the PDD to determine emission reductions? Are all the required ex-ante parameters and equations included in the PDD as required by the applied methodology?	VVM 89	The parameters applied ex-ante in the PDD to determine the emission reductions are as follows: 1. GWP_{CH4} (Global Warming Potential of Methane) 2. $B_{o, ww}$ (Methane producing capacity of the COD in wastewater 3. UF_{PJ} (Model correction factor to account for model uncertainties) 4. $MCF_{WW, treatment, BL, j}$ (Methane correction factor for the baseline anaerobic wastewater treatment systems) 5. $MCF_{WW, treatment, PJ, k}$ (Methane correction factor for project wastewater treatment system k) 6. $\eta_{COD,BL,j}$ (COD removal efficiency of the baseline treatment) 7. CFE_{WW} (Capture efficiency of the biogas recovery equipment in the wastewater treatment systems) 8. Destruction efficiency of the electricity generator (DE_{engine}) 9. Destruction efficiency of the boiler (DE_{boiler}) 10. $EF_{CO2, grid, y}$ (CO_2 emission factor for grid power) 11. ρ_{CH4} (Density of methane at normal temperature and pressure) 12. Energy exported to the grid 13. Thermal energy (enthalpy) produced from the	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		Thermic boil boiler 14. Net calorific value of fossil fuel type k combusted in the boiler, where type k is heavy fuel oil 15. Efficiency of the heavy fuel oil fired boiler that would have been used in the absence of the project activity 16. Liquid heat capacity of thermic fluid (LHCoil) 17. Density of thermic fluid used for heating purposes(ρ_{Oil}) 18. NCV of biogas (NCV biogas) 19. Density of fossil fuel used on the thermal boiler (ρ_{FO}) The following ex-post parameters are used to determine the emission reduction as per the methodology : 1. Volume of wastewater treated in the project treatment system during the year y ($Q_{ww,i,y}$) 2. COD of the wastewater before entering the project system) ($COD_{ww,untreated,y}$) 3. COD of wastewater after the treatment system (UASB) of the project activity equipped with biogas recovery in the year y ($COD_{ww,treated,y}$) 4. Amount of dry matter in final sludge generated by the project wastewater (($S_{final,PJ,y}$) 5. treatment in the year y Quantity of biogas combusted in gas engine ($Q_{biogas,gas\ engine,y}$) 6. Quantity of biogas combusted in thermal boiler ($Q_{biogas,boiler,y}$) 7. Total quantity of biogas flared ($Q_{biogas,flared,y}$)		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		8. The quantity of net electricity exported to the grid by the project activity during the year y ($EG_{BL,y}$) 9. Quantity of grid electricity consumed by the project activity during the year y ($EC_{PJ,j,y}$) 10. The net quantity of steam/heat supplied by the project activity during the year y ($EG_{thermal}$) 11. Temperature of thermic fluid leaving the boiler for starch drying. (T_{out}) 12. Temperature of thermic fluid entering the boiler for starch drying. (T_{in}) 13. Quantity of the thermic fluid from boiler to the process plant. ($Q_{oil,y}$) 14. Volumetric flow rate of the residual gas on dry basis at normal conditions in the hour h($FV_{RG,h}$) 15. Volumetric fraction of component methane in the residual gas in the hour h ($fv_{CH4,RG,h}$ / $w_{CH4,y}$) 16. Temperature in the exhaust gas of the flare(T_{flare}) 17. Quantity of fossil fuel type k combusted in the thermal oil boiler, where type k is heavy fuel oil ($\eta_{flare-h}$)		
8.2. Is an Excel file with a detailed emission reduction calculation in a reproducible format (i.e. indicating the formulae applied and properly linked) provided by the PPs?		Yes, an excel file with all the details of emission reduction calculations is submitted to the validation team	OK	OK
8.3. Have the parameters in the PDD in comparison with those in the selected approved methodology been correctly applied? Please complete the following table		All the parameters required to determine the emission reductions are stated below and also included in section B.6.2 and B.7.1 of the PDD.	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
for each parameter. (Please apply the table for each parameter listed in 8.1; tables can be copied and pasted or deleted, according to the number of parameters. For each parameter, below the table please specify how each requirement was validated, with list of any other data sources used to verify the data and parameters used in the equations)		AMS.III.H : 1. GWP_{CH4} (Global Warming Potential of Methane) 2. $B_{o,\ ww}$ (Methane producing capacity of the COD in wastewater 3. UF_{PJ} (Model correction factor to account for model uncertainties) 4. $MCF_{WW,\ treatment,\ BL,\ j}$ (Methane correction factor for the baseline anaerobic wastewater treatment systems) 5. $MCF_{WW,\ treatment,\ PJ,\ k}$ (Methane correction factor for project wastewater treatment system k) 6. $\eta_{COD,BL,j}$ (COD removal efficiency of the baseline treatment) 7. CFE_{WW} (Capture efficiency of the biogas recovery equipment in the wastewater treatment systems) 8. Destruction efficiency of the electricity generator (DE_{engine}) 9. Destruction efficiency of the boiler (DE_{boiler}) 10. $EF_{CO2,\ grid,\ y}$ (CO_2 emission factor for grid power) 11. ρ_{CH4} (Density of methane at normal temperature and pressure) AMS.I.C : 1. Thermal energy (enthalpy) produced from the Thermic boil boiler 2. Net calorific value of fossil fuel type k combusted in the		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		boiler, where type k is heavy fuel oil 3. Efficiency of the heavy fuel oil fired boiler that would have been used in the absence of the project activity 4. Liquid heat capacity of thermic fluid (LHCoil) 5. Density of thermic fluid used for heating purposes(ρ_{Oil}) 6. NCV of biogas (NCV biogas) 7. Density of fossil fuel used on the thermal boiler (ρ_{FO}) AMS.I.D : 1. CO2 emission factor for grid power (EF CO2 grid) Monitoring parameters : 1. Volume of wastewater treated in the project treatment system during the year y ($Q_{ww,i,y}$) 2. COD of the wastewater before entering the project system) ($COD_{ww,untreated,y}$) 3. COD of wastewater after the treatment system (UASB) of the project activity equipped with biogas recovery in the year y ($COD_{ww,treated,y}$) 4. Amount of dry matter in final sludge generated by the project wastewater (($S_{final,PJ,y}$) 5. treatment in the year y Quantity of biogas combusted in gas engine ($Q_{biogas,gas\ engine,y}$) 6. Quantity of biogas combusted in thermal boiler ($Q_{biogas,boiler,y}$)		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		7. Total quantity of biogas flared ($Q_{biogas, flared, y}$) 8. The quantity of net electricity exported to the grid by the project activity during the year y ($EG_{BL,y}$) 9. Quantity of grid electricity consumed by the project activity during the year y ($EC_{PJ,j,y}$) 10. The net quantity of steam/heat supplied by the project activity during the year y ($EG_{thermal)}$ 11. Temperature of thermic fluid leaving the boiler for starch drying. (T_{out}) 12. Temperature of thermic fluid entering the boiler for starch drying. (T_{in}) 13. Quantity of the thermic fluid from boiler to the process plant. ($Q_{oil, y}$) 14. Volumetric flow rate of the residual gas on dry basis at normal conditions in the hour h($FV_{RG,h}$) 15. Volumetric fraction of component methane in the residual gas in the hour h ($fv_{CH4,RG,h}$ / $w_{CH4,y}$) 16. Temperature in the exhaust gas of the flare(T_{flare}) 17. Quantity of fossil fuel type k combusted in the thermal oil boiler, where type k is heavy fuel oil ($\eta_{flare-h}$) As stated in section 8.1, all the ex-ante parameters are found to be inline with the applied methodology. Similarly QA-QC procedures for monitoring of all the ex-post parameters are also found in line with methodology.		
8.4. In case the methodology provides the selection of different options for equations or parameters, has an	VVM	Yes, the methodology provides the selection of options for		

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
adequate justification been provided and were the correct equations and parameters used in accordance with the methodology?	89	parameters such as methane correction factor. Adequate justification has been provided for the application of specific option of the parameters. All other equations and parameters are applied corrected in accordance with he applied methodologies. The following finding is raised related to the inconsistency in the COD baseline removal efficiency.		
		Section B.4 of the webhosted PDD, it is stated that minimum baseline emissions would be calculated using the following approaches. However, as per para 27 of the applied methodology, PPs should demonstrate how the applied value is the minimum as per para 27 (c). Hence it needs to be addressed accordingly.	CAR 5	OK
		Efficiency of the baseline boiler is taken as 78% in section B.6.2 of the PDD. However, it is not justified inline with para 30 of latest version of AMS.I.C. (version 19).	CL 8	OK
		In section B.6.2 of the PDD baseline COD removal efficiency is stated as 87.27% and the same is stated as 88.17% in Annex-3 of the PDD. Hence it needs to be corrected in the PDD.	CAR 12	OK
		In section B.6.3, the installed power capacity of auxiliary equipments was mentioned as 157 kW. However, based on the equipment list, the total capacity of the equipments	CAR 17	OK

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QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		was observed to be 260 kW. Therefore, it needs to be corrected.		
8.5. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		As there is no transfer of project equipments from or to the project activity. All the applied methodologies do not require leakage.	OK	OK
8.6. Please review and recalculate any equations and indicate whether the calculations are correct. Please provide findings.		The PP has provided all the required equations used to calculate the emission reductions in the PDD. This was also checked during the document review.	OK	OK
9. ADDITIONALITY OF TH PROJECT ACTIVITY				
9.1. If required by methodology, check whether the latest version of the additionality tool is applied and confirm whether all steps are correctly applied (onwards from Step 2/3; step 1 see section 7).		The applied methodologies do not require the application of the latest version of the addtionality tool as it is a small scale project. PP has applied attachment A to Appendix B of the simplified modalities and procedures for small –scale CDM project activities and Non-binding best practice examples to demonstrate additionality for SSC project activities (EB 35 Annex 34).	OK	OK
9.2. Please describe how the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by the PP to support the demonstration of additionality is assessed and validated, e.g. using local knowledge, sectoral and financial expertise and considering other sources of information for cross checks.	VVM 93/94	Refer to section 7.8	CAR 7	OK
9.3. Are any tools and documents provided by the EB to demonstrate the additionality of the proposed CDM project activities relevant and have they been correctly considered and applied?	VVM 95	No further tools are required. Please refer section 9.1.	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
(Please list and specify the findings)				
9.4. Are any specific complementary or alternative requirements included in the approved CDM methodology and have they been correctly considered and applied? Please list and specify the findings.	VVM 95	There are no other alternative requirements included in the approved applied methodology.	OK	OK
9.5. ***Prior consideration of the clean development mechanisms (EB 49 Annex 22)***				
9.5.1. Is the start date of the project activity, reported in the PDD, in accordance with the latest version of the *"Glossary of CDM terms"*? http://cdm.unfccc.int/Reference/glossary.html	VVM 98	The project start date is considered as 2008-05-17. It is the date on which PP has signed a contract with the technology provider. This is first real actions taken by the PP and PP has financially committed some expenses towards the project activity. The document is submitted to the validation team.	OK	OK
9.5.2. Is the project activity, in accordance with the guidance from the EB, a new project activity (project activities with start date at or after 02 August 2008) or an existing project activity (project activities with starting date before 02 August 2008)?	VVM 99	The project is an existing project activity as the project start date 2008-05-17 is prior to 2008-08-02. The following findings are raised related to the prior consideration of the project activity : As per the webhosted PDD, PP has applied guidance on prior consideration version 03, EB 49. However, as per the CDM requirements all the latest guidelines should be applied. Hence, PPs are required to apply the latest version of "Guidelines on the demonstration and assessment of prior consideration of the CDM". In addition to that the presented table should be updated to include the validation start date and other CDM milestones vis'-a –vis' project milestones. Table 5 provided in section B.5 of the webhosted PDD	CAR 6	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		includes, submission of letter of intent to UNFCCC and the DNA. However, as per the guidance these events are to be included if the project start date is after 2 August 2008 to demonstrate the CDM consideration. It is required to substantiate, how these actions would represent the serious actions taken by CDM as the project start date is before 2 August 2008.	CL 2	OK
9.5.3. In case there is a new project activity (start date at or after 02 August 2008) and for which PDD has not been published for global stakeholder consultation or a new methodology is proposed to the EB before the project activity start date, please ensure by means of confirmation from the UNFCCC secretariat that the PP had informed the host Party DNA and the UNFCCC secretariat by submitting the standardized form F-CDM-prior consideration within 6 months of project start date. *(Please document the result of the query)*	VVM 100, EB 48 Annex 61	NA		OK
9.5.4. If there is an existing project activity (project activities with start date before 02 August 2008) for which the start date is prior to the date of publication of the PDD for global stakeholder consultation please verify through document review that PP's prior consideration: Please assess the fulfilment of following requirements: ➢ Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes	VVM 101	Refer to section 9.5.2	CAR 6, CL 2	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, other PP, to undertake the project as a proposed CDM project activity. ➢ Reliable evidence from PPs that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat.				
9.6. ***Identification of alternatives***				
9.6.1. Does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the applied approved methodology prescribes the baseline scenario and no further analysis is required?	VVM 104	demonstrate the baseline scenario. The baseline is grid for electricity generation component and the fossil fuel based thermic oil boiler for the thermal energy component.	OK	OK
9.6.2. Does the list of alternatives given in the PDD ensures that: ➢ The list of alternatives includes as one of the	VVM 105	Kindly refer section 9.6.1	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
options that the project activity is undertaken without being registered as a proposed CDM project activity? ➢ The list contains all plausible alternatives which can be considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity? ➢ The alternatives comply with all applicable and enforced legislation?				
9.6.3. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement?		Kindly refer section 9.6.1	OK	OK
9.7. ***Investment Analysis***				
9.7.1. Has the investment analysis been used to demonstrate the additionality of the proposed CDM project? *(If not please continue with question 9.8)*	VVM 107	NA		OK
9.7.2. Which approach is chosen for investment analysis of the proposed CDM project activity and is it appropriate? a. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income, and there is at least one alternative which is less costly than the proposed CDM project activity (simple cost analysis); b. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative (comparison analysis); c. The financial returns of the proposed CDM project		NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
activity would be insufficient to justify the required investment (benchmark analysis). *Describe why the selected analysis approach is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.*				
9.7.3. Is an Excel file with detailed calculation of investment analysis indicators available? Are all formulas used in the analysis readable and all relevant cells viewable and unprotected?		NA		OK
9.7.4. Please describe how the accuracy of financial calculations carried out for any investment analysis is validated: ➢ Are all input values used valid and applicable at the time of investment decision by the PP according to the available evidence and expertise in relevant accounting practices (such as feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the PPs), with crosschecks against third-party or publicly available sources, such as invoices or price indices? ➢ Are the computations carried out and documented by the PPs correct?	VVM 110	NA		OK
9.7.5. In cases where the PPs rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, describe the means to validate the following requirements:	VVM 112	NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
➢ The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed; ➢ The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values; ➢ On the basis of its specific local and sectoral expertise, confirmation is provided, by crosschecking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.				
9.7.6. Are the type of benchmark (if applicable) chosen (local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR) and the type of financial indicator calculated (e.g. project IRR, equity IRR, etc.) suitable to each other?		NA		OK
9.7.7. In case the project activity could also be developed by an entity other than the PP, is the benchmark based on publicly available data sources which can be clearly validated? *(Such data sources may include local lending and borrowing rates ,equity indices, or benchmarks*		NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
determined by relevant national authorities. The DOE's validation of such benchmarks shall also include its opinion of the suitability of the benchmark applied in the context of the underlying project activity)				
9.7.8. In cases that internal company benchmarks/expected returns are applied, is it verified that there is only one possible project developer and, either the internal company benchmarks/expected returns have been used for similar projects with similar risks developed by the same company or, if the company is brand new, have been used for similar projects in the same sector in the country/region?		NA		OK
9.7.9. Are the risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity?		NA		OK
9.7.10. Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark? (*For example, assessing previous investment decisions by the PPs involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark)*		NA		OK
9.7.11. If a fair value for the project assets in the end of the assessment period is included, assess whether it is calculated in accordance with the local accounting regulations where available or international best practice.		NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
(State the accounting regulations applied for calculating the fair value for the project assets in the end of the assessment period and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value)				
9.7.12. Does the financial indicator calculation include adding back of the depreciation and other non-cash related items to taxable profits?		NA		OK
9.7.13. In case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM, does the investment analysis reflect the economic decision making context at point of the decision to recommence the project?		NA		OK
9.7.14. If project IRR is chosen: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?		NA		OK
9.7.15. If project IRR is chosen and a post-tax benchmark is applied, is the actual interest payable taken into account in the calculation of income tax, with an reasonable interest rate?		NA		OK
9.7.16. If equity IRR is chosen: Is the part of the investment costs which is financed by equity considered as net cash outflow? Is the part of investment costs which is financed by debt excluded in net cash outflow?		NA		OK
9.7.17. Are the results of variation of variables that constitute		NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
more than 20% of either total project costs or total project revenues clearly presented in PDD and reproducible with spreadsheet? Are the ranges of variation (eg. 10%) deemed appropriate in the context of the specific project circumstances?				
9.7.18. Overall, is the investment analysis in accordance with the latest version of the *"Guidelines on the Assessment of Investment Analysis"* as provided by the EB (EB Report 51, Annex 58) and other relevant guidance including the latest guidelines on plant load factors "guidelines for the reporting and validation of plant load factors"?	VVM 109	NA		OK
9.8. ***Barrier Analysis***				
9.8.1. Has the barrier analysis been used to demonstrate the additionality of the proposed CDM project? *(If not please continue with question 9.9)*		Yes, PP has applied the barrier analysis to demonstrate the additionality of the proposed project activity.	OK	OK
9.8.2. What barriers are identified and described in PDD to demonstrate additionality?		The Identified barriers as stated in section B.5 of the PDD are access to finance barrier.	OK	OK
9.8.3. Does any issue considered in the barrier analysis have a clear direct impact on the financial returns of the project activity and thus shall be assessed by investment analysis? *(Please note that such issues are defined in this context as those issues whose impacts can be expressed in monetary terms with reasonable certainty. But this does not refer to:* ➢ *Risk related barriers, for example risk of technical*	VVM 115	Following findings are raised in order to assess the veracity of the proposed access to finance barrier. : For the sake of transparency and completeness PPs to provide the references for the following statements referred in section B.5 of the PDD to demonstrate the access to finance barrier. • During 2003-05, pilot demonstrations of biogas system in starch industry were carried out by receiving the financial support from Energy Conservation Promotion	CAR 8	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
failure, that could have negative effects on financial performance, or ➢ *Barriers related to the unavailability of sources of finance for the project activity.)*		Fund (ECPF). • "Wastewater treatment technologies come together with high investment cost and operating cost". During the site visit PP has informed the validation team that they have approached a bank for the loan in 2008 after taking the decision to go ahead to with the project and it got rejected. After that PP has approached another bank in 2009 and subsequently received the loan and project implementation has started. However, this description on the nature of barrier faced by the PP to be elaborated in the PDD to address the following requirement "*While demonstrating barriers related to the lack of access to capital, information should include nature of company, organization and its ownership and, financial information"* of para 4, Annex 13, EB 50. To demonstrate the chosen barrier : access to finance , PP has included a general description stating that the lack of knowledge and demonstrated success are the two factors which has led to the limited access of finance to the private firms. However, based on the sectoral and host country knowledge validation team understands that Eiam group is well known in the country and successfully implemented few biogas projects in the similar industry. During the site visit, it was also informed by the PP that the technical know how of operating the biogas plants is shared by the other companies of Eiam group. Incidentally this has encouraged the PP to invest and go ahead with the project. Based on	CAR 9 CAR 10	OK OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		sectoral knowledge validation team understands that most of the registered CDM biogas projects in Thailand (more than 25) are operating successfully. Thus this argument is not relevant to the project activity quite generic and not project specific. Hence PP to provide project specific arguments to demonstrate the additionality. It is required to demonstrate objectively how the CDM benefit would be able to mitigate the applied barrier: access to finance as per para 5 of "Guidelines for objective demonstration and assessment of barriers", EB 50, annex 13. Section B.5 of the PDD refers to Para 1 of the guidelines on objective demonstration and assessment of barriers. However, for the sake of transparency and completeness, it is required to provide a table for the justification of all the guidelines provided in "Guidelines for objective demonstration and assessment of barriers" in section B.5 of the PDD. PPs to clarify whether there is any subsidy available from the government to encourage the biogas projects in the host country and the same shall be included while the demonstration of additionality. In the chronology of events presented in section B.5 of the PDD, it is stated that the first payment to the technology provider was made during May 2009 and the loan was secured in September 2009. It is not clear how PP could make the first payment to the technology provider	CAR 11 CL 5 CL 7	OK OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		without securing the loan.		OK
9.8.4. To asses the barrier analysis apply the following two-step process: *a.* Please assess whether the barriers are real: Please assess the available evidence and/or undertake interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist. *(Review that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics. If existence of a barrier is substantiated only by the opinions of the PPs, this shall not be considered to be adequately substantiated. To demonstrate that a barrier is real it has to be supported by sufficient evidence on the basis of sectoral or local expertise)* b. Do the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives? *(Please note, that not all barriers present an insurmountable hurdle to a project activity being implemented. By applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of at least one of*	VVM 116	Refer to section 9.8.4	CAR 8-11, CL 5 and CL7	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
the possible alternatives, in particular the identified baseline scenario)				
9.8.5. Is it sufficiently demonstrated that CDM alleviates the identified barriers that prevent the proposed project activity from occurring?		Refer to section 9.8.4	CAR 8-11, CL 5 and CL7	OK
9.8.6. Overall, is the barrier analysis in compliance with the latest version of *"Guidelines for objective demonstration and assessment of barriers (EB50, Annex 13)"*?		Refer to section 9.8.4	CAR 8-11, CL 5 and CL7	OK
9.9. ***Common Practise Analysis***				
9.9.1. Is common practice required by the methodology applied by the proposed project activity to demonstrate additionality? *(If not please continue with question 10)*		NA		OK
9.9.2. Is the proposed project activity first-of-its-kind? If so, please specify how this statement is substantiated.	VVM 118	NA		OK
9.9.3. In case the project activity is not first of its kind, is the geographical scope (e.g. the defined region) of the common practice analysis appropriate for the assessment of common practise related to the project activity's technology or industry type? Please consider that for certain technologies the relevant region for assessment will be local and for others it may be transnational / global. If a region other than the entire host country is chosen, please assess the explanation why this region is more appropriate. *(Please specify how the geographical scope of the*	VVM 119	NA		OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
common practice analysis has been validated)				
9.9.4. Was an assessment concerning the existence of other similar projects undertaken? Does this include official sources and was local and industry expertise used to determine to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, exist in the defined region? *(Please specify the findings and indicate how the findings were validated e.g. review of the relevant resources listed above)*	VVM 119	NA		OK
9.9.5. If similar and operational projects, other than CDM project activities, are already "widely observed and commonly carried out" in the defined region, what are essential distinctions between the proposed CDM project activity and the other similar activities? *(Please specify how the essential distinctions between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out were assessed)*	VVM 119	NA		OK
9.9.6. Final Conclusion: Based on the assessment of questions 9.1. to 9.9.5. is the proposed project activity additional?		NA		OK
10. MONITORING PLAN				
10.1. Does the PDD include a monitoring plan?	VVM 121	Yes, PDD includes a monitoring plan.	OK	OK
10.2. Does the monitoring plan comply with the approved methodology?	VVM	Yes, the applied monitoring plan complies with the	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
(Please verify that all necessary parameters are included, clearly described and that the means of monitoring described in the plan complies with the requirements of the methodology)	122	approved methodology. However,		
10.3. Are the monitoring arrangements described in the monitoring plan feasible within the project design? *(Please check by review of the documents, interviews with relevant personnel, project plans and any physical site inspection of the proposed CDM project activity this requirement and document the findings)*	VVM 122	Following findings are raised in order to with respect to monitoring plan in the webhosted PDD. During the validation site visit it was revealed that the required monitoring parameters for the flare are not yet included as a part of the monitoring system. Hence PPs to include the same as a part of the revised logbook which is a part of the monitoring system and submit a copy of that document to the validation team. During the validation site visit it was revealed that the required monitoring parameters for the flare are not yet included as a part of the monitoring system. Hence PPs to include the same as a part of the revised logbook which is a part of the monitoring system and submit a copy of that document to the validation team. The monitoring system and QA/QC procedures are described in the monitoring plan in section B.7.1 and B.7.2 of the PDD. However, the monitoring plan does not include the following points : • The procedures regarding data management during	CAR 13 CAR 14 CAR 15	OK OK OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		emergency situation. Therefore, it is required to include the data management procedures during any emergency situation for the sake of clarity and transparency. • Accuracy of all the monitoring equipments. The monitoring plan is in compliance with the applied small scale methodology (AMS III.H., version 16). However, the method of COD determination of wastewater is not clear. Therefore, PPs to clarify how many samples are collected per day and by what method COD is determined. PP to clarify the following points with respect to the description of the monitoring plan provided in section B.7 of the PDD : • For all the flow meters it is stated the data is taken directly from the meter and data from log sheet is transferred to excel sheet. Flow meter is integrated with SCADA. Hence clarify which readings would be considered for the calculation of emission reductions. • In case of energy meters it is stated that the authorities shall be requested for the regular calibration of the meters. However, for the sake of transparency PPs to clarify the term 'regular' in the context of calibration.	CL 3 CL 4	OK OK
10.4. Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures sufficient to	VVM 122	Kindly refer to section 10.3	CAR 14 and CAR 15	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?				
10.5. Final Conclusion: Based on the assessment of the requirements 10.1 to 10.4 is the monitoring plan in accordance with the applied monitoring methodology?		Kindly refer to section 10.3	CAR 14 and CAR 15	OK
11. LOCAL STAKEHOLDER CONSULTATION				
11.1. Were relevant stakeholders invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM 127	Yes, PP has invited the relevant stakeholders on 08-06-2011 which is prior to the publication of the PDD 09-07-2011. The documents were made available to the validation team during the site visit.	OK	OK
11.2. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		No, Stakeholder consultation is not required as per the EIA requirement. However the Thai DNA requires PP to submit the Initial Environmental Evaluation Report (IEE) and hence PP has conducted the local stakeholder consultation as part of the IEE. The document is submitted to the validation team during the validation assessment.	OK	OK
11.3. Have appropriate media been used to invite comments by local stakeholders?	VVM 128	Refer section 11.1	OK	OK
11.4. Is the summary of the received comments complete? *(Please specify how this requirement was verified)*	VVM 128	The summary of the comments and the response of the PP on the comments are provided in section E.2 of the PDD.	OK	OK
11.5. Have the PPs taken due account of any comments received and have they described this process in the PDD?	VVM 128	Refer section 11.4	OK	OK
12. ENVIRONMENTAL IMPACTS				
12.1. Have the PPs submitted an analysis of environmental impacts of the project activity?	VVM	As per the local environmental requirements EIA is not required and the information is verified @	OK	OK

QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
Is such an Environmental Impact Assessment (EIA) mandatory by national legislation? *Please specify how this requirement was validated (e.g. document review, interview with local authorities, and review of local regulations).*	131	http://www.onep.go.th/eia/		
12.2. Were transboundary environmental impacts identified in the analysis?		No, there were no transboundary impacts observed during the analysis.	OK	OK
12.3. Will the project create any adverse environmental effects?		No. the project does not create any adverse environmental effects.	OK	OK
12.4. Have the identified environmental impacts been addressed in the project design sufficiently?		Kindly refer to section 12.1	OK	OK
12.5. Does the project comply with environmental legislation in the host country?	VVM 135	Kindly refer to section 12.1	OK	OK

Resolution of Corrective Action and Clarification Requests including list of Forward Action Requests

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
CAR 1 The Letters of Approval (LOA) of both parties for the proposed CDM project activity is yet to be submitted to the validation team.	2011-09-02	The required documents for requesting the LoA of the Host country are under the preparation. Expected submission date to Thai DNA and approval date are mid of September and end of November 2011, respectively. The LoA of the Purchaser's country can be issued within 2 weeks after approval from the Host country.	2011-09-13	Not OK. This CAR will be closed after the submission of the LoAs for both the parties.	2011-09-30
CAR 1 continued…		The review for the Letter of Approval is under the process.	2011-10-14	A copy of the LoAs of host country Thailand was submitted on 2012-03-14 and Annex-1 part Switzerland was submitted on 2012-03-30. Hence, the CAR is closed.	2012-03-30
CAR 2 The provided project description is not clear with respect to the following points in section A.2 of the project design document (PDD) : - Technical specifications of the	2011-09-02	The project description is revised in section A.2 of the PDD. - Technical specifications of the project activity equipment are included. - The lifetime of the thermal oil boiler is	2011-09-13	Not OK. The capacity of the Thermic oil boiler, gas engines and flaring equipment are provided. However, for the sake of transparency the technical specifications	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
wastewater treatment system and the project activity equipments. - The lifetime of the thermic oil boiler - Operational status of the plant such as commissioning date and the average number of working days. - How much of the electricity is imported to the grid.		included. - The information of the operational status is included. - The amount of net electricity exported to the grid has been included in the PDD. For the sake of transparency, the project activity is expected to have a net export of electricity after internal consumption of electricity. Therefore, under normal circumstances there is no electricity import attributed to the project activity.		need to be presented. OK. The information is included in the revised PDD. OK. The information is included in the revised PDD. OK. The information is included in the revised PDD. OK. The information is included in the revised PDD.	
CAR 2 continued..		The table for the summary of the technical specifications is provided in section A.4.2.	2011-10-14	OK. The response is reflected in the PDD. Hence the CAR is closed.	2011-11-02
CAR 3 During the site visit, it was found that the geographic coordinates stated in the webhosted PDD are not correct and hence it needs to be corrected in	2011-09-02	The geographic coordinates are corrected in section A.4.1.4.	2011-09-13	OK.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
section A.4.1.4 of the PDD.					
CAR 4 For the sake of transparency and completeness PPs are required to revise section B.3 of the webhosted PDD in order to address the following points : • During the site visit it was found that the wastewater from the UASB and excess wastewater from the fine screens is stored in a new open pond before sending it to the pre-existing anaerobic lagoons. Hence it shall be included in the project boundary and the project emissions due to the wastewater should be accounted in the estimation of ex-ante emission reductions.	2011-09-02	The flow diagram of the project activity is revised in section A.4.2 and B.3. • The project emissions from the new open pond are accounted in $PE_{ww,\ treatment,\ y}$ as it is calculated based on the amount of wastewater and chemical oxygen demand entering this pond, which is part of the monitoring plan provided in section B.7.1. The excess wastewater from the coarse screen is currently being bypassed to the new open storage pond because the UASB system is still under commissioning not fully operational yet. Therefore the current treatment capacity is not	2011-09-13	OK. The flow diagram presented in the revised PDD represents the actual situation. OK. Validation team understands that the project activity is not completely operational and therefore the excess wastewater from the coarse screen is discharged to the sump through a temporary pipe. As validation team can not confirm that whether there would be	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
		sufficient to treat all wastewater from the starch factory. A temporary pipe has been installed connecting the output of the coarse screens to the new open pond in order to bypass the UASB reactor and lead the excess wastewater directly to the lagoons. After completion of the commissioning, the pipe will be removed from the project activity thereby further reducing project emissions. The bypass of wastewater is not envisaged during regular operation of the project activity during the crediting period. The new open pond has been incorporated in the revised project boundary diagram under the name of "sump".		discharge of wastewater from the coarse screen to the sump. Hence, this is considered as a FAR and should be checked by the verifier during the first verification period.	
• All facilities such as processing, transportation affected by the project activity are included in the		• The disposal of sludge is included in the revised flow diagram presented in section A.4.2 and B.3.		OK. The revised flow diagram includes the disposal of sludge which is required by the applied methodology.	

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
PDD. However it does not include the disposal of sludge in the flow sheet presented in section B.3 of the PDD as required by the methodology.				The CAR is closed.	
CAR 5 Section B.4 of the webhosted PDD, it is stated that minimum baseline emissions would be calculated using the following approaches. However, as per para 27 of the applied methodology, PPs should demonstrate how the applied value is the minimum as per para 27 (c). Hence it needs to be addressed accordingly.	2011-09-02	PPs have submitted the design document of the baseline open lagoons system. As a result of the 10-day COD campaign data and the efficiency figure as per design document, which has a higher efficiency value, the minimum baseline emissions are derived from the lower efficiency result of the COD campaign data in line with paragraph 27 (c) of AMS-III.H.	2011-09-13	Not OK. The information is presented in the PDD. However, the document indicating for the baseline COD removal efficiency 98.98 % is yet to be submitted to the validation team.	2011-09-30
CAR 5 continued..		The document is submitted to the validation team.	2011-10-14	OK. The document is being submitted to the validation team. Hence, the CAR is closed.	2011-11-02
CAR 6 As per the webhosted PDD, PP has applied guidance on prior consideration version 03, EB 49. However, as per the	2011-09-02	The PDD is updated to apply the latest version of the "Guidelines on the demonstration and assessment of prior consideration of the CDM" version 04,	2011-09-13	OK. The Updated PDD refers to the latest guidelines on the demonstration of prior consideration of CDM.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	**Date** *(yyyy-mm-dd)*	**Project Participants Response** ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	**Date** *(yyyy-mm-dd)*	**GLC Assessment** ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	**Date** *(yyyy-mm-dd)*
CDM requirements all the latest guidelines should be applied. Hence, PPs are required to apply the latest version of "Guidelines on the demonstration and assessment of prior consideration of the CDM". In addition to that the presented table should be updated to include the validation start date and other CDM milestones vis'-a –vis' project milestones.		EB 62. In addition, the timelines have been updated to include the validation start date and other CDM milestones (please see revisions in section B.5 of the PDD).		All the essential timelines are included in the PDD. Hence the CAR is closed.	

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	**Date** *(yyyy-mm-dd)*	**Project Participants Response** ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	**Date** *(yyyy-mm-dd)*	**GLC Assessment** ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	**Date** *(yyyy-mm-dd)*
CAR 7 Information related to the national and/or sectoral policies relevant to the baseline scenario is not presented in the PDD which is required as per the CDM SSC PDD guidelines. PPs to provide this information and any other subsidy provided by the government to encourage the GHG emission reduction projects in section B.5 of the PDD.	2011-09-02	The description regarding the national policies relevant to the baseline scenario is updated in section B.5 as per the CDM SSC PDD guidelines. The same guideline suggests that *'National policies and circumstances relevant to the baseline of the proposed project activity shall be summarized here'*. Therefore, information relates to any other subsidy provided by the government to encourage the GHG emission reduction project is not presented because of CDM SSC PDD guidelines. However, the subsidy is now addressed under CL5 of the findings relating to additionality demonstration for transparency purposes.	2011-09-13	OK. The description regarding the national policies relevant to the baseline scenario is included in section B.5 of the PDD. Not OK. Information related to E+/E- policies should be described for the sake of transparency.	2011-09-30
CAR 7 continued..		Availability of the subsidy scheme is now mentioned also in the baseline section where relevant national and/or	2011-10-14	OK. The response is reflected in the revised PDD. Hence the CAR is closed.	2011-11-02

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
		sectoral policies are described. In addition, implications of the subsidy on the additionality of the project activity are further elaborated in Section B.5 of the revised PDD. This is done despite the fact that the EPPO subsidy can be considered an E- policy as per EB 22, Annex 3 and therefore disregarded in baseline and additionality considerations. However, for the sake of conservativeness and transparency, the nature and impact of the EPPO subsidy is discussed in the revised PDD. Overall, the subsidy accounts for less than 7% of the total investment and is paid in tranches upon completion of certain milestones, whereas most of the payments were made available to the project activity only after financial closure. According to the subsidy rules, the project owner had to provide a bank guarantee with the amount of 3 million THB or roughly 30% of the subsidy value for work assurance which is the same amount as the 1st payment of the			

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		subsidy. This guarantee was then released back to the project owner together with the 2nd payment of the subsidy. However, at that time, the project had already secured the loan from Krung Thai Bank; therefore, the subsidy did not have an impact on the project's ability of access finance and reach financial closure. The subsidy contract along with the translation of relevant sections is submitted to DOE.			
CAR 8 For the sake of transparency and completeness PPs to provide the references for the following statements referred in section B.5 of the PDD to demonstrate the access to finance barrier. • During 2003-05, pilot demonstrations of biogas system in starch industry were carried out by receiving the financial support from Energy Conservation Promotion	2011-09-02	The references are provided in footnote no. 15 and 16 in section B.5 of the PDD.	2011-09-13	OK. The required references are included in section B.5 of the PDD. Hence the CAR is closed.	2011-09-30

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Fund (ECPF). • "Wastewater treatment technology come together with high investment cost and operating cost".					
CAR 9 During the site visit PP has informed the validation team that they have approached a bank for the loan in 2008 after taking the decision to go ahead to with the project and it got rejected. After that PP has approached another bank in 2009 and subsequently received the loan and project implementation has started. However, this description on the nature of barrier faced by the PP to be elaborated in the PDD to address the following requirement "*While demonstrating barriers related to the lack of access to capital, information should include nature of company, organization and its ownership and, financial information"* Of para 4, Annex 13, EB 50.	2011-09-02	The additional information regarding nature of the company, ownership and financing information is provided for the sake of transparency. Besides, the loan approval submitted shows that the revenues from the CDM are critical in the approval of the loan as per the 'Non-binding best practice examples to demonstrate additionality for SSC project activities', EB 35, Annex 34.	2011-09-13	From the provided description in the PDD, validation team understands that Eiam Rung-Ruang Renewable Company is a subsidiary of Eiam Rungruang Industry Company Limited, hence there is a possibility that it can access the capital form the parent company. Hence PP to clarify whether there is any kind of financial support from the parent company Eiam Industries.	2011-09-30

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CAR 9 continued..		Eiamrungruang Industry is not a subsidiary of a multinational group as confirmed in section B.5 of the revised PDD. Therefore, the parent company does not have a significantly different access to capital than the project company (in line with Paragraph 4, "Guidelines for Objective Demonstration and Assessment of Barriers", Annex 13, EB 50). The loan granted by Krung Thai Bank to the project activity to Eiam Rung-Ruang Renewable was more than sufficient to reach financial closure of the project activity. Hence, no finance was provided by the parent company.	2011-10-14	OK. From the provided response it is clear that Eiam Run-Runag renewables is a subsidiary of Eiam Rung -Ruang Industries company Limited. Eiam Run-Ruang Industries is not a part of any multinational group company. Hence, the CAR is closed.	2011-11-02
CAR 10 It is required to demonstrate objectively how the CDM benefit would be able to mitigate the applied barrier: access to finance as per para 5 of "Guidelines for objective demonstration and assessment of barriers", EB 50, annex 13.	2011-09-02	As per the "Non-binding best practice examples to demonstrate additionality for SSC project activities", EB35, Annex 34, paragraph 1(b) suggests that a statement from the bank that the revenue from the CDM are critical in the approval of the loan. The CDM confirmation letter from the bank	2011-09-13	Not OK. Loan rejection letter is yet to be submitted by the PP indicating the reason for rejection. Similarly PP needs to provide a loan approval letter indicating transparently that CDM is the decisive factor in approving the loan.	2011-09-30

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		demonstrates that CDM was critical in loan approval and this also satisfies the para 5 of the "Guidelines for objective demonstration and assessment of barriers", EB 50, annex 13			
CAR 10 continued..		Please find the letters for loan rejection and loan approval indicating the reason for the initial loan rejection by Kasikorn Bank, and CDM consideration for loan approval by Krung Thai Bank.	2011-10-14	OK. As presented in the response PP has submitted the loan rejection letter from the Kosikorn bank stating the reason for loan rejection in a transparent manner. Moreover, PP has clearly outlined in the PDD that initially the loan was rejected and then PP has approached another bank which has approved the loan considering the CDM benefit. Hence, it is evident and validation team is able to confirm that CDM is decisive in making the project financially viable. Hence. The CAR is closed.	2011-11-02
CAR 11 Section B.5 of the PDD refers to Para 1 of the guidelines on objective	2011-09-02	There is no mention to the 'Guideline on objective demonstration and assessment of barriers' under section	2011-09-13	OK.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
demonstration and assessment of barriers. However, for the sake of transparency and completeness, it is required to provide a table for the justification of all the guidelines provided in "Guidelines for objective demonstration and assessment of barriers" in section B.5 of the PDD. Moreover the guideline 6 referred in section B.5 of the PDD is related to investment barrier where as the applied barrier is "access to finance". Hence PPs to revise the additonality argument suitably to meet the requirements.		B.4. For the sake of transparency, the justification regarding the Guideline on objective demonstration and assessment of barriers' is further elaborated in section B.5 of the PDD. The table form as suggested is not presented since only guideline 1 is applicable to the project's additionality demonstration; clearer reference to the guideline is given. Please refer to the revised PDD. Guideline 6 has been used only to make stronger argument with respect to importance of CDM consideration by the bank while approving the loan.		Not OK. PP has applied two guidelines (1 & 6) in the PDD, however in the response referred only one guideline. As PP has applied two relevant guidelines, it may not be required to elaborate all the guidelines in the PDD. OK. Accepted.	
CAR 11 continued..		Kindly refer to section B.5 in the revised PDD.	2011-10-14	OK. PP has revised section B.5 to include all conditions of the guidance on objective demonstration of additionality. Hence, the CAR is closed.	2011-11-02

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CAR 12 In section B.6.2 of the PDD baseline COD removal efficiency is stated as 87.27% and the same is stated as 88.17% in Annex-3 of the PDD. Hence it needs to be corrected in the PDD.	2011-09-02	The information for COD campaign in Annex-3 is corrected in line with the supporting document submitted to DOE.	2011-09-13	OK. The submitted revised PDD includes the correct information. Hence the CAR is closed.	2011-09-30
CAR 13 During the validation site visit it was revealed that the required monitoring parameters for the flare are not yet included as a part of the monitoring system. Hence PPs to include the same as a part of the revised logbook which is a part of the monitoring system and submit a copy of that document to the validation team.	2011-09-02	Sample of a logbook used as a part of monitoring procedure for flaring system is submitted to DOE.	2011-09-13	OK. The sample logbook is submitted to the DOE. Hence, the CAR is closed.	2011-09-30
CAR 14 It was observed that the calculation of baseline emissions due to fuel savings due to the biogas consumption are calculated incorrectly in the submitted ex-ante emission reduction (ER) estimation sheet. Hence PPs to correct the same and submit the revised ER	2011-09-02	The calculation of baseline emissions due to fuel replaced in the ER estimation sheet is corrected.	2011-09-13	Not OK. The EGthermal value is updated. However, in the formula to calculate the $BE_{thermal}$, Needs to be corrected.	2011-09-30

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estimation sheet to the validation team.					
CAR 14 Continued...		The calculation for $BE_{thermal,\ CO2,\ y}$ is corrected.	2011-10-14	OK. The calculation is corrected in the revised emission reduction sheet. Hence, the CAR closed.	2011-11-02
CAR 15 The monitoring system and QA/QC procedures are described in the monitoring plan in section B.7.1 and B.7.2 of the PDD. However, the monitoring plan does not include the following points : • The procedures regarding data management during emergency situation. Therefore, it is required to include the data management procedures during any emergency situation for the sake of clarity and transparency. • Accuracy of all the monitoring equipments.	2011-08-31	The description regarding the monitoring system and QA/QC procedures is revised. - The procedure for data management during emergency situations is included in section B.7.2. - The accuracy of the monitoring instruments has been included in the monitoring plan in Section B.7.1 based on the manufacturers' specifications. The supporting documents have been submitted to DOE.	2011-09-13	OK. The procedure regarding data management during emergency situation is included in section B.7.2 of the PDD. OK. Information related to the accuracy of all the monitoring parameters is included in section B.7.1 of the PDD. Hence, the CAR is closed.	2011-09-30
CAR 16 In section B.8, the name of the	2011-09-02	The name of the responsible entity in section B.8 is corrected.	2011-09-13	OK. The correction is reflected in section B.8 of the PDD. The CAR is closed.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
responsible entity is stated as Swiss Carbon Assets Ltd. However, during the site visit PP has informed that the responsible entity for the baseline study is Southpole Carbon Asset Management Ltd. Hence, it needs to be corrected.					
CAR 17 In section B.6.3, the installed power capacity of auxiliary equipments was mentioned as 157 kW. However, based on the equipment list, the total capacity of the equipments was observed to be 260 kW. Therefore, it needs to be corrected.	2011-09-02	The total capacity of the equipment in section B.6.3 is corrected.	2011-09-13	OK. The revised PDD includes the correct value of the total capacity of the auxiliary equipment. Hence, the CAR is closed.	2011-09-30
CL 1 For the sake of transparency and completeness, PPs are required to justify the following statements referred in the additionality justification in section B.5 of the webhosted PDD : • How the project is a small and medium scale industry.	2011-09-02	The information to classify the project under a small and medium scale industry is provided in section B.5 for the sake of transparency. According to the table 5, the project developer, Eiam Rung-Rung Renewable, can be considered as a subsidiary of Eiam Rungruang Industry	2011-09-13	Not OK. Validation team is not able to access the document related to the classification of Small and Medium Scale Industry (SME) as all the pages are not accessible except page 1. Hence, PP to provide the correct web link through which the information is accessible to all. From the response and the submitted	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
• As per the provided Table 5 in the PDD, it is evident that the project is part of the group company *'Eiam rungruang Industry Co., Ltd. and could also be funded.*. Thus it indicates that the project could be funded by a group company.. Kindly substantiate how the access to fiannce is a barrier to the project activity.		Co., Ltd. However, Eiam Rungruang industry Co.,Ltd. is neither a holding company nor a part of any group company as presumed under CL1. Moreover, referring to the 'Guidelines for objective demonstration and assessment of barrier", it suggests that a subsidiary of a multinational group may have different access to capital, technologies or skilled labour than a local SME company. Thus, it must be considered only if the project is part of the multinational group which is not a case for the proposed project activity since both Eiam Rung-Ruang Renewable and Eiam Rungruang Industry are not part of any multinational group. Therefore, the access to finance barrier is valid as demonstrated under section B.5 of the PDD.		PDD, validation team understands that Eiam Renewables is subsidiary of the Eiam Industry. Eiam Industry and Eiam renewable are not part of any other multinational group. However, there is a possibility that, being a subsidiary Eiam Renewables can access capital from Eiam Industry. PP to clarify.	
CL 1 Continued...		The web link is corrected. Regarding the capital from Eiam Industry, kindly refer to the explanation under CAR 9.	2011-10-14	OK. The provided web link is accessible. Validation team has verified the information and confirms that the provided information the classification of the small and medium scale industries is correct.	2011-11-02

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
				The CL is closed.	
CL 2 Table 5 provided in section B.5 of the webhosted PDD includes, submission of letter of intent to UNFCCC and the DNA. However, as per the guidance these events are to be included if the project start date is after 2 August 2008 to demonstrate the CDM consideration. It is required to substantiate, how these actions would represent the serious actions taken by CDM as the project start date is before 2 August 2008.	2011-09-02	Even though the submission of information to the DNA and UNFCCC were not required as per prior consideration guidelines, PPs submitted the letters as precautionary measure. The purpose of the letters was also to inform both DNA and UNFCCC about the project implementation before making any official submission such as webhosting or requesting LoA from the host country. However, given the non-relevance of the letters in the context of additionality demonstration, PPs have removed these milestones from the table 5 in section B.5.	2011-09-13	OK. The response is reflected in section B.5 of the PDD. Hence, the CL is closed.	2011-09-30
CL 3 The monitoring plan is in compliance with the applied small scale methodology (AMS III.H., version 16). However, the method of COD determination of wastewater is not	2011-09-02	The details of the COD measurement are updated in section B.7.1. - The method of COD measurement is revised. - According to sample collection and	2011-09-13	Not OK. COD measurement is updated. However, PP is required to include the number and type of sample used to measure the COD for the sake of transparency and completeness.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
clear. Therefore, PPs to clarify how many samples are collected per day and by what method COD is determined.		analysis, the project plans to monitor COD data by taking samples and testing at least twice a day.		Moreover, as per the webhosted PDD, COD sampling point for COD inlet is before UASB. However, it was changed prior to entry of acidification pond in the revised PDD. PP is required to substantiate the reason for change in the COD sampling location.	
CL 3 continued..		The description of measurement procedure is improved for the sake of transparency. The COD sampling point was revised to be consistent with the system boundary in the baseline scenario. The sampling point just before the acidification pond (in the project scenario) represents the same wastewater characteristics as at the point prior to the first anaerobic lagoon in the baseline scenario. Hence, the COD sample should be collected prior to the acidification pond in order to ensure consistency between the boundaries in both the project and the baseline scenario. As observed from sample log sheets during site visit, it is	2011-10-14	OK. The provided response is satisfactory and is also inline with para 20 of the applied methodology. Hence, the CL is closed.	2011-11-02

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
		evident that there is a reduction in COD levels when comparing COD samples before and after the acidification pond. As explained in the documentation provided by the technology provider, this reduction in COD levels is attributed to the "hydrolysis" and "acidogenesis" processes that occur in the acidification pond. According to the clarifications provided in the letter by the technology provider, there is no methane production (CH4) in this phase of the process. There is only a conversion of organic material (from starch) to sugar and finally volatile fatty acids (VFA). As a result of fermentation, the principal products in this phase of the treatment process are acetate, as well as hydrogen and CO2. During this phase of the process, most of the organic matter is converted to VFAs, leading to a pH level of 3.5-4.0 in the acidification pond. Such pH levels are not tolerated by the bacteria type			

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
		responsible for the Methanogenesis process in the UASB reactor and therefore inhibit the process of methane production within the acidification pond. CO2 emitted from the acidification pond is not accounted as project emissions because the source of these CO2 emissions is renewable biomass (as per para 3, Annex 18, EB23 *Definition of Renewable Biomass*), which according to basic CDM principles is not regarded as an "anthropogenic source" of CO2. Similar to the CO2 emissions resulting from the combustion of renewable biomass (e.g. biomass residues), such CO2 emissions are in a closed natural cycle, whereas the same amount of CO2 is released as the amount captured during the growth of the biomass source. Overall it can be concluded that the COD sampling point prior to the acidification point is the most			

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
		appropriate sampling point for ensuring consistency between baseline and project emission considerations. Furthermore, there are no relevant project emissions from the treatment process within the acidification pond.			
CL 4 PP to clarify the following points with respect to the description of the monitoring plan provided in section B.7 of the PDD : For all the flow meters it is stated the data is taken directly from the meter and data from log sheet is transferred to excel sheet. Flow meter is integrated with SCADA. Hence clarify which readings would be considered for the calculation of emission reductions. In case of energy meters it is stated that the authorities shall be requested for the regular calibration of the meters.	2011-09-02	The monitoring plan in section B.7.1 is revised to include precise source of data to be used for the estimation of emission reductions. In addition to the energy meters, the regular calibration is referred to the authority's requirement which the supporting document is submitted to	2011-09-13	Not OK. The response is not reflected in section B.7.1 of the PDD. OK. The response is reflected in the revised PDD.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	**Date** *(yyyy-mm-dd)*	**Project Participants Response** ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	**Date** *(yyyy-mm-dd)*	**GLC Assessment** ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	**Date** *(yyyy-mm-dd)*
However, for the sake of transparency it is required to clarify the term 'regular' in the context of calibration.		DOE. The calibration of meter is required to be done once a year in case exporting power to grid is more than six months per year.			
CL 4 continued…		Kindly refer to the 'Source of data to be used' in section B.7.1 of the revised PDD.	2011-10-14	OK. The provided information in the PDD adequately addresses the requirement. Hence, the CL is closed.	2011-11-02
CL 5 PPs to clarify whether there is any subsidy available from the government to encourage the biogas projects in the host country and the same shall be included while the demonstration of additionality.	2011-09-02	The project has explained under section B.5 under Access to Finance barrier, page 25 of the PDD that there is a subsidy available from the government to encourage the biogas project. However, reference to such a policy has now been given under the revised PDD. Please note that the subsidy is available but subjective to each individual project with a payment made per milestone achievement and performance so it is not 100% secure. Further discussion on subsidy is not relevant in the light of access to finance barrier. If the investment analysis was used, subsidy would have been considered in the cash flow items in the calculation of IRR.	2011-09-13	Not OK. For the sake of transparency, PP to provide information on the available subsidy from the government.	2011-09-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
CL5 continued..		The information for subsidy is provided in section B.5 of the revised PDD for the sake of transparency. Kindly refer to CAR 7 for more elaboration on E+/E- policy.	2011-10-14	OK. The response is satisfactory. Hence the CL is closed.	2011-11-02
CL 6 With reference to project description provided in section A.2 of the PDD, the starch plant implementation took place by November 2009. As per the chronology of events provided in section B.5 start date of the project activity is 17 May 2008. Thus it is clear both events took place in parallel. However, the project is considered as an existing project in section B.2 which is not clear. .	2012-03-05	The project activity could be considered as greenfield as the decision making and implementation for the project happened in parallel to the implementation of the starch factory. The PDD has been revised to reflect this and baseline has been further substantiated using general guidance for small scale project activities. Please refer to detailed revision of section B.4.	2012-03-16	OK. PP has considered the project as a greenfield project in light of the parallel implementation of the starch factory and the project activity. Accordingly section B.2, B.4 and other relevant section are found adequately revised. Hence, the CL is closed.	2012-03-30
CL 7 In the chronology of events presented in section B.5 of the PDD, it is stated that the first payment to the technology provider was made during May 2009	2012-03-05	The PP made the first payment based on own equity. The subsidy contract was signed with EPPO on 16Dec 2008 where government committed 10mTHB towards the project. This was necessary to convince the banks that the PP is	2012-03-16	OK. The response adequately addresses the finding. It is understood that PP has made the first payment based on the availed subsidy and equity. The stated evidences were submitted to the validation team. Hence the CL is closed.	2012-03-30

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
and the loan was secured in September 2009. It is not clear how PP could make the first payment to the technology provider without securing the loan.		serious about the project. This has been further detailed in revised PDD section B.5.			
CL 8 Efficiency of the baseline boiler is taken as 78% in section B.6.2 of the PDD. However, it is not justified inline with para 30 of latest version of AMS.I.C. (version 19).	2012-03-05	The efficiency value of the boiler is revised to 100% from the 78%. Accordingly the emission reductions are re-calculated. The revised emission reduction calculation sheet is submitted to the validation team.. The considered value is inline with para 30 of latest version of AMS.I.C .	2012-03-16	OK. The response is reflected in the submitted revised PDD inline with para 30 of latest version of AMS.I.C. The submitted revised emission reduction sheet was also assessed and found correct. Hence, the CL is closed.	2012-03-30
FAR 1 With reference to CAR 4 above, During the site visit it was observed that PP is discharging the excess wastewater from the corase screens to the sump through a temporary pipe. PP has indicated that the temporary pipe which is used to discharge excess wastewater to the sump will be removed after the project is fully	2011-09-30	Since the UASB system is still under the commissioning, a temporary pipe has been installed connecting the output of the coarse screens to the sump in order to bypass the UASB reactor and lead the excess wastewater directly to the p lagoons. After completion of the commissioning, the pipe will be removed from the project activity which	2011-10-14	As stated in the response this would be verified by the DOE during the first periodic verification.	2011-11-02

Description of Finding (CAR, CL, FAR) *Describe the finding in a transparent manner i.e. state clearly what required and why; address the context (e.g. section)*	Date *(yyyy-mm-dd)*	Project Participants Response ***This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence***	Date *(yyyy-mm-dd)*	GLC Assessment ***The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.***	Date *(yyyy-mm-dd)*
operational. As the project is not fully operational now, validation team recommends this point has to be verified during the first periodic verification by the verification entity.		can be observed by DOE during the verification.			

ANNEX B: CERTIFICATES OF COMPETENCE

Certificate

Name : Mr. Srikanth Meesa (M.Tech.)
Certificate No. : 006

This document certifies that Mr. Srikanth Meesa , citizen of country India, is assigned as CDM assessment team leader and validator/verifier by Germanischer Lloyd Certification GmbH.

Mr. Srikanth Meesa fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
	TA 1.2: Energy generation from renewable energy sources	
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	
	TA 13.2: Animal waste management	

Hamburg 2011-03-17
Date

GLC Management

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Date: 2011-04-27; Tris

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Certificate

Name : Mr. Karunakar Avuram (B. Eng.)
Certificate No. : 023

This document certifies that Mr. Karunakar Avuram, citizen of India, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. Karunakar Avuram fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
	TA 1.2: Energy generation from renewable energy sources	
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	2011-03-14
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	
	TA 13.2: Animal waste management	

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Certificate

Name : Mr. Stephen Etheridge (Ph. D.)
Certificate No. : 031

This document certifies that Mr. Stephen Etheridge, citizen of UK and with experience in the region of Thailand, is assigned as expert by Germanischer Lloyd Certification GmbH.

Mr. Stephen Etheridge fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	2010-11-22
	TA 1.2: Energy generation from renewable energy sources	
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	2010-11-22
	TA 13.2: Animal waste management	

Hamburg 2011-03-17
Date

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Certificate

Name : Mrs. Ellen Goel (Dipl. Wi-Ing.)
Certificate No. : 041

This document certifies that Mrs. Ellen Goel, citizen of Germany, is assigned as CDM validator/verifier and financial expert by Germanischer Lloyd Certification GmbH.

Mrs. Ellen Goel fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
	TA 1.2: Energy generation from renewable energy sources	
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	
	TA 13.2: Animal waste management	

Mrs. Ellen Goel fulfils GLC's competence requirements to validate financial analysis of CDM project activities. Validity date: 2011-07-14

Hamburg 2011-08-26
Date

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Date: 2011-04-27; Tris

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Certificate

Name : Mr. José Emilio Moreno (Dipl.-Ing.)
Certificate No. : 016

This document certifies that Mr. José Emilio Moreno, citizen of Spain, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. José Emilio Moreno fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	2010-09-25
	TA 1.2: Energy generation from renewable energy sources	2010-10-22
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	2011-03-20
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	
	TA 13.2: Animal waste management	

Hamburg 2011-03-20
Date

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Certificate

Name : Mr. Markus Weber (Dipl.)
Certificate No. : 001

This document certifies that Mr. Markus Weber, citizen of Germany, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. Markus Weber fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)		Validity date:
SS 1:	**Energy Industries (renewable / non-renewable sources)**	
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
	TA 1.2: Energy generation from renewable energy sources	2011-09-09
SS 2:	**Energy Distribution**	
	TA 2.1: Electricity distribution	
	TA 2.2: Heat distribution	
SS 3:	**Energy Demand**	
	TA 3.1: Energy demand	
SS 7:	**Transport**	
	TA 7.1: Transport	
SS 10:	**Fugitive Emissions from Fuels**	
	TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
	TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13:	**Waste Handling and Disposal**	
	TA 13.1: Waste handling and disposal	2008-12-15
	TA 13.2: Animal waste management	

Hamburg 2011-09-09
Date

GLC Management

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