VALIDATION REPORT

SAREMAS SDN BHD

VALIDATION OF THE

METHANE RECOVERY IN WASTEWATER TREATMENT AND UTILIZATION FOR ELECTRICITY GENERATION AT SAREMAS I PALM OIL MILL, SARAWAK, MALAYSIA

BUREAU VERITAS CERTIFICATION

REPORT NO. SINGAPORE-VAL/018/2011

REVISION NO. 05

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Abbreviations

POME	Palm Oil Mill Effluent
IFC	Internal Financial Committee
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
ER	Emission Reduction
CL	Clarification Request
CO_2	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas(es)
I	Interview
DPR	Detail Project Report
FR	Feasibility Report
EB	Executive Board
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
DNA	Designated National Authority
M & P	Modalities and Procedure
VVM	Validation and Verification Manual
MP	Monitoring Plan
NPV	Net Present Value
PO	Purchase Order
MW	Mega Watt
MWh	Mega Watt Hour
O & M	Operation and Maintenance
PP	Project Participant

Date of first issue: 15/01/2012	Organizational unit: Bureau Veritas Certification Holding SAS
Client: Saremas Sdn Bhd.	Client ref.: Mr. Joshua Lim

Summary:

Bureau Veritas Certification has made the validation of the "Methane Recovery in Wastewater Treatment and Utilization for Electricity Generation at Saremas 1 Palm Oil Mill, Sarawak, Malaysia" project of Saremas Sdn Bhd located in Saremas I palm oil mill, Sarawak, Malaysia 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodologies AMS III.H (Version 16) and AMS I.C (Version 19) and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: SINGAPORE -val/018 /2011	Subject Group: CDM	
Project title: Methane Recovery in Wastewater Treatment and Utilization for Electricity Generation at Saremas 1 Palm Oil Mill, Sarawak, Malaysia		
Work carried out by: Mr. Muralidhar H.B (Team Leader) Mr. Ram M. Desai (Team Member) Mr. Toh Ket Tiong (Local Legal Expert) Mr. Sushil Budhia (External Financial Expert)		
Internal Technical Review carried out by: Mr. Bhavesh Prajapati		
Date of this revision: 03/08/2012	Rev. No.: 05	Number of pages: 220

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Work approved by:

Mr. Flavio Gomes

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1 INTRODUCTION

Saremas Sdn Bhd has commissioned Bureau Veritas Certification to validate its CDM project "Methane Recovery in Wastewater Treatment and Utilization for Electricity Generation at Saremas I palm oil Mill, Sarawak, Malaysia" (hereafter called "the project") at Saremas I palm oil mill, Sarawak, Malaysia.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and 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).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER*	TASK PERFORMED
Lead Verifier	Mr. Muralidhar H.B.	☒Yes ☐ No	☒DR ☒SV ☐RI
Verifier	Mr. Ram M. Desai	☒Yes ☐ No	☒DR ☒SV ☐RI
Technical	Mr. Toh Ket Tiong	☐Yes ☒ No	☒DR ☒SV ☐RI

Specialist			
Financial Specialist	Mr. Sushil Budhia	☐Yes ☒ No	☒DR ☐SV ☐RI
Internal Technical Reviewer (ITR)	Mr. Bhavesh Prajapati	☒Yes ☐ No	☒DR ☐SV ☐RI
Specialist supporting ITR		☐Yes ☐ No	☐DR ☐SV ☐RI

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The completed validation protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Project Design Document (PDD) submitted by M/s Saremas Sdn Bhd and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, M/s Saremas Sdn Bhd. revised the PDD and resubmitted it on 03/08/2012.

The validation findings presented in this report relate to the project as described in the PDD version 02, Dated 03/08/2012.

2.2 Follow-up Interviews

On 27/06/2011 and 28/06/2011 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Saremas Sdn Bhd (Project Participant), KPMG Services Pte. Ltd. (CDM Consultant) and Local Stake Holders were interviewed (See References) . The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Saremas Sdn Bhd	➢ CDM Awareness ➢ CDM Revenue Consideration in Project Budget Approval ➢ Prior Consideration of the Project ➢ Host DNA Approval Process and Approval ➢ Feasibility Report ➢ Project Design and implementation ➢ Baseline Development ➢ POME Treatment Process (Existing) and design feature of treatment units ➢ Data Collection, Archiving and recording ➢ Technical Specifications of project equipment's ➢ Quality Control on monitoring plan ➢ Compliance with national Laws and regulations ➢ Metering System on Site
LOCAL Stakeholder	➢ Stakeholders issues i.e. sustainability due to project implementation ➢ Environmental Pollution ➢ Verbal feed back about project implementation ➢ Confirmation of the local stakeholders meeting conducted by the Project Participant
KPMG Services Pte. Ltd. (CDM CONSULTANT)	➢ Selection of methodology ➢ Baseline determination ➢ Additionality discussions ➢ Monitoring Plan ➢ Financial Analysis ➢ GHG emission reduction Calculations ➢ Environmental Impacts

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

Corrective Action Requests (CAR) is issued, where:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
(b) The CDM requirements have not been met;
(c) There is a risk that emission reductions cannot be monitored or calculated.
The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

2.4 Internal Technical Review

The validation report underwent an Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Lead Verifier provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.

3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 06 Corrective Action Requests (CARs) and 09 Clarification Requests (CLs).

All CARs and CLs raised during validation were closed by PP satisfactorily. Validation Team has reviewed responses provided by the PP before the formal closure of the CARs and CLs.

3.1 Approval (49-50)

The are two parties involved in the proposed CDM project activity i.e. Malaysia as host party and Denmark as Annex I party. It is mentioned that the participation of both parties is voluntary.

The Project Participant M/s Saremas Sdn Bhd has obtained approval from Local DNA i.e. Environmental Management and Climate change Division of Ministry of natural Resources and Environment. The Project participant provided a copy of the letter of approval (Vide letter Ref. No. NRE(S) 602-2/11JLD 15(32) Dated 13/04/2012)/03/ to the validation team. The validation team confirmed the authenticity of the approval by checking the original letter and by confirming with the DNA Authority through Email.

The DNA of Denmark i.e. Danish Energy Agency issued the Letter Of Approval Ref. KKR / File No. – 1602/1102-0089 Dated 07/05/2012**/04/,** authorizing Nordjysk Elhandel A/S as project participant has been submitted to the validation team by the project participant.

Authenticity of both LoAs was confirmed via the official websites of both DNAs and Email communication with Malaysian DNA's officials.

3.2 Participation (54)

The host party for this project is Malaysia. Host party has ratified the Kyoto Protocol on 04th September 2002. This was reconfirmed by visiting UNFCCC website using following link

http://maindb.unfccc.int/public/country.pl?country=MY

Ratification Status:

Kyoto Protocol	
Date of signature:	12 March 1999
Date of ratification:	04 September 2002

As reported above in Section 3.1 the participation of the project participant has also been approved by the Environmental Management and climate change division of Ministry of Natural resources and Environment, Malaysia as DNA.

The Validation team verified the original letter of approval ref. NRE(S)602-2/11JLD 15(32) Dated 13/04/2012 and confirmed that the letter of approval clearly states that Malaysia has ratified the Kyoto Protocol and the approval is for the voluntary participation in CDM project activity. The letter also mentions that Project activity fulfills all national criteria for the CDM activities and will help in achieving sustainable development in host country i.e. Malaysia.

In line with the condition of the DNA PP has identified Denmark as Annex I country, to support the project activity bilaterally. And Validation team has verified the Kyoto protocol ratification status of Denmark from the unfccc website and is provided as below.

http://maindb.unfccc.int/public/country.pl?country=DK

Ratification Status:

Kyoto Protocol	
Date of signature:	29 April 1998
Date of ratification:	31 May 2002

PP has obtained the Letter of approval from Annex I party DNA i.e Danish Energy Agency and submitted to validation team for verification. Validation team has verified the original letter off approval Dated 07/05/2012 bearing Ref. KKR and File No. 1602/1102-0089. The letter is for the voluntary participation authorizing participation of Nordjysk Elhandel A/S in the project activity. Letter of Approval is specific to the project activity Title “Methane Recovery in Waste Water Treatment and utilization for Electricity Generation at Saremas 1 Palm oil mill, Sarawak, Malaysia”. On the basis of verification of both Letter of approvals submitted by PP, the validation team concludes that the project activity is approved by both participating country DNA’s and satisfies criteria

established by the approving DNA's. Hence the project activity is in compliance with Para 51-54 of VVM 1.2.

3.3 Project design document (57)

In line with requirement of Para 56 of VVM, version 1.2, the validation team reviewed the web hosted PDD against the CDM EB guidance document for completion of simplified PDD. The validation team validated that the Project Design Document is based on the currently valid CDM-SSC-PDD template, Version 03. While reviewing the web hosted PDD, the validation team observed that webhosted PDD complies with the latest form of the guidance documents for completion of PDD and the information therein accordance with the applicable guidance document and thus complying with para 57 of VVM Version 1.2

The validation team hereby confirms that the webhosted PDD Version 01 Dated 11/04/2011 complies with the latest forms of the guidance documents for completion of PDD.

3.4 Changes in the Project Activity

The validation team has observed during site visit that the project activity has been implemented in accordance with the description provided in the web hosted PDD. Thus, no changes were observed during site visit as compared to details mentioned in web hosted PDD /Ref: 01/.

However, the final PDD Ver-02, dated 03/08/2012 has following changes as compared to PDD Ver. 01 that was web hosted.

1. PDD section A.2 Table 1 revised to correct the rated capacity of existing steam turbine and diesel generators (Baseline scenario of captive power generation) based on the CAR raised during site visit.
2. PDD section A.2 Table 2 revised to show the electricity supply and demand before and after CDM implementation in more transparent manner based on the CAR raised during site visit.
3. PDD section A.4.2 is revised to explain anaerobic digestion process and COD reductions in two stage Anaerobic digestion clearly. Two stage anaerobic digestion is resulting in to the 80% reduction in COD from input COD (raw POME from Mill) and subsequently to 50% reduction in COD (input from Stage 1 Anaerobic Digestion Process).This change has impact on the CER calculation.
4. PDD Section A.4.2 is revised to incorporate correct operation life time of Biogas engine i.e. 10 years from 25 years.
5. PDD section A.4.3 table for Annual CER estimation is revised based on the changes in the input parameters (refer point 1, 2 & 4 above)

6. PDD section B.5 Table 6 Chronological Events revised to incorporate financial approval to start Phase I project implementation Dtd. 11th February 2010, and project commissioning date is changed to actual date i.e. 11th April 2011.

7. PDD Section B.5 Investment Barrier Section is completely revised and PP has changed simple cost analysis to NPV analysis for demonstrating financial additionality of the project.

8. PDD Section B.6.1 Table 10 parameters used in project emissions calculation due to methane recovery are revised based on the raised CAR and Clarifications. Specific changes in the parameters are $P_{biomass\ based\ turbine}$, P_{diesel}, $COD_{ww.discharge}$ (Due to change in the efficiency of COD removal based on the supporting documents)

9. PDD section B.7.1 Data and parameters monitored is revised to include the accuracy levels of monitoring equipment's and various values applied to calculate emission reductions e.g. Emission factor of captive grid changed to 0.0533 tCO2/MWH, annual quantity of electricity generated by the biogas generation system (EG_{biogas}) changed to 4,380 MWH, $COD_{discharge}$ changed to 0.005285, Annual value of biogas recovered ($BG_{recovered.y}$) changed to 4,462,141 m^3 , Annual electricity generated by diesel generator 1 & 2 ($EG_{diesel\ generator1\&2}$) changed to 934.4 MWh (each generator)

10. PDD Section B.6.4 Summary of the Ex-ante estimation of emission reductions is revised to incorporate changes in project activity emissions due to wastewater discharge, fugitive emissions and estimation of overall emission reductions, based on the changes in various parameters described above.

11. Added Baseline information in Annex 3 of the PDD for Electricity generation during baseline period for one year.

12. Section B.5. is revised to provide further clarity on the Prevailing practice Barrier.

3.5 Project description (64)

Bureau Veritas Certification Recognizes the initiative of the project participant in helping country to fulfill its goals of promoting sustainable development.

The proposed CDM project activity involves POME treatment in controlled anaerobic conditions to capture Methane gas to avoid GHG emission in the atmosphere. PP has planned to implement the project activity in two different phases; the phase separation is defined in the PDD and is given as below.

Phase I – Installation of Anaerobic Reactors / Digesters, Biogas recovery and flaring System
Phase II – Installation of Biogas engine for Electricity generation from recovered biogas during Phase I implementation.

Phase wise implementation details are given in following paragraph.

Phase I Implementation:
Phase I implementation involves recovery of Methane / Biogas generated during anaerobic degradation of POME, through sequential Anaerobic reactors / digesters. The treatment process involves 03 Anaerobic reactors / digesters, 02 Clarifiers and biogas recovery and flaring system, which will replace existing conventional treatment system i.e. open anaerobic ponds without Methane / Biogas recovery.

Sequential anaerobic reactors installed to treat up to 600 M^3/Day of POME generating from palm oil mill. After pre-treatment, 600M^3/day of raw POME will be distributed into two (02) anaerobic digesters from a common feeding tank located near the mixing pond, while any excess raw POME will flow to the two existing anaerobic ponds which will not be part of the project activity. The two digester tanks provide approximately 689 M^3 of gas storage and balancing capacity each. Internal and external piping and mixing systems are provided in each of the reactor. The capacity and residence time for each of the two digesters is 3,488 M^3 and 11.63 days respectively. The two anaerobic digesters will have COD removal efficiency of 80%, which is confirmed based on the project design document. From these two digesters, the wastewater is fed into first clarifier with a capacity of 1,045.58 M^3.

The clarified wastewater from the first clarifier is then further treated in the third anaerobic digester with a capacity and residence time of 3,488 M3 and 6.46 days, respectively. This anaerobic digester is designed to achieve 50% COD removal efficiency. The discharged wastewater from this digester is transferred to the second clarifier where the clarified wastewater will be further treated in the existing aerobic pond downstream. All three anaerobic digesters will be made of mild steel and have fixed roofs and are expected to have an overall COD removal efficiency of 90%. This is confirmed using mass balance reaction of two stage Anaerobic Digestion process and related stoichiometric calculation, chemical reaction involved in the generation of Methane gas by degradation of organic matter present in the POME is $C_6H_{12}O_6 \rightarrow 3CO_2 + 3CH_4$ and related.

The slurry separated by the two clarifiers will be collected in a sludge holding tank before being further dewatered for sludge concentration. The sludge will be disposed to plantation in aerobic condition while the treated

wastewater will be fed into the subsequent aerobic pond together with the clarified wastewater from second clarifier.

The produced biogas generated in the anaerobic digesters is transported to the biogas tank of 51.5 M^3 capacity. In Phase I, this system is connected to a gas flaring system for flaring of the recovered biogas. In Phase II, part of the recovered biogas from the biogas tank will be combusted in a biogas engine in which Electricity will be generated thus, substituting current use of diesel generators. Any unused biogas will be flared in a controlled way. Flame and lightning arrestors, shut-off valves and other safety equipment are provided in the system.

Phase II Implementation:
Phase II Implementation involves utilization of recovered methane / Biogas from anaerobic digester / reactors into the biogas engine to generate electricity for captive consumption. This phase will replace Diesel Generators with Biogas Engine there by eliminating consumption of Fossil fuel i.e. Diesel.

Total Annual CER estimated through implementation of this Small scale CDM project is given as below
Year 01 – 23,101 tCO_2 (on completion of Phase I Project Implementation)
Year 02 to 10 – 24,230 tCO_2 (on completion of Phase II Project Implementation)
Year 11 to 21 – 23,101 tCO_2

Technical specifications provided in the webhosted PDD were found matching with the specifications provided in purchase orders / agreements signed with various vendors, contractors and suppliers selected for Phase I Project Implementation.

During site visit it was confirmed that the Phase I implementation is completed and Anaerobic reactors and Flare system are under commissioning trials. The conditions of Project equipment verified and found that all equipment's are purchased new and are matching with the EPC contract signed with the Vendor.

The DOE hereby confirms that the project description in webhosted PDD (rev 01) is accurate and complete in all respects and that there are no changes to the project activity/design or boundary as compared to the webhosted PDD.

Project Duration and Crediting period
The Phase I of the project activity is designed for more than 25 (Twenty Five) years of lifetime. It was validated from the operational lifetime shown in the PDD section A.4.2 which is adequately supported by the technical statement issued by Rekanan Jurutera Sdn Bhd., Dtd. 19/04/2011 for operating lifetime of anaerobic digester tanks. The life time of the gas engine is stated to be 10 years as per the letter issued by

Shengli Oilfield Shengli Power Machinery Group Company Ltd., dated 30/09/2011. Hence, the emission reductions on account of gas engine operation will be claimed only for 10 years though the chosen crediting period is 21 years i.e. renewable crediting period.

Starting date of the project activity is 12/02/2010, which is confirmed through review of EPC Contract Agreement signed by PP with Vendor for Phase I implementation of project /07/. The PP has opted for a renewable crediting period, with maximum 02 renewals of 7 years each. The project activity has started its operation on 11/04/2011 which was validated using the commissioning report for anaerobic reactors.

The crediting period of the project activity will start on either 31/10/2012 or after the registration of the proposed project activity. The validation team noted that the expected date for start date of crediting period is appropriate. In case, the registration of the proposed project later than this date, the PDD provides confirmation that crediting period will start only after the registration of the project activity.

3.6 Baseline and monitoring methodology

3.6.1 General requirement (76-77)

The Project "Methane recovery in Wastewater Treatment and utilization of Electricity Generation at Saremas 1 Palm Oil Mill, Sarawak, Malaysia" uses two approved methodologies as mentioned below

AMS IIIH (Version 16) – "Methane Recovery in Wastewater Treatment"
AMS IC (Version 19) – "Thermal energy for the user with or without electricity"

It may be noted that the version of applied baseline and monitoring methodology AMS IC was version 18 at the time of web hosting, However, the during course of validation the applied methodology has been upgraded and is now revised to version 19 by CDM EB. Hence, the project participant has also used the latest version of AMS I C, i.e. version 19.

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

As per AMS III H (Version 16):

Applicability Condition-1 (Sr. No. 1 (f)of methodology): *This methodology comprises measures that recover biogas from biogenic organic matter in wastewater by means of (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).

The Project activity involves the introduction of Sequential stage of anaerobic waste water treatment of POME (Palm Oil Mill Effluent) with methane recovery and combustion without sludge treatment. This replaces existing anaerobic wastewater treatment system without methane recovery i.e. Anaerobic Lagoons. This was validated during site visit on 27/06/2011. PP has installed Anaerobic Reactors / Digesters and suitable Methane capture and Flaring system to avoid GHG emissions in the atmosphere.

The POME generating from the palm oil mill is having rich content of Biogenic organic matter with COD values ranging from 50000 – 55000 Mg/L, this was validated through the Analysis reports presented by the PP during site visit as well as reference documents submitted by the PP. /21/ http://www.academicjournals.org/ajb/PDF/pdf2010/19Apr/Baharuddin%20et%20al.pdf

Hence this applicability condition is fulfilled.

Applicability Condition-2 (Sr. No. 2 (f)of methodology): *In cases where baseline system is anaerobic lagoon the methodology is applicable if: (a) The lagoons are ponds with a depth greater than two meters, without aeration. The value for depth is obtained from engineering design documents, or through direct measurement, or by dividing the surface area by the total volume. If the lagoon filling level varies seasonally, the average of the highest and lowest levels may be taken; (b) Ambient temperature above 15℃, at least during part of the year, on a monthly average basis;(c) The minimum interval between two consecutive sludge removal events shall be 30 days.*

The Project Baseline is Anaerobic Lagoon without Methane recovery. Existing POME Treatment system is having two unlined anaerobic Lagoons with a size of 137M (L) x 76M (W) x 4.5M (D), the size verification was done through the design drawing of Anaerobic Lagoons Dtd. March 1995, where SWD of the Lagoon is shown as 3.0M, which is more than the applicability condition i.e. 2.0M

The Ambient Temperature on monthly average is above 15^{o}C, verified through Website www.weatherunderground.com and found that Average low temperature in the project area is in the range of 23-25^{o}C and Average high temperature is in the range of 30-31^{o}C.

There was no de-sludging of Anaerobic lagoons done by the PP, however periodic scum removal is done regularly, last scum removal was done in the month of March 2011, which meets the criteria of AMS for minimum

desludging frequency of 30 Days between two consecutive sludge removals.

Hence this applicability condition is fulfilled

Applicability Condition-3 (Sr. No. 3 (a) of methodology): *The recovered biogas from the above measures may also be utilized for the following applications instead of combustion/flaring (a)Thermal or mechanical, electrical energy generation directly;(b) Thermal or mechanical, electrical energy generation after bottling of upgraded biogas, in this case additional guidance provided in Annex 1 shall be followed; or (c) Thermal or mechanical, electrical energy generation after upgrading and distribution, in this case additional guidance provided in Annex 1 shall be followed:(i) Upgrading and injection of biogas into a natural gas distribution grid with no significant transmission constraints;(ii) Upgrading and transportation of biogas via a dedicated piped network to a group of end users; or (iii) Upgrading and transportation of biogas (e.g. by trucks) to distribution points for end users; (d) Hydrogen production;(e) Use as fuel in transportation applications after upgrading.*

The project activity involves Methane gas / biogas recovery from the anaerobic digesters and utilization of recovered Methane gas / biogas for electricity generation through 0.5 MW capacity Biogas engine (to be installed) during Phase II implementation of this small scale CDM project. This was validated through Phase II investment break down summary and the proposals received form the vendor for installing Biogas Engine. Hence this applicability condition is fulfilled.

Applicability Condition-4 (Sr. No. 4 of methodology): *If the recovered biogas is used for project activities covered under paragraph 3 (a), that component of the project activity can use a corresponding methodology under Type I.*

As per the Applicability condition 3 of Approved Methodology PP has selected option 3(a) i.e. utilization of biogas for electrical energy generation. To develop the baseline and monitoring methodology PP has selected Approved Methodology AMS I.C (Version 19) “Thermal energy for the user with or without electricity” which is corresponding to Type I category as per Appendix B of Simplified modalities and procedures. Hence this applicability condition is fulfilled.

Applicability Condition-5 (Sr. No. 5 of methodology): *For project activities covered under paragraph 3 (b), if bottles with upgraded biogas are sold outside the project boundary, the end-use of the biogas shall be ensured via a contract between the bottled biogas vendor and the end-user. No emission reductions may be claimed from the displacement of fuels from the end use of bottled biogas in such situations. If however the end use*

of the bottled biogas is included in the project boundary and is monitored during the crediting period CO2 emissions avoided by the displacement of fossil fuel can be claimed under the corresponding Type I methodology, e.g. AMS-I.C "Thermal energy production with or without electricity".

Project activities are covered under Paragraph 3(a) only and PP is not intending to sale bottled upgraded biogas outside the project boundary and hence this methodological condition is not applicable.

Applicability Condition-6 (Sr. No. 6 of methodology):*For project activities covered under paragraph 3 (c) (i), emission reductions from the displacement of the use of natural gas are eligible under this methodology, provided the geographical extent of the natural gas distribution grid is within the host country boundaries.*

Project activities are covered under Paragraph 3(a) only and project activity does not include emission reductions from the displacement of the use of natural gas, hence this methodological condition is not applicable.

Applicability Condition-7 (Sr. No. 7 of methodology): *For project activities covered under paragraph 3 (c) (ii), emission reductions for the displacement of the use of fuels can be claimed following the provision in the corresponding Type I methodology, e.g. AMS-I.C.*

Project activities are covered under Paragraph 3(a) only and project activity does not include emission reductions for the displacement of fuels, hence this methodological condition is not applicable.

Applicability Condition-8 (Sr. No. 8 of methodology): *In particular, for the case of 3 (b) and (c) (iii), the physical leakage during storage and transportation of upgraded biogas, as well as the emissions from fossil fuel consumed by vehicles for transporting biogas shall be considered. Relevant procedures in paragraph 11 of Annex 1 of AMS-III.H "Methane recovery in wastewater treatment" shall be followed in this regard.*

Project activities are covered under Paragraph 3(a) only and project activity does not include physical leakage during storage and transportation of upgraded biogas, as well as the emissions from fossil fuel consumed by vehicles for transporting biogas emission reductions, hence this methodological condition is not applicable.

Applicability Condition-9 (Sr. No. 9 of methodology): *For project activities covered under paragraph 3 (b) and (c), this methodology is applicable if the upgraded methane content of the biogas is in accordance with relevant national regulations (where these exist) or, in the absence of national regulations, a minimum of 96% (by volume).*

Project activities are covered under Paragraph 3(a) only and Project activity does not include upgradation of Methane generating form the

POME Treatment in anaerobic digesters and hence this methodological condition is not applicable.

Applicability Condition-10 (Sr. No. 10 of methodology): *If the recovered biogas is utilized for the production of hydrogen (project activities covered under paragraph 3 (d)), that component of the project activity shall use the corresponding methodology AMS-III.O "Hydrogen production using methane extracted from biogas".*

Applicability Condition-11 (Sr. No. 11 of methodology): *If the recovered biogas is used for project activities covered under paragraph 3 (e), that component of the project activity shall use corresponding methodology AMS-III.AQ "Introduction of Bio-CNG in road transportation".*

Project activities are covered under Paragraph 3(a) only and Project activity does not include Use of methane gas as fuel in transportation applications after upgrading.

Applicability Condition- 12 (Sr. No. 12 of methodology): *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.*

Project activity involves installation of new Anaerobic Digesters in an existing Palm Oil Mill where POME was treated in Open lagoon system in baseline condition. Hence the project activity is neither a greenfield project nor a capacity addition of the wastewater or sludge treatment system compared to the designed capacity of the baseline treatment system.

Applicability Condition-13 (Sr. No. 13 of methodology): *The location of the wastewater treatment plant as well as the source generating the wastewater shall be uniquely defined and described in the PDD.*

The Location of the wastewater treatment plant as well as the source generating the wastewater has been clearly defined in the PDD section A.4.1. This is validated during site visit and the geographical coordinates provided in the PDD are also found correct. Hence this applicability condition is fulfilled.

Applicability Condition-14 (Sr. No. 14 of methodology) : *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.

The Project activity is expected to generate annual average emission reductions of 24,230 $_tCO_2$ during the estimated crediting period, which is much below the eligibility cap of 60,000 $_tCO_2$ / Annum. This is validated during site visit and through various project documents including Emission reduction calculation spreadsheet submitted by the PP. Hence this applicability condition is fulfilled.

As per AMS IC (Version 19)

Applicability Condition-1 (Sr. No. 1 of methodology): *This category 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.*

On completion of Phase II Implementation, this project activity shall be utilizing generated Methane gas from the anaerobic reactors / digesters for electricity generation using biogas engine. This is validated during site visit and through various project documents submitted by PP i.e. Phase II investment break down summary, Proposals submitted by the Vendor for 0.5 MW capacity biogas engine.

Applicability Condition-2 (Sr. No. 2 of methodology): *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. 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.*

The Project activity involves utilization of Biogas generating from POME Treatment in an anaerobic digester, for generating electricity using Biogas engine, this is not categorized as cogeneration system, hence this methodological condition is not applicable.

Applicability Condition-3 (Sr. No. 3 of methodology)*: Emission reductions from a biomass cogeneration system can accrue from one of the following activities:*

(a) Electricity supply to a grid;

(b) Electricity and/or thermal energy (steam or heat) production for on-site consumption or for consumption by other facilities;

(c) Combination of (a) and (b).

The Project activity involves utilization of Biogas generating from POME Treatment in an anaerobic digester, for generating electricity using Biogas engine, this is not categorized as cogeneration system, hence this methodological condition is not applicable.

Applicability Condition-4(Sr. No. 4 of methodology): *The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal*

PP has decided to install biogas engine to generate electricity using biogas generated during phase II implementation of project. The total rated electrical energy generation capacity of the project equipment i.e. biogas Engine is considered as 0.5 $MW_{electrical}$, which is much lesser than 45 MW $_{Thermal}$. This is validated during site visit and through various project documents submitted by PP i.e. Phase II investment break down summary, Proposals submitted by the Vendor for 0.5 MW capacity biogas engine.

Applicability Condition-5 (Sr. No. 5 of methodology): *For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel, shall not exceed 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).*

The Project activity involves utilization of only biogas for generating electricity in Phase II, hence this is not a co-fired process and therefor this methodological condition is not applicable

Applicability Condition- 6 (Sr. No. 6 of methodology): *The following capacity limits apply for biomass cogeneration units:*

a. *If the project activity includes emission reductions from both the thermal and electrical energy components, the total installed energy generation capacity (thermal and electrical) of the project equipment shall not exceed 45 MW thermal. For the purpose of calculating this capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e. for renewable energy project activities, the maximal limit of 15 MW(e) is equivalent to 45 MW thermal output of the equipment or the plant);*

b. *If the emission reductions of the cogeneration project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from the electricity component), the total installed thermal energy production capacity of the project equipment of the cogeneration unit shall not exceed 45 MW thermal;*

c. *If the emission reductions of the cogeneration project activity are solely on account of electrical energy production (i.e. no emission*

reductions accrue from the thermal energy component), the total installed electrical energy generation capacity of the project equipment of the cogeneration unit shall not exceed 15 MW.

The Project activity is not a cogeneration project activity and hence this methodological condition is not applicable.

Applicability Condition- 7 (Sr. No. 7 of methodology): *The capacity limits specified in the above paragraphs apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should comply with capacity limits in paragraphs 4 to 6, and should be physically distinct from the existing units.*

The Project activity is not a cogeneration project activity and hence this methodological condition is not applicable.

Applicability Condition- 8 (Sr. No. 8 of methodology): *Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category.*

PP is installing new biogas engine (replacing existing Diesel Engines) for generating electricity utilizing captured Methane gas from anaerobic treatment of POME and hence Project activity does not involve any retrofitting or modification of existing facility for renewable energy generation, hence this methodological condition is not applicable.

Applicability Condition- 9 (Sr. No. 9 of methodology)*: New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies"*

PP will be installing new Biogas Engine of 0.5 MW capacity for generating Electricity, by replacing existing diesel engines of similar capacity in an existing Palm oil mill facility, hence the project activity is neither a greenfield project nor involving capacity additions compared to the baseline scenario. The methodological condition is not fulfilled.

Applicability Condition-10 (Sr. No. 10 of methodology): *If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation.*

Project activity involves utilization of methane gas generating form the POME treatment for electricity generation and hence there is no solid biomass fuel will be used. The methodological condition is not fulfilled.

Applicability Condition-11(Sr. No. 11 of methodology): *Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions.*

Project activity involves utilization of methane gas generating form the POME treatment for electricity generation and hence there is no solid biomass fuel will be used and therefore there is no need to establish monitoring requirement to monitor the source of renewable biomass to account emissions associated with biomass production. The methodological condition is not fulfilled.

Applicability Condition-12 (Sr. No. 12 of methodology)*: If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.*

The Electricity generated by utilizing Methane gas in project activity will be utilized for the captive consumption within project boundary and hence there is no need to establish contract between supplier and consumer. Hence this methodological condition is not applicable.

Applicability Condition-13 (Sr. No. 13 of methodology)*: 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 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.*

Project activity does not apply this methodology as stand alone, Type III component of SSC methodology i.e. AMS IIIH is also considered, hence this methodological condition is not applicable.

Applicability Condition-14 (Sr. No. 14 of methodology): *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. 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.

Project activity involves utilization of methane gas to generate electricity using biogas engine and hence there is no charcoal based biomass energy generation takes place during the project activity. This methodological condition is not fulfilled.

The Validation Team hereby confirms that the selected baseline and monitoring methodologies AMS IIIH (Version 16) and AMS IC (Version 19) are previously approved by the CDM Executive Board, and both are applicable to the project activity, which, complies with all applicability conditions therein.

As stated above the project activity involves

- Emission reduction of 24,230 tCO_2 per Annum under Type III category, which is less than the 60 $ktCO_2e$/y and hence meets the applicability criteria specified in Para 3 (a) (III) of General Guidelines to SSC CDM methodologies (Version 17)

- Total Rated capacity of the project equipment i.e. Biogas Engine utilized to generate electricity from Biogas / Methane due the project activity is 0.5 MW electrical, which is less than the specified Cap of 15 MW_e under Type I category as per Para 3 (a) (III) of General Guidelines to SSC CDM methodologies (Version 17). This condition was validated by checking Design calculations and IFC budget approvals.

The Project activity is not a de-bundled component of a large scale project activity as there is no registered or application to register a small scale project activity with the project participant in the same project category and technology measure within previous two years whose project boundary is within 1KM of the proposed small scale activity at the closest point, as committed in the PDD.

The DOE hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average

annual emissions reductions, which are not addressed by the applied methodology.

3.6.2 Project boundary (80)

Validation Team has validated the project boundary through the description in the PDD, Feasibility report and Project technical document & Drawings submitted during site visit.

Site Visit was made on 27/06/2011 and 28/06/2011 to the project site at Saremas 1 Palm Oil Mill, Sarawak, Malaysia. During site visit Project boundary was physically verified and found that complying with the description provided in the PDD. Details of project boundary encompassing various equipment's under both methodologies is mentioned as below

1. Under AMS IIIH (Version 16) - a project boundary is the physical geographical site where the wastewater treatment takes place. Hence project boundary for this project is the POME Treatment Facility i.e. Anaerobic Lagoons in Baseline Scenario and Anaerobic Digesters and ancillary equipment's in the Project scenario. Project boundary in project scenario involves following equipment's under AMS IIIH (Version 16)

- Waste water feeder tank / pond
- Anaerobic Digesters (03 No's)
- Clarifier (02 No's)
- Flaring system (01No.)
- Sludge Compactor (01 No)
- Biogas Collection and transportation system

2. Under AMS IC (Version 19) –Physical geographical site of the project equipment producing the renewable energy and it is further extended to the industrial facility where generated renewable energy is consumed / utilized. The proposed project delineates the project boundary which covers Phase II implementation where Diesel engines will be replaced by installing biogas engines to generate electricity using methane / biogas generated during Phase I implementation.

The project boundary under AMS IC was assessed during site visit where Validation team seen the existing set up of electricity generation equipments which involves three (03) Diesel gen sets and two (02) Turbines. During site visit it was noticed that the information provided in the PDD is not in line with the actual on site situation, PP has not given correct rated capacity details of diesel gen sets and turbine, hence CAR1 was raised. The response to the CAR 1 was verified in detailed and found that PP has corrected relevant information in PDD version 2, hence CAR 1 was closed.

As described in the PDD section A.2, there was 2 Diesel generators of 320 KW capacities each were operating during baseline, hence PP has decided to replace these two generators with on 0.5 MW biogas generator. The Selected biogas capacity is found lesser that he baseline capacity i.e. 0.64 MW (320 KW + 320 KW). PP will install this 0.5 MW capacity biogas engine for generation of the electricity, this was confirmed by the Validation team from the quotations and purchase order requisitions for the biogas engine and ancillary equipment's and found in line with the emission reduction calculations.

Based on the above assessment, the DOE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

3.6.3 Baseline identification (87-88)

The steps taken to assess the requirement given in paragraph 81 and 82 of the VVM are described below:

PP has utilized two approved methodologies to develop this small scale CDM project as mentioned in the section 3.6.1 of this report. In accordance with the methodology PP defines baseline referring to the following methodological conditions,

As per para 1(f) of AMS IIIH 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.

PP considers continuation of the existing system (i.e. treating POME in anaerobic ponds / lagoons with no biogas recovery and electricity generation using diesel generators) is the most plausible baseline scenario. This is in compliance with EB 58 Report, Annex 23.

It was confirmed through publically available information and various studies /20//21/ that open lagoon system is the prevalent mode of Palm Oil Mill Effluent treatment in Malaysia. This is also supported by a literature published by Palm Oil board of Malaysia /24/.

The present open lagoon wastewater treatment facility is able to treat the POME as confirmed during the site visit and from the engineering drawings /40//41/. In the baseline scenario, PP is treating POME in 02 (Two) unlined open lagoons having dimensions 137M(L) x 76M(W) x 4.5M(D), the total capacity of both lagoons which can contain the wastewater is 93708 m3 while the Palm Oil Mill produces 867.152 m3/Day of wastewater. The waste water generation quantity was confirmed using the installed capacity of Palm oil mill for processing

FFB's (Fresh Fruit Bunches), for validation PP has supported production records and P&ID drawings/44/,/45/&/46/. In the project scenario, Anaerobic Reactors are built to treat the 600 m3/Day of wastewater produced from the Palm oil mill and the total capacity of all three anaerobic reactors is 10464 m3/37/ with an adequate retention time required for the anaerobic treatment process. Hence, in the absence of the project activity, open lagoon wastewater treatment will likely continue as this is the business-as-usual (BAU) scenario and the present open lagoon facility is able to treat the wastewater.

According to para 16 of AMS IC, Version 19 for the 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 the emission factor for the fossil fuel. In this project perspective Diesel is the fossil fuel which will be displaced by Methane / biogas generating from the POME treatment facility in project scenario.

For electricity generation, Diesel generators and diesel consumption will continue to be used as the fuel for generating electricity as there is no methane being captured in the baseline. Implementing the project activity without incentives from the CDM is not feasible as demonstrated in section 3.7.3 of this report. Thus, the baseline scenario for the project activity is the continuation of the current open lagoon wastewater treatment system with Electricity demand met by the combustion of Diesel.

In accordance with the Para 20 of AMS I.C, Version 19, PP has calculated the baseline emissions due to electricity generation using fossil fuel i.e. diesel during pre-project scenario in a conservative and transparent manner.

During pre-project scenario PP is generating electricity from two sources to cater electrical load of Palm oil mill, Palm plantation and colony lighting as explained below

1. Electricity generation from Biomass fuel: PP has one Palm Kernel shell (PKS) fired biomass Cogeneration boiler supplying steam to palm oil mill process and electricity generation through turbine operation. PP has two (02) 1600 MW and (01) 960 MW rated capacity turbines at site specially to cater the Palm oil mill electricity load it also caters the auxiliary lighting load of Palm plantation and Colony and auxiliary operational load of non-process equipment's in the Palm oil mill, when Palm oil mill is in operation. During non-production hours of Palm oil mill it is very difficult to operate biomass boiler and turbines as there is no process steam

requirement, hence PP has set of Diesel generators to generate electricity during non-production hours of Palm oil mill as there is no Grid electricity available in the Palm plantation. This scenario is verified and confirmed by the Validation team during the site visit. PP has demonstrated the Electricity demand and generation using baseline information in the form of energy generation logs of turbines. Monthly energy meter readings are captured and data for September 2009 – August 2011 was made available for the validation. The Baseline Electricity generation quantity using steam turbines is calculated as 5066,360 KWh for the period September 2009 – August 2011and explained transparently by PP in detailed, in the Annex 3 of the PDD, Version 2.

2. Electricity generation from Fossil fuel: As mentioned in the above para it is very difficult to operate biomass boiler and turbines to cater Significantly lower electricity demand during non-production hours of the Palm Oil mill, PP has made a provision of Two (02) 320 KW (each) capacity Diesel generators, which are generating electricity during baseline scenario. This is evident from the Energy generation logs of Diesel generators and Diesel Consumption monitoring records, where PP has captured monthly electricity meter readings and Fuel quantity consumed. Data for Electricity generation and fuel consumption for the period 2009 – 2011 was made available by the PP during site visit and it was confirmed from the operational data that PP has generated 492,030 KWH of electricity during this period.

Further PP has utilized Para 12 of AMS I.D (version 17) “Grid connected renewable electricity generation” using IPCC default value for emission factor of diesel.

Based on the above assessment, the DOE hereby confirms that:

(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) 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.

It is observed that the selected baseline scenarios are in line with both selected approved methodologies i.e. AMS IIIH (Version 16) and AMS I C (Version 19). Validation team confirms that the selected baseline scenarios are reasonably represents what would have happened in the absence of the project activity.

3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)

The steps taken to assess the requirement outlined in paragraph 89 the VVM are described below:

Project Participant has used the algorithm and formulae in line with the selected methodologies i.e. AMS IIIH (Version 16) and AMS IC (Version 19) and corresponding tools to calculate baseline emissions, project emissions and Emission reductions due to project activity.

The PP has described detailed algorithms and calculations under Section B.6.1 and B.6.3 of the PDD respectively, which covers formulae used for each individual parameter as explained below.

Calculation of Baseline Emissions:

Baseline emission calculations are derived using two formulae in accordance with both approved methodologies utilized by the PP to develop this project.

Baseline calculation as per AMS IIIH (Version 16) is calculated using

$$BE_y = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\} - \{\text{Ref. Para 18 of AMS IIIH (version 16)}\}$$

The formulae is further simplified as given below. The justification for excluding parameters i.e. $BE_{s,treatment,y}$ & $BE_{s,final,y}$ Verfied and found adequately defined in the PDD Table 7. The Justification given by PP was confirmed during site visit.

$$BE_y = BE_{ww,treatment,y} + BE_{ww,discharge,y}$$

Baseline calculation as per AMS IC (Version 19) is calculated using

PP has utilized Para 20 of AMS IC, Version 19 to calculate the baseline emissions. PP has considered amount of electrical energy generated by the biogas engine in year y converted to thermal terms, the actual baseline emission is calculated using following Formulae

$$BE_y = (EG_{biogas,y} / \eta_{BL}) * EF_{diesel}$$

$= (P_{biogas,y} * N_{biogas,y} * 3.6\ GJ/MWh / 100\%) * EF_{diesel}$

- **Calculation of Project Emissions:**

Project Emission as per AMS IIIH (Version 16) is calculated using

To calculate project emission due to treatment of POME in anaerobic digesters are PP has adopted following formulae and is found in line with the Para 29 of AMS III H (Version 16)

$$PE_y = PE_{power,y} + PE_{ww,treatment,y} + PE_{s,treatment,y} + PE_{ww,discharge,y} + PE_{s,final,y} + PE_{fugitive,y} + PE_{biomass,y} + PE_{flaring,y}$$

PP has justified the applicability of each parameter in the above equation to the project activity in Table 9, which is found satisfactory. On the basis of justification PP has utilized following simplified equation to calculate ex-ante project Activity emission.

$$PE_y = PE_{power} + PE_{y,ww,discharge} + PE_{fugitive,y} + PE_{flaring,y}$$

- **Calculation of emission reductions:**

Emission reduction calculations are calculated using two different Formulae under each respective approved methodology as explained below. Under AMS III H it is required to calculate ex ante and ex post emission reduction due to project activity and PP has demonstrated this adequately in PDD section B.6.1

- Emission Reduction for methane recovery as per AMS IIIH (Varsion 16) – with reference to the para 32 of AMS III H (Version 16) the emission reduction ex ante is calculated using following formulae

$$ER_{y,ex\ ante} = BE_{y,\ ex\ ante} - (PE_{y,\ ex\ ante} + LE_{y\ ex\ ante})$$

Where:

$ER_{y,ex\ ante}$ *Ex ante* emission reduction in year *y* (tCO_{2e})

$LE_{y\ ex\ ante}$ *Ex ante* leakage emissions in year *y* (tCO_{2e})

$PE_{y,\ ex\ ante}$ *Ex ante* project emissions in year *y* (tCO_{2e})

$BE_{y,\ ex\ ante}$ *Ex ante* baseline emissions in year *y* (tCO_{2e})

- Ex post emission reductions are calculated as per Para 33 and Para 34 of AMS III H (Version 16) for case 1 (f)

$$ER_{y,\ ex\ post} = min\ ((BE_{y,\ ex\ post} - PE_{y,\ ex\ post} - LE_{y,ex\ post}),\ (MD_y - PE_{power,y} - PE_{biomass,y} - LE_{y,ex\ post}))$$

Where:

$ER_{y,\ ex\ post}$ Emission reductions achieved by the project activity based on monitored values for year *y* (tCO_{2e})

$BE_{y,\ ex\ post}$ Baseline emissions calculated using *ex post* monitored values

$PE_{y,\ ex\ post}$ Project emissions calculated using *ex post* monitored values

MD_y Methane captured and destroyed/gainfully used by the project activity in the year *y*(tCO_{2e})

- Emission Reductions for Power Generation are calculated using AMS I C, In accordance with par 47, PP has utilized following formulae.

$ER_y = BE_y – PE_y – LE_y$
Where:
ER_y Emission reductions in year y (tCO_{2e})
BE_y Baseline emissions in year y (tCO_{2e})
PE_y Project emissions in year y (tCO_{2e})
LE_y Leakage emissions in year y (tCO_2

- During Site visit it was confirmed that the project does not involve any transfer of equipment from or to the project activity and thus there is no leakage accountable to the project activity.

Validation team assessed the calculation of estimated emission reduction as provided by project participant in a spread sheet. The Assumptions in this spreadsheet were validated referring to Data and parameters those are used for calculating Emission reductions. These parameters are made available in the PDD section B.6.2, mostly all are IPCC Default values.

Based on the above assessment, the DOE hereby confirms that:
(a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
(b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
(c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
(d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
(e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

The Estimated annual average of approximately 24,230 tCO_2 emission reductions represents a reasonable estimation using the assumptions given the PP. All the assumptions for this estimation are arrived using various methodical tools, IPCC default values and conditions prescribed in both approved methodologies.

3.7 Additionality of a project activity (97)

The project is small scale project activity. Therefore, in accordance with para 28 of the simplified modalities and procedures for small-scale CDM project activities, the additionality of the project activity has been demonstrated using Attachment A to Appendix B (additionality tool for small scale project activities) and guidance given vide Annex 05 of EB 62. As all requirements specified vide para 28 of the simplified modalities and procedures are complied with by the project activity, this approach has

been assessed to be appropriate for the additionality assessment for this project activity.The project participant has demonstrated the additionality of the project using barrier analysis as stated in attachment A to Appendix B of Simplified modalities and procedures for small scale CDM Project activities.

As per the criteria PP has demonstrated how project activity would not have occurred anyway due to barriers exists. PP has explained in PDD that Three barriers are exists, and the list of barriers analysed by the PP is given as below

- Investment Barrier
- Technological Barrier
- Prevailing Practice Barrier

The validation team verified if any barrier has a clear impact on the financial returns which can be expressed through reasonable certainty in monetary terms. The specific obstacles posed by the indicated barriers are outlined as below.

3.7.1 Prior consideration of the clean development mechanism (104)

The DOE validated the project activity start date provided in the section B.5 of PDD in a tabular manner (Refer Table 6 “Series of events prior consideration of CDM”)

As per table it is clear that the PP has informed UNFCCC about the project implementation through Prior Consideration of the CDM form and it is communicated on 15/10/2009. Verification of Web site is done by the Validation and Team and it was noticed that the same in received by UNFCCC on 12/11/2009.

As per the guidelines for completing the simplified project design document (Version 5), the starting date of the project activity is the earliest date of the real action of the project activity, PP has considered the date of Award of EPC contract for implementation of Phase I of the project activity i.e. installations of Anaerobic reactors / digesters for POME treatment. PP provided Copy of EPC contract with the appointed Contractor for Da Yuen Engineering & Construction for installation of anaerobic reactors /digesters at Saremas Oil Mill, Sarawak. The contract was awarded through a letter for Acceptance of Tender Dtd. 12/02/2010.

As reported above, the start date of the project activity is 12/02/2010, which is after 2nd August 2008. Hence in accordance with Para 2 and 3 of the guideline on demonstration and assessment of prior consideration of the CDM i.e. Annex 13 of EB 62 /Ref-32/.

The PP has informed a Host Party designated national authority (DNA) and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. This was validated using communications with respective entities and details are provided as below

- **Communication with host Party DNA** – Letter received from the Secretary General, Ministry of Natural Resources and Environment (Host party DNA) bearing subject Acknowledgement Letter for the CDM Project proposal, Ref No. NRE(S) 62.120/010.001.002/012 jld (10) / Dtd. 05th January 2009. This letter confirms that host party has received the communication from PP to inform that PP is intended to implement a Project titled "Saremas 1 Methane Recovery in Waste water Treatment and utilization for electricity" as CDM project. Validation team confirmed the authenticity of the letter by having dialogue with the authority who issued this letter.

  From the Communication it was observed that the Project title mentioned in the web hosted PDD is different from the project title in the Communication. Although there is a slight change in the project title, however the location of project is same; it is confirmed using geographical coordinates mentioned in the Prior consideration form available in the website and Coordinates as per the prior consideration form are 3°31'29.561"N 113°44'50.147"E.

- **Communication with UNFCCC Secretariat:** PP has communicated its decision to implement proposed Project as CDM project with UNFCCC secretariat by submitting Prior Consideration form in the prescribed format (F-CDM-Prior). The same was validated using UNFCCC website and observed that UNFCCC Secretariat has received the Prior consideration form on 12/11/2009.

Prior consideration Form submitted to UNFCCC Secretariat is having relevant information and is in line with the requirement of EB guideline on Prior consideration.

It was also confirmed that the start date of the project activity is within six month i.e. 12/02/2010, from the prior consideration date.

PP has demonstrated that the CDM was seriously considered in the decision to implement the project activity through PDD section B.5 where Table 6 "Series of events prior consideration of CDM" has been depicted.

Date	Event	Evidence Verified
14/05/2008	Interaction with IFC that resulted in awareness on CDM	IFC Approval Document Dtd. 15.05.2008
12/11/2008	Internal study on anaerobic digester system with CDM consideration.	Internal Feasibility Study Report for verifying the technical feasibility of the treatment technology and various options.

22/01/2009	Completion of internal evaluation of the project	
12/11/2009	UNFCCC notification on prior consideration	UNFCCC web site for the notification
19/11/2009	Local stakeholder Consultation meeting	Advertisement in local dailies i.e. The Usan Borneo and Sinciew & Borneo Post Dated 14th and 15th November 2009. Detailed report on the Stake holder consultation process along with List of Attendees.
11/02/2010	Financial approval of the project Phase I	Formal internal Document for budget approval of Phase I implementation.
12/02/2010	EPC contract award for Phase I	EPC Contract Document between Project Participant and EPC Contractor Da Yuen Engineering & Construction for installation of anaerobic reactors /digesters at Saremas Oil Mill, Sarawak
04/03/2010	Start Date of Project construction	Acceptance of Tender Dtd. 12th February 2010.
11/04/2011	Project Commissioning and Start up of Phase I for Biogas recovery from anaerobic digester.	Project commissioning report and Log book maintained at the Project site.

Above events were verified in detail and evidences against each event seen during site visit and it is explained as below

IFC Approval document Dtd. 14th May 2008

As per the normal procedure of organization any capital expenditure has to undergo an Internal Financial Committee approval, where project details in terms of costing and funding is discussed, during this IFC approval it was evidenced that the CDM Revenue was considered against implementation of the project activity, which clearly indicates that awareness towards CDM implementation is there amongst the Management Team.

The project is internally funded by the organization, there is no external funding / lending (i.e. Bank Loans / Public fund etc.) is applicable for this project (i.e. Bank Loans / Public fund etc.)

Internal Feasibility Study Dtd. 12th November 2008

Feasibility study was conducted internally to assess the technical feasibility of project and alternatives available for the treatment of POME. As per the feasibility report three alternatives were analyzed for the feasibility, out of which anaerobic digester in Mild Steel Tanks is selected as preferred option. The objective of project implementation as mentioned in the feasibility report is reduction of Green House Gas emission in the Atmosphere and utilization of renewable energy source – In this case Methane gas emission, which was happening during baseline scenario. Methane is considered as one of the GHG under Kyoto Protocol. Thus the

Feasibility Report also demonstrate that there was considerable awareness is there towards the implementation of CDM project.

Board Approval on Project Budget (Dtd. 22nd January 2009 & 11th February 2010)
Board approval is the formal process where the project details and financial commitments are briefed to all board members during management review meeting through a formal document, verified documents dated 22nd January 2009 & 11th February 2010 and found that CDM consideration is mentioned appropriately the same is demonstrated through the investment analysis done by PP to obtain board's approval where cost of CER is shown as €10 as CDM Revenue. Budgetary approvals are obtained from the Board.

The Project is a new project according to the definition in the "Guidance on the demonstration and assessment of prior consideration of the CDM" version 04 (Annex 13, EB 62, 15/07/2011) /Ref:32/ (hereinafter called "Guidance-Prior Consideration"), i.e. the start date of the Project is after 02/08/2008. The start date of the Project is also prior to the date of publication of the PDD for global stakeholder consultation, which is from 05th May 11 to 06th June 11, and the validation team has assessed the PP's prior consideration of the CDM through documents reviews summarized as below:

The PP informed Malaysian DNA in writing of intention to seek CDM status on 15/12/2008. This was verified by reviewing the acknowledgement Letter Ref No:NRE(S)62.120.010.001.002/012JLD7(10) Dated 05/01/2009 from Conservation and Environmental Management Division of Ministry of Natural Resources and Environment, Malaysia.
The PP informed UNFCCC secretariat in writing of the Prior consideration of the CDM for proposed project activity and the same has been reviewed from the UNFCCC website, which shows received date as 12/11/2009. The Validation team also confirmed that the project activity is listed in the UNFCCC secretariat's publicly available list of such notifications*

Hence, it is established that the PP has intimated the UNFCCC and NCDMA within six months from the start date of the Project.

Hence the validation team concludes that in accordance with para 2 of Annex 13 of EB 62, CDM was seriously considered while making the investment decision for the project activity.

Based on the above assessment, the DOE hereby confirms that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity. Thus the proposed CDM

* http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html

project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

3.7.1.1 Historical information on project timeline

The project start date is 12th February 2010 and as per EB 49 Annex 22, it falls under the category of new project activities. Hence, historical information on project timeline with respect to any real action prior to start date of project activity is not applicable. Proposal was received by project participant from the technology supplier Da Yuen Engineering & Construction, and project participant took the decision to implement the project activity in the Board meeting held on 22nd January 2009. Subsequently EPC Contract was awarded for Phase I implementation on 12th February 2010.

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3.7.2 Identification of alternatives (107)

Approved Methodologies utilized by the PP i.e. AMS III.H (Version 16) does clearly prescribe baseline scenarios for project activity and hence the identification of alternatives is not applicable to this project activity.

However the 2nd approved methodology utilized by the PP is supplementary to the main project activity and there is only one alternative remains with PP which is continuation of the baseline scenario, i.e. continuation of the Diesel Generator operation for Electricity generation to meet the electricity demand of mill as well as colony. Hence PP has applied simplified baseline scenario to the project activity which is found in accordance with the Para 16 of AMS IC, Version 19. As per the Para 16 of AMS IC, Version 19, for the 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 the emission factor for the fossil fuel displaced. Based on above description, validation team hereby confirms that no identification alternatives is required as there is sufficient historical information on past electricity generation using diesel and biomass boiler is made available. The validation team has confirmed the same by reviewing historical records of electricity generation by biomass based boilers and diesel generators working in baseline scenario, which is in accordance with AMS IC, Version 19, as there is a pre project scenario which reasonably represent that an existing facility would have continued to use diesel generators in absence of project activity.

As per Attachment A to Appendix B of Simplified modalities and procedures for small-scale CDM project activities, Project participant has used investment barrier, Technological Barrier and Barrier due to prevailing practice to demonstrate additionality.

3.7.3 Investment analysis (114)

The Project Participant has demonstrated the additionality of the project activity using the investment analysis, in accordance with Attachment A to Appendix B of simplified modalities and procedures for SSC CDM Project activities.

The proposed project activity involve installation of Anaerobic Digesters to replace baseline Lagoons for treatment of POME generating from Palm oil mill, and capturing and utilization of methane gas for electricity generation and burning in the flare. PP has identified alternative to the project activity as continuation of pre project scenario i.e. continuation of Open lagoon treatment system for the POME generating from Palm oil mill, which does not require PP do any investment. Hence PP has selected Bench mark Analysis method to demonstrate Financial Additionality. This is found in line with the Para 19 of EB 62 Annex 05. PP has utilized Net Present Value (NPV) method for carrying out investment analysis to assess the financial viability in implementing the proposed project. The project investment is analyzed against the CDM revenue, which is the one of the source of revenue to demonstrate investment barrier.
Due to the nature of the cash flow trend over the 25-year timeframe (i.e. positive and negative cash flows), IRR of the project could not be defined and hence is not used as financial indicator. The project proponent has thus chosen to use Net Present Value (NPV) as the financial indicator, using a default expected return of equity of 10.9% as the discount factor (Benchmark) obtained from the Annex A of EB 62 Annex 05, the validation details of benchmark is provided in this section under "**Benchmark"**.

While reviewing webhosted PDD, Version 01, it was observed that PP has carried out Simple cost analysis and it is indicated that the Payback period of the Project is 5Years at estimated CER price of US $ 19. The financial analysis seems to be very generic. Simple cost analysis and Payback period of 5 years is not adequately justified by the PP; hence following CAR 3 was raised during the site visit.

In response to the CAR-03, PP has revised the investment analysis and adopted Benchmark analysis method as explained above and showed that the Project is financially additional using NPV Method. Validation team verified the financial analysis in detail using financial expert and found accepted and hence CAR 3 was closed.

On verification of the revised investment analysis it was noticed that PP has not carried out Sensitivity analysis to demonstrate in which scenario the project activity would pass the benchmark using sensitivity analysis as per EB Guideline EB 62 Annex 05 "Guideline on Assessment of

Investment Analysis", hence CAR 6 was raised. In response to the CAR, PP has revised the excel spread sheet of Financial Analysis with the Sensitivity analysis using +/-10% variations of important Project parameters i.e. Investment Cost, Operating cost , Revenue from fuel saving and CER Price. (Refer CAR 6)

It was observed that PP has calculated Net Present Value (NPV) to demonstrate project additionality using estimated CDM Revenue as 19 US$ / CER. The estimated price of CER is verified by the Validation team through the reference provided by PP in the financial analysis, the source of estimated price of CER i.e. Report published by JP Morgan in 2009 titled "Understanding CER Price Volatility" on http://www/latincarbon.com/2009/docs/presentations/UnderstandingCERpriceVolatility_Steinacker.pdf , found reliable and confirmed that most conservative value of CER price is utilized by the PP to demonstrate the Financial Additionality.

The parameters used in financial calculations have been validated as given below

Parameter / Value	Source of Information	Validation Justification
Total Capital Expenditure of the project US$ **2,661,671** (US$ 1,880,733 for Phase I and US$ 780,938 for Phase II)	- Proposal from Da Yuen Engineering & Construction for Phase -I Project implementation i.e. for Anaerobic Digester and flaring system installation. - Contract Agreement (Volume 1 & Volume 2) Dtd.25th May 2010 for Phase I. - Phase II Investment break down summary.	Based on the sources of information and relevant documents i.e. Bank statements presented by PP to justify the claim of capital investment and payment made to EPC contractor on completion of Phase I, the investment value used by the PP as an input to investment analysis found satisfactory.
Expected Average Annual CER units 24,230 tCO_{2e} (CER units are 23,101 tCO2e for Phase I and 24,230 tCO2e for Phase II)	- From PDD section A.4.3 - From Emission Reduction Calculation sheet (CDM_Saremas _ER Calculation_V2)	Found satisfactory as per the description provided in the section B.6.3 of the PDD, which is validated using excel spread sheet where PP has demonstrated utilization and calculation of each parameter to arrive at Emission Reductions transparently.
CER Price 19 US$	- From Carbon price data base on the UNFCCC and other website, The same value was used during Feasibility Report preparation Dtd. 12th November 2008. - Based on the Report published by JP Morgan titled "Understanding CER Price Volatility"	The estimated price of CER found Conservative. Due to volatility in the CO2 market, there is a chance of reduction in the CER Price, which will further impact the PP financially.
Savings in Diesel Consumption 264,897 Litre/Year	- PDD Section B.5 "Investment Barriers" and excel spread sheet for financial analysis to calculate NPV.	PP has utilised Diesel Consumption data during baseline (Pre Project) scenario. The Data used to arrive at the average Consumption of diesel is on the basis of Log sheets

		maintained by the PP for Period September – December 2009 (66,366 Litres) and January – August 2010 (198,531 Litres)
Monitory Savings in Diesel Purchase 146,310 USD/ Year	- PDD Section B.5 "Investment Barriers" and excel spread sheet for financial analysis to calculate NPV. - 2010 PPBOP Average Monthly diesel price.	- Diesel consumption data validated as mentioned above. - Diesel Price taken by the PP is 1.96 RM/ Litre (0.55233 USD/ Litre) the price of diesel considered for carrying out financial Analysis found conservative.
Total Operating and Maintenance cost 86,696 USD/Year	- Schedule Tender Prices for Mechanical spares for various equipment's installed at Waste Water Treatment Plant. - Phase II AFCE Budget Breakdown - Purchase orders for Valves - Salary Slips of waste water treatment plant operators.	- Values applied by PP to arrive at Operating and maintenance cost found realistic and sufficient evidences were provided by PP to justify these values. - Total manpower required to operate the plant is 05, and the salary given to the operator found satisfactory.
Estimated Average Project CER's (Phase I) 23,101 CER / Year	- PDD Section A.4.3 - From Emission Reduction Calculation sheet (CDM_Saremas _ER Calculation_V2)	Found satisfactory and transparent to justify the claim of CER during Phase I of project implementation
Estimated Average Project CER's (Phase II) 24,230 CER / Year	- PDD Section A.4.3 - From Emission Reduction Calculation sheet (CDM_Saremas _ER Calculation_V2)	Found satisfactory and transparent to justify the claim of CER during Phase II of project implementation The Emission reductions claimed for Phase II consist of Emission reduction due to the usage of Biogas for Energy generation, which are applicable / valid till the lifetime of the 1st Biogas engine i.e. 10 years from the date of implementation of Phase II. After 10 years Emission reductions due to Electricity generation through Biogas engine will not be considered due to the life time constraint of the Biogas Engine. This has been verified by the Validation team and found adequately applied by PP consistently in the Investment Analysis spread sheet and in the Input Value table of PDD.
Recurring capital cost of Biogas engine	- Manufacturers Specification on Life time of the Biogas engine - Phase II AFCE Budget Breakdown	Technical Document issued by the supplier of Biogas engine regarding operating life time of

replacement every 10 years 659,764 USD / 10 Years	- PDD Section A.4.2 for Project equipment Life time determination.	the project equipment Shengli Oilfield Shengli Power Machinery Group Company Ltd, Dtd. 30th September 2011 – found satisfactory.

Investment analysis: Calculation and conclusion

The validation team has verified the assumptions as explained above and observed that they are correct and based on conservative values that are applicable at the time of investment decision making. The project participant has not considered benefits from accelerated depreciation [tax shield] and tax exemption under local Act in Malaysia, Escalation in commodity prices etc, hence CL 2 was raised, in response to the clarification PP has confirmed that all cost and revenue items in financial analysis are in real terms and there is no escalations and tax benefits considered.

The arithmetical accuracy was also found to be correct. The NPV calculations have been provided in a transparent spreadsheet and verified by the validation team. The NPV is calculated for 25 years of operations, which is the lifetime of the project and is in conformity with the guidance issued by CDM – EB vide EB 62 Annex 05. The Project utilizes Biogas engines for electricity generation from Methane gas. The life time of biogas engine is 10 years (confirmed through Technical Document issued by the supplier of Biogas engine regarding operating life time of the project equipment Shengli Oilfield Shengli Power Machinery Group Company Ltd, Dtd. 30th September 2011).

Hence financial calculation is also including recurring investment cost every 10 years; the recurring investment cost considered by PP was validated using quotation from the supplier.

An independent financial expert has verified the NPV calculations and observed them to be in order.

In the above background, the validation team concludes that underlying assumptions are appropriate, accounting principles adopted in calculations and calculations presented in the spreadsheet are correct and the guidance vide paragraph 111 of the VVM has been taken care of. Based on the above, the Net Present Value of the project works out to be negative without considering CDM benefits.

Benchmark:

The project participant has chosen Default value for the expected return on equity as per the Annex A of EB 62 Annex 05. The default value selected by Project participant is 10.9% under Group 1 for host country Malaysia. This value is classified under A3 category of Moody's Risk

Rating for bonds. Validation of this applied benchmark is provided as below,

The guidance to investment analysis issued in EB 62 (Annex 5, paragraph 12) states that in cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Cost of Equity (CoE) & Weighted Average Costs of Capital (WACC) are appropriate benchmarks for Equity IRR and Project IRR respectively.

PP is utilizing internal equity to finance the project and there is no Internal company benchmark available as there is no other similar project PP has undertaken in past and hence in accordance with Para 15, the benchmark should be based on parameters that are standard in the market. In accordance with Para 15 of EB Guideline EB 62 Annex 05, PP has selected the default value of cost of equity provided in Appendix A of the investment guidance. The benchmark for the project activity has been derived based on the default values for the expected return on equity.

In accordance with Appendix A of EB 62, Annex 5. The project activity falls under Host Country Malaysia, Group 1 (S. No. 13. Waste Handling and disposal) hence the real value for expected return on equity is 10.90%. As the bench mark applied is in real term, PP has utilized Default value directly, which is found conservative approach, hence accepted.

The selection of default value is appropriate as there is no external funding is utilized for this project, project participant has utilized internal equity from the parent company to finance the project.

Hence the validation team was of the view that the expected return of 10.9% from the project was commensurate with the risk involved in the Group 1 project activity under sectoral Scope 1 and 13 particularly Waste handling and disposal in which Treatment process involves numerous uncertainties. Thus, the benchmark determined for the project activity (10.9%) was found in line with VVM version 1.2 Para 112 and EB 62 Annex 05.

The project NPV was calculated based on the above input values and default benchmark value of 10.9%. This clearly shows that the project is not financially feasible as the Net Present Value is negative without financial incentive in terms of CDM revenue.

The validation team noted that with CDM revenues, the Net Present Value improves and become positive. Hence the validation team concludes that it is critical for the project activity to get the CDM revenue in order to make the project financially feasible.

Sensitivity Analysis:

Project Participant did not performed the sensitivity analysis initially hence CAR 6 was raised, in response to the CAR project participant performed the sensitivity analysis and presented the outcome in the PDD Version 2.

In order to demonstrate the robustness of the conclusion arrived at above, viz., that the project is additional, the PP had subjected three critical parameters of the project activity i.e. Investment Cost, Operating cost , Revenue from fuel saving to reasonable variations. It has been noted that the above three parameters are the only factors, which are likely to affect the Project NPV significantly because of their variation.

The Investment cost was taken from the proposals of project equipment suppliers for both phases i.e. Phase I and Phase II. The PP has subjected the Investment Cost, Operating cost , Revenue from fuel savings to +/-10 % variation and has presented the calculations in the PDD version 2.

Proposal provided by the technology provider / supplier represents the actual project cost (this was also validated from Contract Agreement). Hence, the project cost available at the time of investment decision is already actual project cost and any variation in the project cost is not applicable (as the project is already implemented).

The results of the sensitivity analysis are as follows:

A. Sensitivity Analysis without CDM Revenue:

Parameter	Base NPV	Sensitivity	NPV	Benchmark
Capital Cost	(2,472,820)	10%	(2,731,312)	10.9%
		5%	(2,602,066)	
		-10%	(2,214,329)	
		-5%	(2,343,574)	
Revenue from Fuel Saving		10%	(2,361,889)	
		5%	(2,417,355)	
		-10%	(2,583,751)	
		-5%	(2,528,286)	
Operating Cost		10%	(2,546,370)	
		5%	(2,509,595)	
		-10%	(2,399,270)	
		-5%	(2,436,045)	

B. Sensitivity Analysis with CDM Revenue:

Parameter	Base NPV	Sensitivity	NPV	Benchmark
Capital Cost	1,128,406	10%	869,914	10.9%
		5%	999,160	
		-10%	1,386,897	
		-5%	1,257,651	
Revenue		10%	1,239,337	

from Fuel Saving		5%	1,183,871	
		-10%	1,017,475	
		-5%	1,072,940	
Operating Cost		10%	1,054,856	
		5%	1,091,631	
		-10%	1,201,955	
		-5%	1,165,181	

From the sensitivity analysis it is very clear that NPV remains negative in all three important parameters when there is a variation in the range of +/-5% to +/-10%. Project NPV becomes positive only when CER Revenue is considered in the financial analysis.

In the case of project investment cost, variation of -10 % is highly unlikely as the price quoted in the IFC Approvals are based on the final negotiated cost of project equipment's for both phases (IFC Approval Dated 11.02.2011). The investment analysis considers the final negotiated price of 1,880,733 USD for Phase I implementation and 780938 USD for Phase II implementation totaling to USD 2,661,671 (which was available to the PP at the time of investment decision) against the initial proposed price of 2,183,150 USD (as per web hosted PDD). Validation team further verified the same with the actual purchase order values raised by the PP. Hence it is highly unlikely to have any reduction in the project cost (as the project is already implemented and actual project cost is taken in the investment analysis), so the project NPV becoming positive is unrealistic. Thus sensitivity of project investment cost has been validated in compliance to Para 20 &21 of EB 62 Annex 05.

Subjecting the Operating Cost to +/-10 % variation reveals the project NPV remains negative and hence no probability of occurrences conducted as per Para 21 of EB 62 Annex 05.

In case of Revenue from fuel saving, the fuel saving is directly proportional to the CER generation as a result of methane gas consumption for Electricity generation, which depends upon the anaerobic treatment which is affected by various factors i.e. POME generation quantity, buffering capacity of the digesters, percentage of methane in the gas generating out of anaerobic digestion process, process break down etc.hence +/- 10 % variation is appropriate, and sensitivity results revels that the NPV remains negative to the variations and is in accordance with the Para 21 of EB 62 Annex 05.

The validation team states that the Net Present Value (NPV) computed by the project participant is based on conservative computation approach where no tax, no escalations, no depreciations and no financial benefits considered in the cash flows. The investment analysis applied by the

project participant has also been validated by an independent financial expert.

In the above background, validation team concurs with the PP that the project activity is financially not viable without the benefits from CDM. NPV with CDM revenues worked out to be positive. Thus the project is viable with CDM revenues. DOE is, therefore, convinced that the project is additional.

3.7.4 Barrier analysis (118)

As described above in section 3.7 of this report above, project participant has demonstrated additionality on investment barrier, Technological barrier and barrier due to prevailing practice in accordance with Attachment A to Appendix B of Simplified modalities and procedures for small-scale CDM project activities. PP has applied barrier analysis to the project activity for the demonstration of additionality of proposed CDM project activity. Validation details of each individual barrier identified by the PP is given as below.

- **Investment Barrier :**

PP has opted to demonstrate additionality using investment barrier, where Net Present Value (NPV) has been selected as the financial indicator to assess the financial viability of the proposed CDM project activity. The Validation details of investment analysis done by PP to demonstrate project additionality is discussed in detail in the Section 3.7.3 of this Report.

- **Technological Barrier :**

PP has demonstrated the technological barrier in implementing the proposed project activity as the, baseline anaerobic treatment system is the prevailing system for treating POME effluent in Malaysia. More than 85% of the POME treatment system in host country uses the anaerobic open pond technology due to simplicity and lesser technological interventions for day to day operations and maintenance.

From the overall assessment of the project activity it is concluded that Technological Barrier arises due to two (02) main reasons, as explained below

1. **Technological Failures due to unfamiliarity of technology:**
   Anaerobic treatment process is considered as one of the sensitive treatment process, and the success of this treatment process depends on lot of chemical and operational parameters. There is a risk of technological failure arises as the technology is very complex and unfamiliar within the Palm oil Mill industry. This is confirmed through various third party studies in host country.

Operation and maintenance activities of Anaerobic digester plant involves various critical operations and monitoring as listed below, which need high skill. The critical operations involved are as listed below.

- Mixing primarily fresh organic material so that optimum organic matter is available for digestion (Maintaining F/M Ratio)
- Maintaining a narrow temperature range suitable for digestion of POME.
- Maintaining pH balance in digester and ensuring proper operations to eliminate plugging, crusting or foaming problems http://www.environmentalexpert.com/Files/5306/articles/9252/204.pdf
- Optimizing the "recipe" to generate sufficient and consistent biogas production to make the economics work
- Operation and management of an interrelated group of systems to safely handle heating of the tank, material flow, hydrogen sulphide reduction, methane transfer, electricity production, Flare operations etc.

This is confirmed using Digester Operation and maintenance manual provided by the EPC contractor and sectoral knowledge of the validation team

2. **Safety Risk involved in the Biogas plant operation and maintenance**:
From the chemical and physical characteristics of methane gas generating out of Anaerobic treatment of POME in digesters, it is clear that the handling of recovered methane needs much more care and sophistication to avoid any catastrophe due to its combustible nature.

The risks associated with methane are increased further because the gas is both odorless and colorless. Therefore, it is possible for methane gas to be in the environment without being detected until its too late. Methane in a concentration of 6% to 15% with air is an explosive mixture. Since it is lighter than air, it will collect in rooftops and other enclosed areas. It is relatively odorless and detection may be difficult. Extreme caution and special safety features are necessary in the digester design and storage tank, especially if the gas is compressed.

The major disadvantage is the amount of management required due to the sensitivity of the digesters, the high initial investment required for equipment safety.

Appropriate measures and procedures have to be addressed by the

PP in an effort to prevent accidents from occurring. This is confirmed from the safety manual that requirement of flame arrestors, special safety precautions with respect to electrical equipment and electronic instrumentation at the hazardous area. The strict zoning of boundaries is also enforced at site to ensure IEC safety standards. This demonstrates that the introduction of biogas to the site increases the risk of incidents arising from technological failure. This has been substantiated with various news on accidents in biogas plants.

As per PP's opinion operating and maintaining Open Pond treatment system is much easier and cost effective than that of advanced Treatment systems such as Anaerobic Digesters with Methane Recovery.

To exercise advanced monitoring controls and operational controls skill requirement is one of the biggest challenge due to unavailability of skilled manpower in the region. This risk is identified and adequately demonstrated by PP to prove technological barrier.

Validation Team has verified the supporting evidences provided by the PP and additional information from relevant publically available information to confirm the argument on technological barrier presented by the PP. The justification of the technological barrier found satisfactory and hence accepted.

- **Barrier due to prevailing Practice :**

As discussed in the technological Barrier, the Open Pond POME treatment method is one of the most common method adopted in Malaysia by various Palm oil mills. According to the publicly available information from Palm oil mill board, there are approximately 434 Palm oil mills are operational in Malaysia and most of them treat POME using open anaerobic Lagoons, which is a common practice in the host country. This common practice is prevailed in host country due to following reasons

1. **Availability of Land**: Palm oil Mills are generally located inside the palm plantations to avoid transportation cost on the transportation of fruit bunches from plantation to mill, and hence plenty of land is available with mill owners for creating open ponds/ lagoons for treatment of POME.

2. **Low Cost treatment option** : Creating Open lagoons for treatment of POME is considered as very easy and low cost treatment option as there is no electricity required and no mechanical components involved, this further reduces the cost of operation and maintenance. This concludes that the open lagoon treatment system is favored due to its low capital costs and its ability to comply with existing effluent discharge standards. It has been demonstrated based on the publically available information that currently 85% of the palm oil mills use open pond system and the remaining 10% uses

open tank systems(B.G. Yeoh http://www.cogen3.net/presentations/asean/cdm_hcm/BiogasprojectsandCDM.pdf)

3. **No Regulatory requirement to promote advance treatment**: As per the legal requirement in Malaysia, Standards of Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulation, 1977 by the Department of Environment, establishes parameters for the discharge of treated POME to Water body / land disposal.

   With existing open pond treatment system PP is meeting the statutory requirements, validation team verified the legal compliance through Local Legal Expert and it noticed that there is no violation reported and all prescribed parameters are complied satisfactorily by the PP prior to the discharge of treated POME. Also there is no legal requirement to capture the Methane generating from the POME treatment facilities in Malaysia, however PP has taken initiative in treating the generated POME in an environmental friendly manner on a voluntary basis although there is a big investment required. In general Malaysian Palm Oil mill owners prefer to continue the open pond treatment system rather than investing costlier and technologically complex treatment system.

Treatment of POME in anaerobic digesters is not common due to its high capital costs and the lack of incentives for installing such treatment systems. There are currently 29 projects similar (in Host country Malaysia) to the project activity which are registered with UNFCCC and are availing CDM benefits. The list of CDM projects provided by PP in PDD is verified by the validation team using UNFCCC Website and found correct. From this it is concluded that all these projects are implemented only with consideration of CDM benefits otherwise open lagoon system still remains common practice in the Malaysia.

Given the above, it is adequately demonstrated that the project is not a likely baseline scenario and emission reductions claimed by PP are additional and also found in line with the latest guidelines on barrier analysis as per Attachment A of Appendix B (version 8) of EB 63 Annex 24 and it is evidenced that the existing practice i.e. Treatment of POME in open lagoon system would have resulted in higher emissions.

3.7.5 Common practice analysis (121)

Common practice analysis has not been used to demonstrate additionality. As per Attachment A to Appendix B of Simplified modalities and procedures for small scale CDM project activities, additionality can be demonstrated by any one of the four barriers listed. The project participant has demonstrated additionality using investment barrier.

3.8 Monitoring plan (124)

PP has utilized two approved methodologies to develop this CDM Project i.e. AMS III.H (Version 16) & AMS I.C (Version 19). The monitoring plan defined in the Section B.7.1 was validated for the suitability and correctness. It was confirmed that all important parameters prescribed by both Approved methodologies are covered in the Monitoring Plan and are validated as follows

As Per AMS III.H (Version 16) following important parameters are incorporated in the Monitoring plan by PP.

- According to the Methodology, monitoring shall consist of metering of flow of wastewater to the Anaerobic digesters, the PP has included the Parameter $Q_{ww,\ in}$ and $Q_{ww,discharge}$ in the monitoring plan and suitable electromagnetic flow meters are installed to capture hourly incoming flow. Flow meter has provision to monitor current flow and totalizer with data logging provision.
- PP has included Chemical Oxygen Demand (COD) in the Monitoring plan and has made provision to monitor COD of wastewater before and after treatment.
- The Monitoring plan includes monitoring of biogas Volume recovered ($BG_{Recovered.y}$) in a year, for which gas meters are established.
- PP has made provision to monitor Methane content in the recovered biogas, suitable instrumentation is made available for continuous monitoring.
- Temperature (T) of biogas is also found included in the monitoring plan, which is required to determine the density of the Methane gas. Suitable instrumentation is made available for continuous monitoring.
- Pressure (P), pressure of the biogas is also found included in the monitoring plan. Suitable instrumentation is made available.

PP has installed enclosed flare system and decides to use default flare efficiency. This is found in line with the requirement of applicable tool to calculate emissions due to flaring operations i.e. "Tool to determine project emissions from flaring gases containing methane". The default value applied by the PP for Flare efficiency 0.9 (for the Flare temperature above $500^{o}C$ for more than 40 Minutes). Suitable arrangement of flare temperature monitoring is in place.

As per AMS I.C (Version 19) following parameters are included in the monitoring plan

- Emission factor of the captive grid in year y ($EFCO2_{captive,grid\ y}$), the parameter is calculated correct equation as per paragraph 12(b) of AMS I.D (Version 16). This parameter is calculated as weighted average emission of the power generation mix during crediting period.
- Electricity generated through ($EG_{Diesel.generator1\&2}$) using diesel generator 1 & 2 is derived from the Daily operation log book which was verified during the validation site visit.
- Electricity supplied from the captive grid to the project ($EC_{captive.grid}$), log book is maintained to monitor the parameter.
- Volume of Diesel in liter ($Q_{diesel,y}$) is part of the monitoring plan which will be displaced during phase II project implementation, which is measured and recorded in the daily operation log book

While validating the Monitoring plan validation team has observed that monitoring plan does not include details of accuracy class of instruments utilized for monitoring of various parameters as mentioned in the monitoring plan, hence one CAR 04 was raised as follows

Monitoring Plan section B.7.2 does not include the characteristics / configuration of the monitoring and measurement instruments. In response to the CAR, PP has revised PDD section B.7.1 to provide detailed information on the characteristics and configuration of the monitoring and measurement instruments and added Annexure 4 for monitoring information and location of monitoring and measurement instruments. A change in the PDD verifies in Version 2 and found satisfactory, hence closed.

The validation team physically verified the monitoring equipment's installed against implementation of phase I of the project activity and confirms that PP has made suitable arrangement to capture project relevant Parameters as mentioned in the monitoring plan presented in the PDD and the monitoring plan complies with the requirement of both Approved methodologies.

The DOE hereby confirms that the project participants are able to implement the monitoring plan.

3.9 Sustainable development (127)

The PP has defined the contribution of project activity in sustainable development in section A.2 of PDD, where PP has utilized three key indicators to demonstrate sustainable development. The indicators are given as below

Environmental Sustainability – due to implementation of this CDM project PP is intended to improve the wastewater treatment process so that soil pollution, ground water pollution, surface water pollution and air pollution (Due to Methane emission in the atmosphere) shall be eliminated / reduced / controlled. This is confirmed by the Validation team during site visit.

Currently PP is using large land area for treating POME (Palm Oil Mill effluent) in open unlined Lagoons / ponds, which is resulting in the land contamination, ground water pollution and air pollution due to emission on methane in the atmosphere. Implementation of the project shall help in achieving following specific environmental sustainability objectives.

- The project activity involves the use of anaerobic digesters with methane recovery. The project thus avoids the emission of methane gas into the atmosphere and therefore contributes to the reduction of GHG emissions.
- The final treated effluent from the POME wastewater treatment, which includes the project activity (i.e. anaerobic digesters), meets the Malaysian's environmental regulations.
- The recovered methane from project activity will be used for electricity generation for captive use in the facilities. The project will displace the electricity which is generated by combustion of diesel in generators and reduce the GHG emission.
- The avoidance of methane emission and use of sludge for plantation in aerobic conditions will therefore reduce the unpleasant odour associated with the existing POME treatment system.

Economic Sustainability – PP shall be gaining economic sustainability as the project activity will help them to save diesel for electricity generation. Also the project will generate more job opportunity which will be helping improving economic condition of local community.

Social Sustainability – Social sustainability shall be achieved by improving the skill level of local workforce in various aspects of project implementation, operation and maintenance.

3.10 Local stakeholder consultation (130)

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

The local stakeholder's consultation meetings were conducted by Project Participant to get their comments and suggestions on the project activity. Stakeholders' consultation meeting was held on 19th November 2009. A record of invitation letter sent to all relevant local stakeholders verified during site visit and found satisfactory. The letter is covering relevant agenda points.

During the site visit of the validation team to the project site, interview was conducted with local stakeholders. The local villager appreciated the Project activity. The project has given employment to local people and the local villager viewed the project as contributing to local environmental benefits and social-economy. There were no negative comments from the stakeholders regarding the project activity. The validation team hereby confirms that the process of local stakeholder consultation is observed to be adequate.

3.11 Environmental impacts (133)

PP has claimed that the project activity does not require any Environmental Impact Assessment. Validation team consisting of Local Legal expert verified legal requirement and confirmed the claim of PP. PP has also supported the claim with the help of letter Ref 000/001.jld.7 (26) dtd. 21st May 2010 received from the Department of Environment (Locally known as “Jabatan Alam Sekita, Negeri Sarawak”).

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD using methodologies AMS III.H (Version 16) and AMS I.C (Version 18) was webhosted on the UNFCCC for global stakeholder’s comments as per CDM requirements. The project was webhosted from 05/05/2011 to 05/06/2011.

There was one comment received from Mr. Zhong Zhou Li, the comment was submitted to PP for providing response. The project participant provided response to this comment. Validation team took due account of the comment and the respective responses while making the validation opinion. The details of the comments received, responses by the project participant/s and the explanation of how due account of these is taken by the validation team are attached as Appendix B with this validation report.

Each point in the stake holder comment was reviewed by the Validation team internally and verified project specific conditions during site visit as given below

1. Requirement of DPR And FR
2. Condition of Equipment’s
3. Internal Feasibility study report for assessing the technical feasibility of the selected option of treatment method
4. Payment Certification by the Project consultant

From above evidences Validation Team confirms that:

1. PP has utilized internal fund, and there is no public fund / bank loan is involved to finance the project hence the Feasibility study carried out

by PP was for internal assessment purpose only to check the feasibility of the treatment method selected by the PP.

2. All project equipment's are purchased new and the PP has presented relevant evidences. Validation Team assessed the condition of equipment's during site visit and found that all equipment's installed during Phase 1 installation are found new and there is no equipment found old. Gate entries of all project equipment's are maintained by the PP.

3. PP has appointed a project management consultant (third Party) for supervision of construction and installation of project equipment's, Payment advices are found certified by the Consultant and records all such project specific clearances were verified by the validation team and found satisfactory.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Methane Recovery in wastewater Treatment and Utilization for Electricity Generation at Saremas 1 Palm Oil Mill, Sarawak, Malaysia Project in Malaysia. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participant used Attachment A to Appendix B of Simplified modalities and procedures for small scale CDM project activities for demonstration of the additionality. The PDD provides investment barrier, Technological Barrier and Barrier Due to prevailing practice to demonstrate additionality. The net present value of the project (with even sensitivity on investment cost, revenue from fuel saving and operating cost) is negative using default benchmark value and hence it is demonstrated that the project is additional.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated emission

reductions during selected crediting periods as mentioned in the below mentioned table

Crediting Period	From	To	Average Emission Reductions tCO2	Validation Remarks
1st Crediting Period	2012	2019	24,230	- On completion of Phase I, Emission Reduction = 23,101(1st Year) - On Completion of Phase II, Emission Reduction= 24,230 (2nd to 7th Year)
2nd Crediting Period	2019	2026	23,665	- Due to Biogas engine Lifetime i.e. 10 years PP can claim emission reductions due to Electricity generation for first three years in 2nd crediting period.(8th – 10th Year)
3rd Crediting Period	2026	2033	23,101	- Due to Biogas engine Lifetime i.e. 10 years PP will not be claiming emission reductions due to Electricity generation during this crediting period.

The review of the project design documentation and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of 'Methane Recovery in Wastewater Treatment and utilization for Electricity Generation at Saremas 1 Palm Oil Mill, Sarawak, Malaysia' as CDM project activity.

6 REFERENCES

Category 1 Documents:
Documents provided by Type the name of the company that relate directly to the GHG components of the project.

/01/ PDD [initially published version (web hosted)], Version-01, Date- 11/04/2011

/02/ PDD Version-02, Date 03/08/2012.

/03/ Host Country Approval: Malaysia, - Ref. No. NRE(S)602-2/11JLD 15(32) Dated 13/04/2012

/04/ Annex I party Approval, Denmark - Ref KKR (File No. 1602/1102-0089 Dated 07/05/2012

/05/ Modalities of Communication

/06/ Spreadsheet for emission reduction

/07/ NPV (Net Present Value) calculation Spreadsheet

/08/ Proof of start date:04/12/2008
(based on the EPC Contract signed by PP with the EPC

contractor Yuen Engineering & Construction for Phase-I Project implementation i.e. for Anaerobic Digester and flaring system installation.)

/09/ Proof of Serious consideration of CDM (in accordance with the UNFCCC guidelines provided in EB 62 ANNEX 05

a) UNFCCC CDM portal, Prior consideration notification indicating the date received as 05/10/2009
b) Intimation to DNA - the acknowledgement Letter Ref No:NRE(S)62.120.010.001.002/012JLD7(10) Dated 05/01/2009 from Conservation and Environmental Management Division of Ministry of Natural Resources and Environment, Malaysia.

/10/ Proof of the implementation timeline presented in the PDD in accordance with the UNFCCC guidelines provided in EB 62 ANNEX 05

a) IFC Approval (Board Approval on project implementation) Document Dtd. 15.05.2008
b) UNFCCC CDM portal, Prior consideration notification indicating the date received as 05/10/2009
c) Intimation to DNA - the acknowledgement Letter Ref No:NRE(S)62.120.010.001.002/012JLD7(10) Dated 05/01/2009 from Conservation and Environmental Management Division of Ministry of Natural Resources and Environment, Malaysia.Engagement letter with consultant dated 30/11/2009

/11/ Evidences against all Techno-economic input data and assumptions used in Investment analysis

a) Proposal from Da Yuen Engineering & Construction for Phase -I Project implementation i.e. for Anaerobic Digester and flaring system installation.
b) Contract Agreement (Volume 1 & Volume 2) Dtd.25th May 2010 for Phase I.
c) Phase II Investment break down summary. Consideration of Board of Directors dated 02/12/2008.
d) CER Price at the time of investment decision - Based on the Report published by JP Morgan titled “Understanding CER Price Volatility”
e) Diesel Consumption Data - Log sheets maintained by the PP for Period September – December 2009 and January – August 2010.
f) Monthly Diesel Price - PPBOP Average Monthly diesel price data presented by the PP in Excel Sheet – Verified from the web site.
g) Quotation for Diesel prices from BN NGU’S Trading SDN. BHD.(DTD. 17.03.2010 and 13/01/2010)
h) Operating & Maintenance Cost –

- Schedule Tender Price List for Mechanical spares for various equipment's installed at Waste Water Treatment Plant.
- Phase II AFCE Budget Breakdown
- Purchase orders for Valves
- Salary Slips of waste water treatment plant operators.

i) Proof for the Operating Life Time of Biogas Engine – Technical Document issued by the Technology provider Shengli Oilfield Shengli Power Machinery Group Company Ltd, Dtd. 30th September 2011

j) Proof for the Operating life time of Anaerobic Digester Tanks - Issued by Rekanan Jurutera Perunding SDN.BHD Dated 19/04/2011 in accordance with Code of Practice BS 2654:1973 and API 650:1988.

/12/ Proof of Acceptance of Tender by the EPC contractor appointed for Phase I project implementation i.e. Da Yuen Engineering & Construction Dtd. 10/02/2010

/13/ Internal Feasibility Study Report Date – 12/11/2008

/14/ Copies of Authorization for capital expenditure (AFC Document) Date -

/15/ Email copies and extract of Management Review for board of directors approval on project implementation

/16/ Contract Document with CDM Consultant KPMG Advisory Services Pte. Ltd.

/17/ Ownership document No. A085793 [Borang 1 – Seksyen5,23DAN24(2)

/18/ Proof of Payment to the EPC Contractor against Phase I Project implementation i.e. Construction of Anaerobic digester tanks. - Certificate of Payment and Variation orders by the Project management consultant Rekanan Jurutera Perunding Sdn Bhd.from the Charted Accountants confirming PLF (Certificate No. 20951/DYE / 7 Dtd. 29/09/2011 showing summary of 1-7 Progress Payments)

/19/ Record of Stakeholder meeting attendance and Advertisement in local newspapers and invoice from the publishing companies Dated – 15/11/2009 for payment purpose.

/20/ http://eprints.utp.edu.my/1310/1/Kinetic_evaluation_of_palm_oil_mill_effluent_digestion_in_a_high_rate_up-flow_anaerobic_sludge_fixed_film_bioreactor.pdf

/21/ http://www.academicjournals.org/ajb/PDF/pdf2010/19Apr/Baharuddin%20et%20al.pdf

/22/ Safety Risks in Biogas plants (http://www.eu-vri.eu/filedown.aspx?file=7032) – As there is no local information available DOE Considered this information relevant in proving technological Barrier.

/23/ Accidents in Biogas Plants (http://anaerobic-digestion-news.blogspot.com/2008/12/four-killed-by-biogas-in-digester-tank.html) http://www.hindu.com/2009/08/27/stories/2009082761930100.htm

/24/ **Palm oil development and performance in Malaysia**
Presentation to USITC Washington DC, Feb. 3, 2010, *Prepared by - MPOB and APOC (http://www.americanpalmoil.com/pdf/USITCpre-PublicHearing-V2.pdf)*
For the number of Palm oil mills operating in Malaysia.

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

/25/ CDM Validation and Verification Manual (Version 1.2)

/26/ Approved Baseline & Monitoring Methodologies:
1. AMS-III.H, Version 16
2. AMS-I.C, Version 19

/27/ Tool to determine project emissions from flaring gases containing methane, EB 28 Annex 05

/28/ Tool to calculate Project or leakage CO2 emissions from Fossil fuel combustion, Version 2.

/29/ AMS-I.D (Version 16) – To Calculated weighted Average emission Factor for current generation Mix.

/30/ UNFCCC: Guidelines for Completing the Project Design Document (CDM-SSCPDD) and the template for the CDM-SSC-PDD, version 05

/31/ UNFCCC, CDM-SSC-PDD–Project Design Document form for Small-Scale project activities, Version 03, EB 28, Annex 34

/32/ Annex 13 of EB 62; Guidance on the demonstration and assessment of prior consideration of the CDM, version 4.0

/33/ Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities.

/34/ Annex 05 of EB 62; Guidance on the assessment of Investment analysis, Ver. 5.0.

/35/ General Guidance to SSC CDM methodologies

/36/ Guidelines on Assessment of De-bundling for SSC project activities in EB 54, Annex 05

/37/ Design Specifications for Anaerobic Digesters and Ancillary system

/38/ Flare Specification Document Dtd. 17/03/2010

/39/ P& ID for Methane Recovery Process (Drg No. SARE-MR-001/ Dtd 24/11/2010)

/40/ Design Drawing for current anaerobic Lagoons / Ponds (Drg No. 20951/DOE/1C Dtd. 09.12.2009 Rev B)

/41/ Location & Site Plan Drg no. K301/2/M&E / 01 Dtd. March 1995

/42/ Record of 10 Day Measurement Campaign – Report No. R188/10 Date 15/11/2010.

/43/ Training records against training provided to the operators of Biogas Plant.

/44/ Mill production records Showing FFB Crushing and Palm oil Crude production details.

/45/ P&ID Documents for palm oil mill with Capacity.

/46/ Palm Oil mill Effluent generation Data

/47/ Baseline Fuel consumption and Electricity generation records in the form of log book.

Persons interviewed:

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

/1/ Mr. Joshua Lim (Project Coordinator) – Saremas Sdn Bhd
/2/ Mr. Chin Sung (GM – Mill Operation) – Saremas Sdn Bhd.
/3/ Mr. N. GopiKandan (Sr. mill Manager) - Saremas Sdn Bhd.
/4/ Mr. Ng Yeok Chian (Project Manager) – Saremas Sdn Bhd
/5/ Mr. Chan Pooi Ling (Project Engineer) – Saremas Sdn Bhd
/6/ Mr. Lee Kok Vui (Project Executive) – Saremas Sdn. Bhd.
/7/ Mr. Hanif B. Mohd (Project Engineer) – Saremas Sdn Bhd.
/8/ Mr. Rahul Kar (Consultant) – KPMG Services Pte. Ltd.
/9/ Mr. Soekendro Harjono (Consultant) – KPMG Services Pte. Ltd.
/10/ Mr. Henry Qasah (Sakeholder)
/11/ Mr. Ebin Ak Talap (Stakeholder)
/12/ Mr. Husseini Tupong (Stakeholder)
/13/ Mr. Rantau Ak Tapi (Stakeholder)

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7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

H B Muralidhar: (Lead Verifier) *Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects*

Ram M. Desai ***(Verifier)***
Environmental Engineer with over all 13 years of experience in various industries related to Water & Waste water engineering design, installation & Commissioning, Integrated Facility Management for Environmental Services operations in various industries i.e Automotive, Pharmaceutical , IT & Electronics (With Clean Room).
Management System Implementation and Maintenance, Green Building concept implementation, Lean Management Implementation, Water & Waste Water engineering Design & project Management, Project Environmental Compliance etc. for a construction company.
He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience spans for 3 year with BVCI & BVCS. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2005 and working as a lead Verifier for validation and verification of CDM/VCS projects

Mr. Bhavesh Prajapati (Internal Technical Reviewer)
Bureau Veritas Certification, Lead Verifier – Climate Change
Bhavesh Prajapati is a graduate in the field of Chemical Engineering and post graduate in finance (MBA-Finance). He has more than 8 years of Industrial work experience in the field of environment audits, consultancy of HVAC (pharmaceutical industry as well as commercial air conditioning) and utility services and project management. He has undergone lead verifier's training on Clean Development Mechanism. He is involved in the Validation/verification of CDM and VCS projects."

Mr. Toh Ket Tiong (Technical Specialist – For Local Legal Requirements)
Climate change verifier. He holds a Master Degree in Environmental Technology and Management from Asian Institute of Technology, Bangkok, Thailand. He has more than 10 years experience as Environmental Consultant and more than 6 years as ISO 14001 Lead Auditor.
He obtained the certificate of CDM Lead Verifier and ISO 14001 Lead Auditor.
Mr. Sushil Budhia (External Financial Expert)
He has been practicing as Chartered Accountant for 25 years and he has very wide experience on project finance, taxation and financial auditing. He has undergone training on Clean Development Mechanism and has conducted verification of financial indicators like IRR/ NPV for more than 70 CDM Projects.

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APPENDIX A: SAREMAS SDN. BHD., CDM PROJECT VALIDATION PROTOCOL

PROJECT TITLE: METHANE RECOVERY IN WASTEWATER TREATMENT AND UTILIZATION FOR ELECTRICITY GENERATION AT SAREMAS 1 PALM OIL MILL, SARAWAK, MALAYSIA

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
1. Approval			*COUNTRY A (Malaysia)*	*COUNTRY B (Denmark)*		
a. Have all Parties involved approved the project activity?	VVM	44	Malaysia	Denmark	ACC	ACC
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from the DNA)	VVM	45	*Yes PP has identified Malaysia as host party DNA – Participation will be voluntary*	*Yes PP has identified Denmark as Annex I party to the Project Activity – Participation will be voluntary*	ACC	ACC
c. Does the letter of approval from DNA of each Party involved:	VVM	45	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~There is no LOA has been obtained by PP from Annex I party - *CL1*~~	~~CL 1~~	ACC
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	*Malaysia is the Party of the Kyoto protocol* and is verified from the UNFCCC web site	Denmark is party to Kyoto protocol and is verified from the UNFCCC web site	ACC	ACC
ii. confirm that participation is voluntary?	VVM	45.b	*Verified and found that participation is voluntary there is no legal obligations for implementing the project activity.*	*Verified and found that participation is voluntary there is no legal obligations for implementing the project activity.*	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	*Yes*	Yes	ACC	ACC
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	*Yes the title of project is clear and precise to the project activity and the Tiltle is* "Methane recovery in wastewater treatment and utilization for electricity generation at Saremas I palm oil mill, Sarawak, Malaysia"		ACC	ACC
d. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~*CL1*~~	~~CL 1~~	ACC
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~*CL1*~~	~~CL1~~	ACC
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	*No the there is no doubt original letter is verified by the validation team*	~~*CL1*~~	~~CL1~~	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
			and authenticity was confirmed with the DNA authority through Email communication independently.			

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	*No the there is no doubt original letter is verified by the validation team and authenticity was confirmed with the DNA authority through Email communication independently.*		~~CL1~~	ACC
2. Participation			*PP1 - Saremas Sdn Bhd*	Nordjysk Elhandel A/S		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Yes	Yes	ACC	ACC
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~CL1~~	~~**CL 1**~~	ACC
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes	Yes	ACC	ACC
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	Yes	Yes	ACC	**ACC**
e. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)	VVM	52	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~CL1~~	~~CL1~~	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No.		ACC	ACC
g. Has the approval of participation issued from the relevant DNA?	VVM	53	LOA from DNA is obtained and given to Validation team for verification DNA Approval letter Ref. No. NRE(S)602-2/11 Jld 15 (33) Dated 13/04/2012	~~CL1~~	~~CL1~~	ACC
h. Is there doubt with respect to (g) above?	VVM	53	No the there is no doubt original letter is verified by the validation team and authenticity was confirmed with the DNA authority through Email communication independently.	~~CL1~~	~~CL1~~	ACC
i. If yes, was verified with the DNA that the approval of participation is valid for the proposed project participant?	VVM	53	No the there is no doubt original letter is verified by the validation team and authenticity was confirmed with the DNA authority through Email communication independently.	~~CL1~~	~~*CL1*~~	ACC
3. Project design document						
a. Is the PDD used as a basis for validation prepared in accordance with the latest template	VVM	55	Yes		ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
and guidance from the CDM Executive Board available on the UNFCCC CDM website?					
b. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Yes	ACC	ACC
c. In CDM-SSC-PDD section A.1 are following provided?	EB 34	Ann 09		ACC	ACC
i. Title of project	EB 34	Ann 09	Yes	ACC	ACC
ii. Current version number and date of document	EB 34	Ann 09	Yes	ACC	ACC
d. In CDM-SSC-PDD section A.2 are following provided (max. one page)?	EB 34	Ann 09	Yes	ACC	ACC
i. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, present scenario and baseline	EB 34	Ann 09	Yes, however Table 1 , table 2 and corresponding paragraph needs corrections hence CAR 1 was raised. - Installed generation capacity of Turbine -1600 as seen from the name plate - Diesel Generators installed 03 numbers of capacity 400 KW , 400 KW and 300KW	~~CAR 1~~	ACC
ii. Explanation how the GHG emission reductions are effected	EB 34	Ann 09	Yes	ACC	ACC
iii. The PP's view on the contribution of project activity to sustainable development	EB 34	Ann 09	Yes it is found covered in Section A.2 where PP has addressed Environmental / Economical and Social Sustainability adequately and found satisfactory.	**ACC**	ACC
e. In CDM-SSC-PDD section A.3 are following provided in the tabular format?	EB 34	Ann 09		ACC	ACC
i. List of project participants and Party(ies)	EB 34	Ann 09	Yes	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Identification of host party	EB 34	Ann 09	Yes	ACC	ACC
iii. Indication whether the Party wishes to be considered as project participant	EB 34	Ann 09	To be verified once the Host DNA approval for the project is obtained by the PP	ACC	ACC
f. In CDM-SSC-PDD section A.4.1 are following provided?	EB 34	Ann 09		ACC	ACC
i. Technical description, location, host party(ies) and address as required?	EB 34	Ann 09	Yes it is provided and found in line with the requirement	ACC	ACC
ii. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 34	Ann 09	Yes it is found satisfactory and is limited to one page.	ACC	ACC
g. In CDM-SSC-PDD section A.4.2 are following provided	EB 34	Ann 09		ACC	ACC
i. the list of categoreis of project activities as per the latest categorization of Appendix B to to the simplified modalities and procedures for small-scale CDM project activities, hereafter referred to as Appendix B. (refer http://cdm.unfccc.int/methodologies/SSCmethodologies	EB 34	Ann 09	Yes. PDD Section A.4.2 is in compliance with the requirement – PP has developed the project using two Approved Methodologies i.e. AMS III H & AMS IC. As per Appendix B of the simplified modalities and procedure for small scale CDM Project, the said project is classified under Type III Other Project activity and Type I Renewable Energy Project.	ACC	ACC
ii. A description of how environmentally safe and sound technology and know how is being applied by the project activity interalia technology transfer to the Host Party(ies) for application in the project activity	EB 34	Ann 09	Yes it is addressed effectively in the Section A4.2 of PDD.PP has utilized Two technologies as given below 1. Methane generation using Anaerobic degradation of Palm oil mill effluent and flaring it in controlled conditions (Phase I project activity). 2. Capturing methane to generate Electricity using Biogas engine (Phase II Project Activity)	ACC	ACC
h. In CDM-SSC-PDD section A.4.3 is the estimation	EB	Ann	Yes estimation of emission reduction is done for	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
of emission reductions provided, as requested, in a tabular format?	34	09	07 years in tabular format		
i. In CDM-SSC-PDD section A.4.4 is information regarding Public funding provided?	EB 34	Ann 09	Yes, there is no public funding is used for this project	ACC	ACC
j. In CDM-SSC-PDD section A.4.5 are following provided?	EB 34	Ann 09		ACC	ACC
i. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity.	EB 34	Ann 09	Yes it is confirmed using condition defined in Appendix C of modalities and procedures for the small scale CDM project Activity. There is a Biomass Boiler installed for steam and electricity generation in baseline scenario, however there was no clarity whether this biomass boiler utilized for generating steam and electricity is a part of any CDM project, hence CL 4 was raised. PP has replied to the CL and confirmed that this boiler is not a part of any CDM project activity, this was verified using UNFCCC web site and found that there is no CDM project registered.	~~CL 4~~	Accep ted
ii. Indication if there is a registered small-scale project activity under the CDM or an application to register another small-scale project activity under the CDM	EB 34	Ann 09	No. Not Applicable	ACC	ACC
a. With the same project participants	EB 34	Ann 09	No. Not Applicable	ACC	ACC
b. Registered within the period of 2 years	EB 34	Ann 09	No. Not Applicable	ACC	ACC
c. Whose project boundary is within 1 km of	EB	Ann	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the project boundary of the proposed small-scale activity under the CDM at the closest point.	34	09			
k. In CDM-SSC-PDD section B.1 is the approved baseline and monitoring methodology and version no provided?	EB 34	Ann 09	Yes The Baseline and monitoring of this project activity is based on two Approved Methodologies as given below 1. AMS III H (Version 16) – "Methane Recovery in Waste Water Treatment" 2. AMS I C (Version 19) – "Thermal Energy for the user with or without Electricity" Selection of Approved methodologies found correct and are of current version at the time of Site visit.	ACC	ACC
l. In CDM-SSC-PDD section B.2 are the following provided?	EB 34	Ann 09		ACC	ACC
i. Justification of the choice of project activity and category?	EB 34	Ann 09	Yes it is defined and justified using AMS III H Criteria in PDD section B.2 Table 3	ACC	ACC
1. Does the lagoons have condition as following: 1.1 deeper than 2 meters 1.2 without aeration 1.3 ambient temperature above 15℃, at least durin g part of the year, on a monthly average basis, 1.4 the minimum interval between two consecutives sludge removal events shall be 30 days.	AMS	III H	Anaerobic Lagoons at project site are found complying with requirement of AMS Conditions - Lagoon drawings obtained during site visit shows Sizes as 137M x 76 M x 4.5 M (02 No. Anaerobic Ponds) – Refer Lagoon Design Drg Dtd. 18th June 1999. - Lagoons are found without Aeration and confirmed during site visit. - Last Sludge Removal was carried out during March 2011 which is more than 30 Days.	ACC	ACC
2. This methodology comprises measures that recover biogas from biogenic organic matter in wastewaters by	AMS	III H	- This methodology comprises measures that recover biogas from biogenic organic matter i.e	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
means of one, or a combination, of the following options: 2.1 Substitution of aerobic wastewater or sludge treatment systems with anaerobic systems with biogas recovery and combustion; 2.2 Introduction of anaerobic sludge treatment system with biogas recovery and combustion to a wastewater treatment plant without sludge treatment; 2.3 Introduction of biogas recovery and combustion to a sludge treatment system; 2.4 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. 2.5 Introduction of anaerobic wastewater treatment with biogas recovery and combustion, with or without anaerobic sludge treatment, to an untreated wastewater stream; 2.6 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).			Palm oil Mill Effluent (POME) generating from Palm Oil Mill extraction process by means of introduction of a sequential stage of waste water treatment with recovery and combustion of biogas, without sludge treatment. -The recovered biogas will be partially used in Phase II for electricity generation and excess gas will be flared, this is line with the requirement of Para 3(a) of AMS III H (version 16)		
3. Is the recovered biogas from measures in Paragraph 1 also utilized for the following applications instead of	AMS	III H	PP has justified Application of AMS III H criteria for applicability in Section B.2 of PDD and it is found	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
combustion/flaring: 3.1 Thermal or mechanical, electrical energy generation directly; or 3.2 Thermal or mechanical, electrical energy generation after bottling of upgraded biogas; or 3.3 Thermal or mechanical, electrical energy generation after upgrading and distribution: 3.3.1 Upgrading and injection of biogas into a natural gas distribution grid with no significant transmission constraints; or 3.3.2 Upgrading and transportation of biogas via a dedicated piped network to a group of end users; or 3.3.3 Upgrading and transportation of biogas (e.g. by trucks) to distribution points for end users. 3.4 Hydrogen production. 3.5 Use as fuel in transportation applications after upgrading.			that Para F under Technology / measure of AMS III H is selected to justify applicability. - PP has installed three Sequential Anaerobic digesters for the treatment of POME generating out of Oil extraction process. - In Phase I of project PP has installed three Sequential Anaerobic digesters, 02 clarifiers and one flaring unit of capacity shown in the Baseline calculation.		
4. If the recovered biogas is used for project activities covered under paragraph 3a, that component of the project activity can use a corresponding methodology under Type I.	AMS	III H	PP Has decided to adopt AMS IC, which is a Type I Methodology. PP is intended to utilize generated methane gas for producing Electricity for captive usage during Phase II of project – PP has initiated the Purchasing process for phase II implementation.	ACC	ACC
5. If the recovered biogas is utilized for production of hydrogen (project activities covered under paragraph 3 d, that component of project activity shall use corresponding category	AMS	III H	Not applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
AMS-III.O.					
6. In case of project activities covered under paragraph 3b if bottles with upgraded biogas are sold outside the project boundary the end-use of the biogas shall be ensured via a contract between the bottled biogas vendor and the end-user. No emission reductions may be claimed from the displacement of fuels from the end use of bottled biogas in such situations. If however the end use of the bottled biogas is included in the project boundary and is monitored during the crediting period CO_2 emissions avoided by the displacement of the fuels is eligible under a corresponding Type I methodology, e.g., AMS-I.C.	AMS	III H	Not Applicable	ACC	ACC
7. In case of project activities covered under paragraph 3c i emission reductions from the displacement of the use of natural gas is eligible under this methodology, provided the geographical extent of the natural gas distribution grid is within the host country boundaries.	AMS	III H	Not Applicable	ACC	ACC
8. In case of project activities covered under paragraph 3c ii emission reductions for the displacement of the use of fuels can be claimed following the provision in the corresponding Type I methodology, e.g., AMS-I.C.	AMS	III H	Not Applicable	ACC	ACC
9. In particular, for the case of 3 (b) and (c) (iii), were the physical leakage during storage and transportation of upgraded biogas, as well as the emissions from fossil fuel consumed by vehicles for transporting biogas considered?			Not Applicable	ACC	ACC
10. In case of project activities covered under paragraph 3b and 3c, this methodology is applicable if the upgraded	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
methane content of the biogas is in accordance with relevant national regulations (where these exist) or, in the absence of national regulations, a minimum of 96% (by volume).					
11. 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 requirements in the General Guidance for SSC methodologies concerning these topics. In addition the requirements for demonstration of the remaining lifetime of the equipment replaced as described in the general guidance shall be followed.	AMS	III H	Not Applicable	ACC	ACC
12. The location of the wastewater treatment plant shall be uniquely defined as well as the source generating the wastewater and described in the PDD.	AMS	III H	Yes It is clearly defined in the PDD section B.3	ACC	ACC
13. Measures are limited to those that result in aggregate emission reductions of less than or equal to 60 kt CO_2 equivalent annually from all Type III components of the project activity.	AMS	III H	Yes it is satisfying the Criteria of aggregate emission reductions of less than or equal to 60 KT CO_2 equivalent annually – Refer to the Emission reduction Calculations in PDD Section A 4.3	ACC	ACC

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ii. Demonstration that the project activity qualifies as a small-scale project activity and that it will remain under the limits of small-scale project activity types during every year of the crediting period as per the following:For Type I : the capacity of the proposed project activity will not exceed 15 MW (or an appropriate equivalent); For Type II: the annual energy savings on account of efficiency improvements will not exceed 60 GWh (or an appropriate equivalent) in any year of the crediting period; For Type III: the estimated emission reductions of the project activity will not exceed 60 ktCO2e in any year of the crediting period.	EB 34	Ann 09	Yes this criteria is also fulfilled by the PP as the Project activity is classified under Type III project and the estimated emission reduction due to project activity is 23,101 tCO2 for Phase I i.e. during 1st year and 24,230 tCO2 for Phase II i.e. from 2nd year onward till 21st year. Hence the project activity will never exceed 60 $ktCO_{2e}$ in any year of the crediting period.	ACC	ACC
m. In CDM-SSC-PDD section B.3 is the project boundary of the project activity, based on the guidance of the applciable project category, provided?	EB 34	Ann 09	Yes Project boundary is defined as per the guidance of applicable project category i.e. para 15 of AMS III H (Version 16). The project boundary is nothing but a physical geographical site where the waste water treatment is carried out, in the base line and project situations. It covers all facilities where processing of POME and biogas capture takes place. The project boundary is covering existing lagoons and the newly constructed Anaerobic digesters, Clarifiers , flaring system (Phase I equipment's) as well as Biogas engine (Phase II Equipment). PP has defined the project boundary	ACC	ACC
Does the project boundary encompasses the following	AMS	III H			
1. (Paragraph 15) The project boundary is the physical,	AMS	III H	Project boundary is covering entire POME treatment facility, Biogas capture, flaring and electricity generation	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
geographical site where the wastewater and sludge treatment takes place in baseline and project situation. It covers all facilities affected by the project activity including sites where the processing, transportation and application or disposal of waste products as well as biogas takes place.			activities and is found in line with the requirement of AMS III H. (Baseline as well as project scenario) The project boundary delineation is included in the PDD and shown as Figure 3, Figure 4 and Figure 5 for Base line scenario and Project Activity Phase I & II respectively.		
2. (Paragraph 16) 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 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 qty. 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 potential remains unaltered.	AMS	III H	Not Applicable as the only first unit of waste water treatment system shall be unchanged i.e. Mixing Pond, otherwise entire process is changed and there is a considerable difference in the operational parameters is observed – The same is adequately justified and all operating parameters of anaerobic digesters are clearly defined in the monitoring plan.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
n. In CDM-SSC-PDD section B.4 are following provided?	EB 34	Ann 09		ACC	ACC
i. The baseline for the proposed project activity with reference to the chosen project category	EB 34	Ann 09	Yes it is found clearly defined in the Section B.4 of PDD. PP has demonstrated the development of Baseline referring General Guidelines to SSC CDM Methodologies" EB 58 Report, Annex 23. PP has utilized most plausible scenarios, i.e. the continuation of the existing system that is Anaerobic Ponds for wastewater treatment with no biogas recovery and electricity generation using Diesel generator sets. This baseline justification is found in line with the respective Approved Methodologies i.e. AMS III H and AMS IC.	ACC	ACC
ii. Justification of key assumptions and rationales	EB 34	Ann 09	Justification given by the PP in PDD is given as below - POME Waste Water Treatment system in the form of anaerobic ponds without methane recovery in which project activity will be carried out is in line with the PARA 1 of AMS IIIH (Version 16) - PP is intended to implement renewable energy technology that displaces technology using fossil fuel. The simplified Base line in this case shall be the continuation of usage of fossil fuel (Diesel for Energy Generation that would have been in the absence of the project activity/	ACC	ACC
iii. Transparent illustration of all data used to	EB	Ann	Yes Data utilized for arriving at the baseline	ACC	ACC

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determine the baseline emissions (variables, parameters, data sources etc)	34	09	emission calculation found clearly defined and is found transparent. PP has share d Excel spread sheet for demonstrating compliance towards this requirement		
o. In CDM-SSC-PDD section B.5 are following provided?	EB 34	Ann 09	Yes	ACC	
i. Explanation that the proposed project activity is additional as per options provided under attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities	EB 34	Ann 09	▪ Demonstration of additionally is found inline with the options provided in Attachment A To Appendix B of Simplified Modalities and procedure for small – scale CDM Project Activity. ▪ PP has utilized Investment Barrier / Technology Barrier and Barrier due to Prevailing Practices ▪ All three barriers are briefly discussed in the PDD Section B.5 and found that The pay back period is shown as financial indicator. However the basis / consideration of Payback period is not been explained. PDD Section B.5 uses simple cost analysis to demonstrat Invenstment Barrier for demonstration of Additionality. The pay back period is shown as financial indicator. However the basis / consideration of Payback period is not been explianed. Evidence for cross checking the financial parameters such as investment cost of different cost heads of the project has not been provided. – PP's response to CAR – Payback period is no longer used in the updated PDD. Due to the nature	~~CAR 3~~	Accep ted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			of the cashflow trend over the 25-year timeframe (i.e. positive and negative cashflows), IRR of the project could not be defined and hence is not used as financial indicator. Thus, the investment barrier has been updated with the use of Net Present Value (NPV) as the financial indicator in Section B.5 of the PDD to clearly demonstrate that with the addition of CER revenues, the NPV of the project turns positive which allows the project to be financially viable and attractive. An excel sheet with the detail Financial Analysis of the project and the evidence of investment cost breakdown attached. ▪ Technological Barrier and Barrier due to prevailing practice found justified adequately and found satisfactory		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. National policies and circumstances relevant to the baseline of the proposed project activity	EB 34	Ann 09	Host country does not have any specific requirement on capturing the Methane generating from POME treatment. Only specifies the discharge limits which are continuously complied by the PP with existing method of treatment i.e. Treatment of POME in series of open lagoons. Verified Waste water analysis reports before and after treatment and found no violation. PP has voluntarily taken decision to implement project of Treating POME using advanced technology and capturing Methane to generate Electricity.	ACC	ACC
iii. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation. (this is part of the large scale project guidelines. It is better to be retained)	EB 34	Ann 09	The incentive from the CDM was seriously considered to proceed with the project activity can be evidenced through various documents verified during site visit and are found in line with the table 6 – Series of events prior consideration of CDM. Documents verified are listed as below 1. Verified UNFCCC Prior Consideration Letter Dtd. 15th October 2009 on UNFCCC web site. 2. IFC Document where Committee approves the budget for the project Dtd. 14th May 2008 3. Internal study on Anaerobic Digester System with CDM Consideration (Internal Feasibility Report) Dtd. 12th November 2008 4. Completion of internal evaluation of the project dtd. 22nd January 2009.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			The Internal FSR Document submitted by the PP indicates that the price of CER considered was USD 19/tCO_{2e}. This is a small scale project and date of validation is after the project start date. Project Start Date was mentioned as 12th February 2010 when EPC contract was awarded for construction of Anaerobic Digester (Phase I Project implementation)		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
p. In CDM-SSC-PDD section B.6.2 are following provided?	EB 34	Ann 09		ACC	ACC
i. A compilation of information on the data and parameters that are not monitored but determined upfront so as to be available for validation	EB 34	Ann 09	Yes PP has compiled information on the data and parameters that are not monitored but determined upfront so as to be available for validation. This section mainly uses default values against various parameters utilized by PP to demonstrate baseline and project emission calculation and some are the measured parameters during project activity. Found inline with the AMS III H and IPCC default values for various parameters. PP has calculated Baseline emission using measurement campaign of 10 days as there is no one year historical data of the affected two anaerobic lagoons at the project location is available. 10 Days campaign is accepted as per the Para 27 of AMS III H (Version 16), The Data collected during measuring campaign carried out during 12th October 2010 to 21st October 2010 is provided in the Annex 3 of the PDD, which is inclusive of Waste water flow, COD in and COD out COD Reduction, COD Loading rate etc.	ACC	ACC
ii. The actual value applied	EB 34	Ann 09	Actual values applied are taken from the 10 Days Measurement Campaign and re provided adequately in Annex 3.	ACC	ACC
iii. Explanation and justification for the choice of the source of data	EB 34	Ann 09	Explanation and justification for the choice of the source of data is provided in the Table 8, Table 10 and Section B 6.2 sections of PDD. Parameters	ACC	ACC

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			verified and found in line with sources justified by PP.		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv. Clear and transparent references or additional documentation in Annex 3	EB 34	Ann 09	Yes Measuring Campaign results are clearly tabulated in the Annex 3 of the PDD. Average Values from the Measuring campaign are calculated and are validated as below Qww,in = 867.152 m3/day Qww,out = 1,086.879 m3/day CODin = 52,850 mg/L = 0.05285 tonnes/m3 CODout = 11,876 mg/L = 0.011876 tonnes/m3 _BL = ((0.05285 – 0.011876) / 0.05285) * 100% = 77.53 % The design flow rate of the anaerobic digesters system is as follow: Qww,in = 600 m3/day = 219,000 m3/year Qww,out = 588.6 m3/day = 214,839 m3/year Since the design flow rate is less than the existing wastewater treatment system's flow rate, therefore theproposed CDM project will only treat part of the total wastewater generated by the palm oil. As a result,the baseline flow rate (Qww,in and Qww,out) will use the design flow rate.	ACC	ACC
v. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement	EB 34	Ann 09	Yes Found defined in the Tabular format.	ACC	ACC

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results					
q. In CDM-SSC-PDD section B.6.3 are following provided?	EB 34	Ann 09		ACC	ACC
i. A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology	EB 34	Ann 09	Yes it is provided in Section B6.3 of PDD and found that PP has utilized correct formulae to arrive at ex Ante Calculation of project emission, baseline emissions and leakages expected during the crediting period and is found correct. PP has used two methodologies and calculations are based on the correct formulae from both methodologies i.e. AMS III H (Version 16) and AMS IC (Version 19) Verified with the Excel sheet used for emission calculation. Summary of the Ex – ante estimation of emission reduction is provided in Section B.6.4 of PDD. PP has demonstrated clearly - Estimation of baseline emissions - Estimation of Project Activity emission consists of Emission due to Power Consumption, waste water discharge , fugitive emissions and flaring emissions. - Estimation of Leakages. - Estimation of overall emission reductions	ACC	ACC
ii. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 34	Ann 09	Yes the Documentation of each equation adequately done with illustration of values applied in each equation is found transparent and it can be correlated with relevant sources. Cross referencing is provided in PDD against each equation and parameters used.	ACC	ACC

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iii. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 34	Ann 09	*Yes Spread sheet for calculations is provided and validated during the site visit for correctness*	ACC	ACC
iv. Emission reduction calculations for each component are provided separately if more than one component activity is applied	EB 34	Ann 09	Yes. PP Adopts two Approved methodologies i.e. AMS IIIH and AMS I.C, required components under both AMS's are captured and provided separately for the emission reduction calculations in the PDD.	ACC	ACC
r. In CDM-SSC-PDD section B.6.4 are the results of the ex ante estimation of emission reductions for all years of the crediting period, in a tabular format, provided?	EB 34	Ann 09	Yes it is provided in the tabular manner and found transparent. All values are obtained using relevant formulae and equations defined in both Approved methodologies applied for the development of Project Baseline i.e. AMS III.H (Version 16) and AMS IC (Version 19).	ACC	ACC
s. In CDM-SSC-PDD section B.7.1 are following provided?	EB 34	Ann 09	YES	ACC	ACC
i. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 34	Ann 09	▪ Yes it is provided using specified format in the Guideline for completing the project design document (EB 41 Annex 12) ▪ All Monitoring parameters were verified and found in line with the Baseline calculations and project emission calculations. Applicability of all identified parameters in the section was validated and found correct. ▪ Sources of Data utilized against these identified monitoring parameters were also verified and found that data capture from these sources is authentic ie. Operation log books for diesel generators, Turbine operation log books , Flow meter readings etc.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. For each below parameter the following information, using the table provided:	EB 34	Ann 09		ACC	ACC
a. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred	EB 34	Ann 09	Yes it is provided and justified adequately. There is no National statistics utilized for arriving at the emission reduction calculations. In most cases PP Monitored values and Default IPCC values are considered and found correct	ACC	ACC
b. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person/entity that should undertake the measurements and what is the measurement interval; (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment. Provide any relevant further background documentation in Annex 4.	EB 34	Ann 09	Description on Source of data measurement methods, QA / QC is adequately defined in the format, however Monitoring Plan section B.7.2 does not include the charactrisitcs / configuration of the the monitoring and measurement instuments and calibration needs.	~~CAR 4~~	ACC
iii. A detailed description of the monitoring plan.	EB 34	Ann 09		ACC	ACC
a. The operational and management	EB	Ann	Yes it is provided in the PDD Section B .7.1	ACC	ACC

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structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity	34	09			
b. These responsibilities for and institutional arrangements for data collection and archiving	EB 34	Ann 09	Plant Technicians are responsible for Recording and reporting monitored data on daily basis and Plant Manager is responsible for review of collected data and analysing it to arrive at emission reductions on regular basis. The General Manager of the project is the final authority to review of the monitoring plan for correctness.	ACC	ACC
c. Does the monitoring plan reflect good monitoring practice appropriate to the type of project activity	EB 34	Ann 09	Monitoring Plan section B.7.2 does not include the charactrisitcs / configuration of the the monitoring and measurement instuments and calibration needs.	~~CAR 4~~	ACC
d. Relevant further background information in Annex 4	EB 34	Ann 09	Annex 4 is provided to explain how emission factor for the captive grid calculation is done using Para 12 of AMS ID Version 16. for this PP has adopted Option (b) i.e. weighted average emissions in tCO2/MWH of the current generation mix. The emission factor of the captive grid is calculated by the following equation: *EFgrid = (_FCi,y * NCVi * EFCO2,i) / EGy* *= (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy* *FCdiesel,y* = (*_diesel * Qdiesel,y*) / 1,000 *EGy = Pbiomass boiler * nbiomass boiler,y + Pdiesel * ndiesel generators,y*	ACC	ACC

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t. In CDM-SSC-PDD section B.8 are following provided	EB 34	Ann 09		ACC	ACC
i. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 34	Ann 09	Yes Date of completion of application of the methodologies to the project activities is mentioned in Section B.8 of PDD as 10th February 2011in DD/MM/YYYY format.	ACC	ACC
ii. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 34	Ann 09	Contact information is provided as Saremas Sdn Bhd 38 Jalan Sultan Ismail 15th floor, Wisma Jerneh, Kuala Lumpur Tel: +60-3-2119-9000 Email: joshualim@wilmar.com.sg (responsible person: Mr. Joshua Lim)	ACC	ACC
iii. Indicated if the person/entity is also a project participant listed in Annex 1	EB 34	Ann 09	Yes it is matching with the Details provided in Annex 1	ACC	ACC
u. In CDM-SSC-PDD section C.1.1 are following provided?	EB 34	Ann 09	Yes	ACC	ACC
i. The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun (EB33, Para 76/CDM Glossary of terms/EB41, Para 67)	EB 34	Ann 09	The Date of Real Action is mentioned and it is found documented as 12/02/2010 – The Award of the EPC contract for Construction of Anaerobic Digesters. Verified the EPC Contract award process and found satisfactory and in line with the claim of date in this Section.	ACC	ACC
ii. A description of how this start date has been determined, and a description of the evidence available to support this start date	EB 34	Ann 09	The starting date of a CDM project activity is the earliest date of the (1) implementation; or (2) construction; or (3) real action of a project activity. Using this definition, the start date of the project activity is the date where real action starts, i.e. the	ACC	ACC

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			award of the EPC contract, which is 12/02/2010. Verified EPC Contract date through Letter of intent / Acceptance of Tender Dtd. 12th February 2010 to M/s Da Yuen engineering & Construction and subsequent contract Agreement with the Vendor Dtd. 25th May 2010		

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iii. If this starting date is earlier than the date of publication of the CDM-SSC-PDD for global stakeholder consultation by a DOE, does Section B.5 above contain a description of how the benefits of the CDM were seriously considered prior to the starting date (EB41, Para 68).? (though this is in guideline for large scale projects, it is advisable to maintain this for small scale projects as well)	EB 34	Ann 09	*Yes this project Start date is earlier than the date of Publication of the CDM –SSC-PDD for global stakeholder consultation – DOE has published the PDD for Stake holders consultation on 5th May 2011.*	ACC	ACC
v. In CDM-SSC-PDD section C.1.2 is the expected operational lifetime of the project activity in years and months provided?	EB 34	Ann 09	Yes PP has selected 25 Years as operational life time of the project activity which is supported using Tank Design Code of Practice BS2654:1973 & API 650:1988, as confirmed by the EPC contractor Rekanan Jurutera Perunding Sdn Bhd, through letter Dtd. 19th April 2011.	ACC	ACC
w. In CDM-SSC-PDD section C.2 is it stated whether the project activity will use a renewable or a fixed crediting period and completed C.2.1 or C.2.2 accordingly?	EB 34	Ann 09	PP has selected Renewable Crediting period and is defined clearly in the Section C.2.1 of PDD which is in line with the operational lifetime of the project equipments	ACC	ACC
x. In CDM-SSC-PDD section C.2.1 is it indicated thath each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable?	EB 34	Ann 09	Yes It is defined in Section C.2.1.2 of PDD and the length of first crediting period is 07 Years.	ACC	ACC
y. In CDM-SSC-PDD section C.2.1.1 are the dates in the following format: (DD/MM/YYYY) provided?	EB 34	Ann 09	Yes it is provided in DD/MM/YYYY format with a note – that the date is indicative, and shall be	ACC	ACC

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			updated with revised date as date of registration when project will be registered.		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
z. In CDM-SSC-PDD section C.2.1.2 is the length of the first crediting period in years and months?	EB 34	Ann 09	Yes it is defined as 07 years.	ACC	ACC
aa. In CDM-SSC-PDD section C.2.2 is it indicated fixed crediting period at most ten (10) years	EB 34	Ann 09	Not Applicable	ACC	ACC
bb. In CDM-SSC-PDD section C.2.2.1 are the dates in the format (DD/MM/YYYY) provided?	EB 34	Ann 09	Not Applicable	ACC	ACC
cc. In CDM-SSC-PDD section C.2.2.2 is the length of the crediting period in years and months provided?	EB 34	Ann 09	*Not Applicable*	ACC	ACC
dd. In CDM-SSC-PDD section D.1 is the documentation on the analysis of the environmental impacts, if required by Host Party, provided?	EB 34	Ann 09	The project activity does not require an environmental impact assessment, as per letter from the Department of Environment (locally called "Jabatan Alam Sekitar, Negeri Sarawak"). The letter reference is 000/001.jld.7(26) dated 21 May 2010. The Same is verified by the local Legal expert Mr. Toh Ket Tiong (Malaysian Verifier) during site visit and confirmed.	ACC	ACC
ee. In CDM-SSC-PDD section E.1 are following provided?	EB 34	Ann 09	**YES**	ACC	ACC
i. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilities comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted	EB 34	Ann 09	Yes it is defined in the Section E.1 of PDD. The stakeholders meeting was conducted on 19th November 2009 at the Mill Club house and 43 persons attended the meeting. Verified all documents ie. Communication with Stake holders on Date , timing and venue of the meeting. Proceedings of meeting are briefly captured in the PDD. There was no objection raised by the stake holders who attended the meeting.	ACC	ACC

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ii. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures	EB 34	Ann 09	Yes verified the Minutes of meeting and records	ACC	ACC
iii. The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation	EB 34	Ann 09	Yes. DOE received 1st Draft of the PDD in the month of February 2011.	ACC	ACC
ff. In CDM-SSC-PDD section E.2 are following provided?	EB 34	Ann 09	Yes	ACC	ACC
i. Local stakeholders that have made comments identified	EB 34	Ann 09	*Yes Details of comments are made available in the PDD section E.3. There were 03 Queries were raised and PP has answered these queries satisfactorily.*	ACC	ACC
ii. A summary of these comments	EB 34	Ann 09	Yes provided in the PDD section E.3	ACC	ACC
gg. In CDM-SSC-PDD section E.3 is and explanation of how due account have been taken of comments received from local stakeholders provided?	EB 34	Ann 09	*Yes Details of comments are made available in the PDD section E.3. There were 03 Queries were raised and PP has answered these queries satisfactorily.*	ACC	ACC
hh. In CDM-SSC-PDD Annex 1 are following provided?	EB 34	Ann 09		ACC	ACC
i. Contact information of project participants	EB 34	Ann 09	Yes Organization: Saremas Sdn Bhd Street/P.O.Box: 38 Jalan Sultan Ismail Building: 15th Floor, Wisma Jerneh City: Kuala Lumpur Postfix/ZIP: 50250 Country: Malaysia Telephone: +60-3-2119-9000	ACC	ACC

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			FAX: +60-3-2141-0491 E-Mail: - URL: www.wilmar-international.com Represented by: - Title: Project Manager Salutation: Mr Last Name: Lim Middle Name: Chian Yieh First Name: Joshua Department: Project/CSR Mobile: Direct FAX: Direct tel: Personal E-Mail: joshualim@wilmar.com.sg		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 34	Ann 09	Yes it is the Same as provided in annex 1	ACC	ACC
ii. In CDM-SSC-PDD Annex 2 is information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?	EB 34	Ann 09	Not Applicable as there is no public fund availed for this project.	ACC	ACC
jj. In CDM-SSC-PDD Annex 3 is the background information used in the application of the baseline methodology provided?	EB 34	Ann 09	Results from 10 Day measuring Campaign in the baseline wasteWater treatment system is presented in tabular manner and is found in line with Para 27 of AMS III H (Revision 16)	ACC	ACC
kk. In CDM-SSC-PDD Annex 4 is the background information used in the application of the monitoring methodology provided?	EB 34	Ann 09	Annex 4 is provided to explain how emission factor for the captive grid calculation is done using Para 12 of AMS ID Version 16. for this PP has adopted Option (b) i.e. weighted average emissions in tCO2/MWH of the current generation mix. The emission factor of the captive grid is calculated by the following equation: *EFgrid = (_FCi,y * NCVi * EFCO2,i) / EGy* *= (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy* *FCdiesel,y* = (*_diesel * Qdiesel,y*) / 1,000 *EGy = Pbiomass boiler * nbiomass boiler,y + Pdiesel * ndiesel generators,y*	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
4. Project description					
a. 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?	VVM	58	Yes it is provided in the Section A.2 of PDD. The project activity involves replacement of Anaerobic Lagoons which were used to treat 867 M^3/Day volume of POME (Palm Oil Mill Effluent) as a base line scenario with Sequential Anaerobic Digesters to treat 600 M^3/Day of POME to capture Methane Gas and Flaring it during Phase 1 implementation. Methane Gas generated during Phase 1 implementation shall be utilized for generating Electricity using Biogas engine during Phase 2 implementation to eliminate usage of Fossil Fuel (Diesel) for the purpose of electricity generation as baseline scenario. Emission reduction due to Methane capture and elimination of fossil fuel are utilized as important aspects of this project to calculate Emission reductions and subsequent CER generation There are totally Three Digesters are installed by the PP with overall capacity of 10464 M3 with designed HRT of 18.09 Days. Detailed Process flow chart of Treatment is illustrated in the PDD section B.3 , Figure 4 & Figure 5. PP is intended to utilize 6% of total Biogas generated i.e. 388.49 M3/Day for the electricity generation and remaining biogas shall be flared in controlled manner with all process safety and contingency mechanisms to avoid direct emission of methane into the atmosphere.	ACC	ACC
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59		ACC	ACC

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i. sufficiently covering all relevant elements?	VVM	59	Yes all relevant process elements are covered in the project description and is found adequate enough.	ACC	ACC
ii. acurate?	VVM	59	Yes It is accurate from the process point of view and Emission reduction calculations point of view.	ACC	ACC
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Yes. The project description is found clear.	ACC	ACC
c. Is the proposed CDM project activity in existing facilities or utilizing existing equipments?	VVM	60	Yes project activity is existing facilities. PP is using initial mixing pond for collecting POME from Mill and thereafter entire Project equipment is newly designed and constructed which Consists of 1. Mechanical screen 2. Two Parallel Anaerobic Digesters of 3488 M3 Capacity - MOC MS fabricate Tank 3. Two Clarifiers to remove sludge 4. One Buffer tank – MOC – MS 5. One Anaerobic Digester of 3488 M3 capacity in series 6. Pumps, Blowers , Mixers, Flare Unit ant instrumentation.	ACC	ACC
d. Is the CDM project activity one of the following types:	VVM	60		ACC	ACC
i. Large scale?	VVM	60	Not applicable	ACC	ACC
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	Yes – Total Average Annual estimation of Emission reductions in Tones of CO2 equivalent is 24,230 for first crediting period.	ACC	ACC
iii. Bundled small scale projects, each with emission reductions not exceeding 15,000	VVM	60	Not Applicable	ACC	ACC

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tonnes?					
e. If yes to (c) and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	Yes physical Site visit was done for two days on 27th June 2011 and 28th June 2011 to assess the correctness of description provided by PP in the PDD web hosted.	ACC	ACC
f. If yes to (d.iii) above, was the number of physical site visits base on samping?	VVM	60	Not Applicable	ACC	ACC
g. If yes is the sampling size appropriately justified through statistical analysis?	VVM	60	Not Applicable	ACC	ACC
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	Not applicable	ACC	ACC
i. For all other proposed CDM project activities not referred to in paragraphs 59 – 61, and for other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	62	Not Applicable	ACC	ACC
j. If no: was it appropriately justified?	VVM	62	Not Applicable	ACC	ACC
i. Was the validation undertaken by reviewing available designs and feasibility studies, conducting comparison analysis to equivalent projects, as appropriate?-	VVM	62	Not Applicable	ACC	ACC
ii. Was it appropriately justified?	VVM	62	Not Applicable	ACC	ACC
k. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	The proposed CDM Project Activity involves installation of Anaerobic Digesters replacing existing method of treatment i.e. Lagoon.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
l. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	The project description mentioned in the PDD section A.2 & section A4.2 is clearly explaining the differences resulting from the project activity compared to the pre project Situation.	ACC	ACC
5. Baseline and monitoring methodology					
a. General requirement					
a. Do the the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM	65	Yes. PP has utilized two Approved Methodologies i.e. AMS IIIH (Version 16) and AMS I.C (Version 19) and according to the baseline and Monitoring Criteria of both AMS's PP has demonstrated the compliance as below	ACC	ACC
b. Is the selected methodology applicable to the project activity?	VVM	66	Yes Both Methodologies Selected by PP are are Applicable for the project activity.	ACC	ACC
c. Had the PP correctly applied the selected methodology?	VVM	66	Yes PP has correctly applied the Selected methodology and it is addressed in Section B.1 and B.2 (Table 3 and Table 4) of the PDD	ACC	ACC
d. Had the selected methodology been correctly applied with respect to project boundary?	VVM	67	Yes Project Boudary is found inline with the Approved Methodologies. The description of project boundary is mentioned in the Section B.3 of the PDD.	ACC	ACC
e. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Yes PP has correctly identified methodology application with respect to baseline identification and the compliance is demonstrated as below. 1. POME wastewater treatment system in the form of anaerobic ponds without methane recovery, in which the project activity (i.e. anaerobic digesters system) will be introduced. This is accordance to paragraph 1 f of AMS III.H (version 16)	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			2. According to paragraph 13 AMS I.C (version 19), for the 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 the emission factor for the fossil fuel (in this case, diesel) displaced.		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	Yes. Verified all applicable Alogorithms / Formulae used by PP to determine emission reductions and found as per the Applicable approved methodologies.	ACC	ACC
g. Had the selected methodology been correctly applied with respect to additionality?	VVM	67	Yes. Additionality is appropriated defined in the PDD and is found correct.PP has selected and discussed three additionalities to demonstrate that the project Is additional 1. Investment Barrier – Financial Analysis document and Excel sheet is provided to arrive at NPV (Net Present Value) considering CDM Revenue and without CDM Revenue. 2. Technological Barrier – support documents provided for verification of Additionality are given herewith as a links - http://www.academicjournals.org/ajb/PDF/pdf2010/19Apr/Baharuddin%20et%20al.pdf http://cartwright.chem.ox.ac.uk/hsci/chemicals/methane.html 3. Barriers Due to Prevailing Practice in the region – Using Legal requirement Crude Palm Oil Regulation, 1977 by the dept of Environment before being discharged to the water ways or for land application.	ACC	ACC
h. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67	Yes	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. Applicability of the selected methodology to the project activity					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity including that the used version is valid?	VVM	68	**Yes** The baseline and monitoring of this project activity is based on the following approved methodologies: 1. **AMS III-H (version 16)**: "Methane recovery in wastewater treatment" 2. **AMS I-C (version 19)**: "Thermal energy for the user with or without electricity"	ACC	ACC
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	Yes. The selected baselines and monitoring methodology proposed by PP were verified using following Tools "Tool to calculate Project or leakage CO2 emissions from Fossil fuel combustion (Version 2)" "Tool to determine Project emissions from flaring gases containing methane"	ACC	ACC
c. Is the methodology correctly quoted?	VVM	70	Yes Both Methodologies used to develop this project are correctly quoted in the relevant section of PDD.	ACC	ACC
d. Are the applicability conditions of the methodology met?	VVM	71	Yes Applicable conditions of both methodologies are met refer PDD Section B.2 (Table 3 & 4)	ACC	ACC
e. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	71	No.	ACC	ACC
f. Is the choice of the methodology justified?	VVM	71	Yes. The choice of methodology is justified in Section B.2 of PDD.	ACC	ACC
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved methodology?	VVM	71	Yes. It is clearly justified in the PDD and during Site visit it was reconfirmed by verifying actual project equipments and their specifications.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			All Design features of Project equipments are found meeting applicability conditions of both methodologies.		
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	Yes . PDD covers all cross references of tools and Methodological requirements where ever necessary.	ACC	ACC
g. Is the latest versions of the following tools used?	-	-	Yes	ACC	ACC
"Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site'	AMS	III H	Not Applicable	ACC	ACC

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"Tool to determine project emissions from flaring gases containing methane"	AMS	III H	Yes PP has utilized EB 28 Annex 05 for determining Project emissions from flaring gases containing methane appropriately and it is demonstrated in the PDD Section B.6.1 in step by step manner.	ACC	ACC
h. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	As far as POME treatment using anaerobic Digester in local scenario is concern there is no data available, however few studies are being carried out and are found available on internet. One of the prominent Study report was reviewed to verify and compare the basis of project design Baseline Study of Methane emission from open digesting tanks of Palm oil mill effluent treatment which is downloaded from www,Elsevier.com/locate/chemosphere	ACC	ACC
i. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	▪ Yes the PDD was cross checked with the study outcomes and found that the project activity meets the applicable conditions of the methodology. ▪ Open lagoon system with anaerobic conditions is the main applicable criteria.	ACC	ACC
j. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Yes.	ACC	ACC
k. If no, clarification of the methodoloy was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
l. If answer to (5.b.d.) above is “no”, revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	Not Applicable	ACC	ACC
m. If yes to (5.b.l) and (5.b.m) above, a request for registration was submited before the CDM Executive Board has approved the proposed deviation or revision?	VVM	74	Not Applicable	ACC	ACC
c. Project boundary					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	Yes the Project Boundary delineation is defined by PP clearly for Baseline Scenario, For Phase 1 and for phase 2 project activities in Figure 3, figure 4 & Figure 5 in Section B.3 for PDD. PP has adopted two Approved methodologies and hence the project boundary conditions are fulfilled referring to the each individual approved methodology as give below - In accordance with paragraph 15 of AMS III.H (version 16), a project activity 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. - In accordance with paragraph 12 of AMS I.C	ACC	

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			(version 19), a project activity boundary is the physical, geographical site of the project equipment producing the renewable energy delineates the project boundary. The boundary also extends to the industrial facilities, consuming energy generated by the system and the processes or equipment that is affected by the project activity.		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. Is the delineation in the PDD of the project boundary correct?	VVM	79	*Yes it is verified during site visit and confirmed that the project boundary defined in the PDD is Correct and is meeting the both approved methodology criteria.*	ACC	
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	*Yes.*	ACC	
d. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	*Yes all required sources and GHG's by both approved methodologies used are included within the project boundary appropriately.*	ACC	
e. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	79	Yes, however methane and CO2 are the only major GHG's in purview of this project.	ACC	
f. If yes, have the project participants justified that choice?	VVM	79	Yes the choice is justified in the Table 5 of the PDD.	ACC	
g. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	Yes the choice is justified in the Table 5 of the PDD.	ACC	
d. Baseline identification					
a. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	81	Yes. PP has discussed the description of baseline and its development in Section B.4 of the PDD and found satisfactory in addressing the baseline scenario, refereeing to the General guidelines to SSC CDM Methodologies, EB 58 Annex 23. The baseline Scenario defined by the PP is the continuation of the existing system ie. Anaerobic ponds / Lagoons for wastewater treatment with no biogas recovery and electricity generation using diesel generator sets.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	No, there is no specific procedure applicable to identify the most reasonable baseline scenario in both Approved methodologies however, PP has referred to following criteria 1. POME wastewater treatment system in the form of anaerobic ponds without methane recovery, in which the project activity (i.e. anaerobic digesters system) will be introduced. This is accordance to paragraph 1 f of AMS III.H (version 16) 2. According to paragraph 13 AMS I.C (version 19), for the 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 the emission factor for the fossil fuel (in this case, diesel) displaced.	ACC	ACC
b) For a system where all generators use exclusively fuel oil and/or diesel fuel, the baseline emissions is the annual kWh generated by the renewable unit times an emission factor for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1. of AMS I.D.	AMS	I D	Yes PPhas utilized condition of Para 12 of AMS ID Version 16 to calculate the weighted average emission of the current generation Mix.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. In establishing the most reasonable baseline scenario, have the following guidelines as per methodology been followed.	-	-		ACC	ACC
a) Wastewater and sludge treatment systems equipped with biogas recovery facility in the baseline situation shall be excluded from the baseline emission calculations	AMS	III H	Not Applicable	ACC	ACC
b) Baseline emissions for the systems affected by the project activity may consist of: (i) Emissions on account of electricity or fossil fuel used ($BE_{power,y}$); (ii) Methane emissions from baseline wastewater treatment systems ($BE_{ww,treatment,y}$); (iii) Methane emissions from baseline sludge treatment systems ($BE_{s,treatment,y}$); (iv) Methane emissions on account of inefficiencies in the baseline wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea ($BE_{ww,discharge,y}$); (v) Methane emissions from the decay of the final sludge generated by the baseline treatment systems (*BEs,final,y*) - us*ing the formula* $BE_y = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\}$	AMS	III H	(i) Emissions on account of electricity or fossil fuel used ($BE_{power,y}$); Not Applicable (ii) Methane emissions from baseline wastewater treatment systems ($BE_{ww,treatment,y}$); - Applicable iv) Methane emissions on account of inefficiencies in the baseline wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea ($BE_{ww,discharge,y}$); - Applicable (v) Methane emissions from the decay of the final sludge generated by the baseline treatment systems (*BEs,final,y*) - Not Applicable – On the basis of above applicability condition PP has modified the formula and the BE_y is Calculated as below $BE_y = BE_{ww,treatment,y} + BE_{ww,discharge,y}$	ACC	ACC
c) In determining baseline emissions using the above equation, historical records of at least	AMS	III H	As historical records of one year prior to the project implementation is not available, this condition is not	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
one year prior to the project implementation shall be used. This shall include for example COD removal efficiency of the wastewater treatment systems, amount of dry matter in sludge, power and electricity consumption per m3 of wastewater treated, amount of final sludge generated per tonne of COD treated, and all other parameters required for determination of baseline emissions.			applicable. PP has followed Para 27 of AMS III.H which allows PP to carry out measurement Campaign of 10 days to collect the data. PP has used Average Values from the 10 Day measurement campaign after multiplying by 0.89 to account uncertainty range (30% - 50 %)		
d) In case one year of historical data is not available: (a) The parameters shall be determined by a measurement campaign in the baseline wastewater systems for at least 10 days. The measurements should be undertaken during a period that is representative for the typical operation conditions of the systems and ambient conditions of the site (temperature, etc). Average values from the measurement campaign shall be used and the result shall be multiplied by 0.89 to account for the uncertainty range (30% to 50%) associated with this approach as compared to one-year historical data;	AMS	III H	PP Has launched the 10 Days measuring campaign on 12/10/2010 to obtain data on various important parameters i.e Flow,Total solids, COD, BOD, Oil & grease, COD Removal efficiency etc. for the baseline scenario. PP used 0.89 to multiply the obtained value.	ACC	ACC
e) In the case of Greenfield and capacity addition projects, or existing plant without three year operating history the following procedures shall be used to determine the baseline emissions: (1) For existing plant without three year	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
operating history, procedures in paragraph 27 shall be followed; (2) For Greenfield and capacity addition projects, one of the following procedures shall be used: (a) Value obtained from a measurement campaign in a comparable wastewater treatment plant i.e., having similar environmental and technological circumstances for example treating similar type of wastewater. Average values from the measurement campaign shall be used and the result shall be multiplied by 0.89 to account for the uncertainty range (30% to 50%) associated with this approach; (b) Value provided by the manufacturer/designer of a Greenfield wastewater treatment plant using the same technology, demonstrated to be conservative e.g. average values from the top 20 percent plants with lowest emission rate per ton COD removed among the plants installed in the last five years designed for the same country/region to treat the same type of wastewater as in the project activity.					
f) Baseline emissions from electricity consumption (BEpower,y) are determined as per the procedures described in AMS-I.D. The energy consumption shall include all equipment/devices in the baseline wastewater and sludge treatment facility. If recovered biogas in the baseline is used to power	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
auxiliary equipment it should be taken into account accordingly, using zero as its emission factor.					
g) Has correct equation as per methodology used for determining the Methane emissions from the baseline wastewater treatment systems affected by the project?	AMS	III H	Yes PP has utilized correct equation for determining the methane emissions from the baseline waste water treatment system affected by the project i.e. Anaerobic pond / Lagoons	ACC	ACC
h) Has the Methane Correction Factor (MCF) determined correctly?	AMS	III H	Yes Methane Correction Factor is determined correctly. PP has utilized IPCC Default value from Table III H.1 from Approved Methodology and the methane correction factor utilized in the calculation are 0.8 for baseline anaerobic deep lagoon (Depth more than 2 meters) and 0.3 corresponding to Aerobic treatment, poorly managed or overloaded and it is found more conservative.	ACC	ACC
i) Has the Methane emissions from the baseline sludge treatment systems affected by the project activity determined correctly? Pl discuss			Not applicable	ACC	ACC

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c. Does the selected methodology require use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario?	VVM	82	No. Methodology does not require to use any tool to establish the baseline scenario?	ACC	ACC
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	Not Applicable	ACC	ACC
e. Is the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" correctly used?	AMS	III.H	Not Applicable	ACC	ACC
f. Is the "Tool to determine project emissions from flaring gases containing methane" correctly applied?	AMS	III.H	Yes	ACC	ACC
g. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No.	ACC	ACC
h. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	83	Not Applicable	ACC	ACC
i. Has any reasonable alternative scenario been excluded?	VVM	83	No	ACC	ACC
j. Is the baseline scenario identified reasonably supported by:	VVM	84	Yes	ACC	ACC
i. Assumptions?	VVM	84	Not Applicable	ACC	ACC
ii. Calculations?	VVM	84	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Rationales?	VVM	84	In accordance to "General Guidelines to SSC CDM methodologies", EB 58 Report, Annex 23, the baseline of this project activity is the most plausible scenario, which is the continuation of the existing systems (i.e. anaerobic ponds for wastewater treatment with no biogas recovery and electricity generation using diesel generator sets) 1. POME wastewater treatment system in the form of anaerobic ponds without methane recovery, in which the project activity (i.e. anaerobic digesters system) will be introduced. This is accordance to paragraph 1 f of AMS III.H (version 16) 2. According to paragraph 13 AMS I.C (version 19), for the 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 the emission factor for the fossil fuel (in this case, diesel) displaced.	ACC	ACC
k. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	Yes	ACC	ACC
l. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (idendify the sources)	VVM	84	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
m. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	Yes. All Applicable CDM requirements been taken into account in the identification of the baseline scenario of Proposed CDM Project.	ACC	ACC
n. Have all relevatn policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	Yes. All Relevant policies and circumstances been identified and correctly considered in the PDD. PP has utilized "General Guidelines to SSC CDM methodologies", EB 58 Report, Annex 23, to demonstrate applicability criteria for arriving at Baseline.	ACC	ACC
o. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	Yes	ACC	ACC
e. Algorithms and/or formulae used to determine emission reductions					
a. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	Yes Steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions are complying with both Approved methodologies utilized by PP to develop the project. i.e. AMS III H (Version 16) and AMS I.C (Version 19).	ACC	ACC
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Yes. Verified all equations and found that all are correctly applied.	ACC	ACC
Emission Reduction (AMS III H version 16)	-	-		ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1. For all scenarios in paragraph 1 of AMS III.H. v.16, i.e., 1 (a) till 1 (f) emission reductions shall be estimated *ex ante* in the PDD using the equations provided in the baseline, project and leakage emissions sections above. Emission reductions shall be estimated *ex ante* as follows: $\mathbf{ER_{y,ex\ ante} = BE_{y,ex\ ante} - (PE_{y,ex\ ante} + LE_{y,ex\ ante})}$ Where: $ER_{y,ex\ ante}$ *Ex ante* emission reduction in year *y* (tCO2e) $LE_{y,ex\ ante}$ *Ex ante* leakage emissions in year *y* (tCO2e) $PE_{y\ ex\ ante}$ *Ex ante* project emissions in year *y* calculated as paragraph 29 of (tCO2e) $BE_{y,\ ex\ ante}$ *Ex ante* baseline emissions in year *y* calculated as per paragraph 18(tCO2e)	AMS	III H	Yes PP has utilized same equation to estimate / calculate emission reduction ex ante. This is clearly shown in the Section B 6.1 of PDD. Estimated Annual Emission Reductions ex ante = 24,230 t CO_{2e}	ACC	ACC
2. *Ex post* emission reductions shall be determined for	AMS	III H	Yes	ACC	ACC
2.1 Case 1 (i) and 1 (v)	AMS	III H	Yes	ACC	ACC
2.1.1 The emission reduction achieved by the project activity (*ex post*) will be the difference between the baseline emission and the sum of the project emission and leakage. $\mathbf{ER_y = BE_{y,\ ex\ post} - (PE_{y,\ ex\ post} + LE_{y,\ ex\ post})}$ The historical records of electricity and fuel consumption, COD content of untreated and treated wastewater, and quantity of sludge	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
produced by the replaced units will be used for the baseline calculation.					
2.1.2 In case (i) if the volumetric flow and the characteristic properties (e.g., COD) of the inflow and outflow of the wastewater are equivalent in the project and the baseline scenarios (i.e., the project and baseline systems have the same efficiency for COD removal for wastewater treatment), then higher energy consumption and sludge generation in the case of baseline scenario are the only significant differences contributing to emission reduction in the project case. In this case the emission reduction can be simply calculated as the difference between the historical energy consumption of the replaced unit and the recorded energy consumption of the new system, plus the difference in emissions from sludge treatment and/or disposal.	AMS	III H	Not Applicable	ACC	ACC
2.1.3 Project emissions from fugitive emissions and incomplete flaring ($PE_{fugitive,y}$, $PE_{flaring,y}$) shall also be considered in the calculation of the emission reduction, however the emissions from the wastewater outflow and sludge ($PE_{ww,discharge,y}$, $PE_{s,final,y}$) may be disregarded, if they are equivalent in baseline and project scenarios	AMS	III H	Applicable and fugitive emissions due to flare inefficiency is captured adequately in emission reduction calculation ex post.	ACC	ACC
2.2 For cases 1 (b), 1 (c), 1 (d) and 1 (f). It is possible	AMS	III H	Yes. PP has utilized this equation in the PDD to	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
that the project activity involves wastewater and sludge treatment systems with higher methane conversion factors (MCF) or with higher efficiency than the treatment systems used in the baseline situation. Therefore the emission reductions achieved by the project activity is limited to the *ex post* calculated baseline emissions minus project emissions using the actual monitored data for the project activity. The emission reductions achieved in any year are the lowest value of the following: $ER_{y,ex\ post} = min\ ((BE_{y,\ ex\ post} - PE_{y,\ ex\ post} - LE_{y,\ expost}), (MD_y - PE_{power,y} - PE_{biomass,y} - LE_{y,\ expost}))$ Where: $ER_{y,ex\ post}$ Emission reductions achieved by the project activity based on monitored values for year *y* (tCO2e) $BE_{y,\ ex\ post}$ Baseline emissions calculated as per paragraph 16 using *ex post* monitored values $PE_{y,\ ex\ post}$ Project emissions calculated as per paragraph 26 using *ex post* monitored values MD_y Methane captured and destroyed/gainfully used by the project activity in the year *y* (tCO2e)			calculate the emission reduction ex post and found that the equation is correctly applied. Estimated Average Annual Emission Reduction ex post calculated using given equation = 24,230 t CO_{2e}		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
2.3 In case of flaring/combustion *MDy* will be measured using the conditions of the flaring process: $MD_y = BG_{burnt,\,y} * w_{CH4,\,y} * D_{CH4} * FE * GWP_{CH4}$ Where: $BG_{burnt,\,y}$ Biogas (Biogas volume and methane content measurements shall be on the same basis (wet or dry)) flared/combusted in year *y* (m^3) $w_{CH4,\,y}$ Methane content12 in the biogas in the year *y* (volume fraction) D_{CH4} Density of methane at the temperature and pressure of the biogas in the year *y* (tonnes/m^3) *FE* Flare efficiency in year *y* (fraction). In the case that biogas is destructed for gainful purpose, e.g., fed to the engine, an efficiency of 100% is to be applied.	AMS	III H	Yes Ex ante flaring emissions are calculated and provided in PDD PP has estimated Flaring emission using the equation provided in the Tool "Tool to determine project emissions from flaring gases containing methane" Total Annual quantity of Methane captured and destroyed during Phase I and Phase II is given as below - Flaring during Phase 1 (For 1st two years) = 2985 tCO_2 / Annum - Flaring During Phase 2 (For 3rd – 21 years = 2710 tCO_2/Annum	ACC	ACC
Baseline Emission (AMS III H version 16)	-	-		ACC	ACC
1. (Paragraph 17) Wastewater and sludge treatment systems equipped with biogas recovery facility in the baseline situation shall be excluded from the baseline emission calculations	AMS	III H	Not Applicable	ACC	ACC
2. (Paragraph 18) Baseline emissions for the systems affected by the project activity may consist of: 2.1 Emissions on account of electricity or fossil fuel used ($BE_{power,y}$)	AMS	III H	2,2 and 2.4 conditions are applicable for this project and it is clearly addressed in the PDD. PP has utilized these parameters to calculate	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
2.2 Methane emissions from baseline wastewater treatment systems ($BE_{ww,treatment,y}$) 2.3 Methane emissions from baseline sludge treatment systems ($BE_{s,treatment,y}$) 2.4 Methane emissions on account of inefficiencies in the baseline wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea ($BE_{ww,discharge,y}$) 2.5 Methane emissions from the decay of the final sludge generated by the baseline treatment systems ($BE_{s,final,y}$).			baseline emissions.		
3. Baseline emissions is calculate by $BE_y = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\}$	AMS	III H	Yes. PP has utilized same equation by modifying it as only 2 conditions are applicable to calculate the baseline emissions. PP has modified the formula and the modified formula is $BE_y = \{BE_{ww,treatment,y} + BE_{ww,discharge,y}\}$	ACC	ACC
4. (Paragraph 26) In determining baseline emissions, historical records of at least one year prior to the project implementation shall be used. This shall include for example 4.1 COD removal efficiency of the wastewater treatment systems 4.2 amount of dry matter in sludge 4.3 power and electricity consumption per m^3 of wastewater treated 4.4 amount of final sludge generated per tonne of COD treated and	AMS	III H	Not Applicable as historical record of Lagoon operational data is not available for last one year, hence PP has followed Paragraph 27 to carry out 10 Days measuring campaign for collecting project baseline relevant data.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
4.5 all other parameters required for determination of baseline emissions.					
5. (Paragraph 27) In case one year of historical data is not available:	AMS	III H	Yes. There is no One year historical data available	ACC	ACC
5.1 The parameters shall be determined by a measurement campaign in the baseline wastewater systems for at least 10 days. The measurements should be undertaken during a period that is representative for the typical operation conditions of the systems and ambient conditions of the site (temperature, etc). Average values from the measurement campaign shall be used and the result shall be multiplied by 0.89 to account for the uncertainty range (30% to 50%) associated with this approach as compared to one-year historical data;	AMS	III H	PP has carried out 10 days Measuring Campaign starting from 12/10/2010 to 21/10/2010 for collecting baseline relevant data. The collected data is summarized in the Annex 3 of PDD.	ACC	ACC
5.2 In the case of Greenfield and capacity addition projects, one of the following procedures shall be used to determine the baseline emissions: 5.2.1 Value obtained from a measurement campaign in a comparable wastewater treatment plant i.e., having similar environmental and technological circumstances for example treating similar flow and same type of wastewater (domestic, industrial, etc.), located in the same host country and region. Average values from the measurement campaign shall be used and the result shall be	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
multiplied by 0.89 to account for the uncertainty range (30% to 50%) associated with this approach; 5.2.2 Value provided by the manufacturer/designer of a Greenfield wastewater treatment plant using the same technology, demonstrated to be conservative (less emitting) for example by choosing parameters from the top 20 per cent of the plants installed in the last five years designed for the same country/region to treat the same type and similar flow of wastewater as in the project activity.					
6. (Paragraph 19) Baseline emissions from electricity consumption ($BE_{power,y}$) are determined as per the procedures described in AMS-I.D. The energy consumption shall include all equipment/devices in the baseline wastewater and sludge treatment facility. If recovered biogas in the baseline is used to power auxiliary equipment it should be taken into account accordingly, using zero as its emission factor.	AMS	III H	Not Applicable	ACC	ACC
7. (Paragraph 20) Methane emissions from the baseline wastewater treatment systems affected by the project (*BEww,treatment,y*) are determined using the COD removal efficiency of the baseline plant : $BE_{ww, treatment, y} = \sum_i Q_{ww, i, y} * COD_{removed, i, y} * \eta COD,BL,I * MCF_{ww, treatment, BL,} * B_{o,ww} * UF_{BL}$	AMS	III H	Yes PP has utilized the same equation to arrive at the methane emission from the baseline wastewater treatment system affected by the project as $BE_{WW.treatment.y.}$ and $BE_{WW.discharge.y}$ Calculated value of Emissions for two different situations as mentioned above from the baseline	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
***GWP_{CH4}** Where: $Q_{ww,i,y}$ Volume of wastewater treated in baseline wastewater treatment system *i* in year *y* (m^3) $COD_{removed,i,y}$ Chemical oxygen demand of the wastewater inflow to the baseline treatment system *i* in year *y* (tonnes/m^3), measured as the difference between inflow COD and the outflow COD in system *i* * ηCOD,BL,I COD removal efficiency of the baseline treatment system i. $MCF_{ww,treatment,BL\ i}$ Methane correction factor for baseline wastewater treatment systems *I* (MCF values as per table III.H.1) *i* Index for baseline wastewater treatment system $B_{o,ww}$ Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH4/kg COD) UF_{BL} Model correction factor to account for model uncertainties (0.89) GWP_{CH4} Global Warming Potential for methane (value of 21)			using this equation is - BE $_{WW.treatment.y}$ = 29853 tCO_{2eq} / Annum - BE $_{WW.discharge.y}$ = 3183 tCO_{2eq} / Annum - Total Baseline Emission = 29853 + 3183 - = 33036 tCO_{2eq} / Annum		
8. If the baseline treatment system is different from the treatment system in the project scenario, the monitored values of the COD inflow during crediting period will be used to calculate the baseline emissions *ex post*.	AMS	III H	Yes Applicable. PP has utilized ex ante COD values to arrive at estimated emission reductions are provided in the emission reduction calculation spread sheet which was validated during site visit. PP will be utilizing COD inflow values during crediting period to calculate the Baseline emission	ACC	ACC

<table>
<tr><th>CHECKLIST QUESTION</th><th>Ref.</th><th>§</th><th>COMMENTS</th><th>Draft Concl</th><th>Final Concl</th></tr>
<tr><td></td><td></td><td></td><td>ex post.</td><td></td><td></td></tr>
<tr><td>9. (Paragraph 21) The Methane Correction Factor (MCF) shall be determined based on the following table:

<table><tr><th>Type of wastewater treatment and discharge pathway or system</th><th>MCF value</th></tr><tr><td>Discharge of wastewater to sea, river or lake</td><td>0.1</td></tr><tr><td>Aerobic treatment, well managed</td><td>0.0</td></tr><tr><td>Aerobic treatment, poorly managed or overloaded</td><td>0.3</td></tr><tr><td>Anaerobic digester for sludge without methane recovery</td><td>0.8</td></tr><tr><td>Anaerobic reactor without methane recovery</td><td>0.8</td></tr><tr><td>Anaerobic shallow lagoon (depth less than 2 metres)</td><td>0.2</td></tr><tr><td>Anaerobic deep lagoon (depth more than 2 metres)</td><td>0.8</td></tr><tr><td>Septic system</td><td>0.5</td></tr></table></td><td>AMS</td><td>III H</td><td>PP has determined the MCF Value form the given table and the selected value for MCF which are is applicable for this project are 0.8 was chosen for the baseline anaerobic lagoons without methane recovery and MCF of 0.3 was chosen for the subsequent poorly managed aerobic lagoon where the POME from the baseline anaerobic lagoons is discharged into., which are found conservative hence accepted.</td><td>ACC</td><td>ACC</td></tr>
<tr><td>10. (Paragraph 22) Methane emissions from the baseline sludge treatment systems affected by the project activity are determined using the methane generation potential of the sludge treatment systems:</td><td>AMS</td><td>III H</td><td>Not Applicable</td><td>ACC</td><td>ACC</td></tr>
</table>

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
$BE_{treatment,\ s,\ y} = \sum_j S_{j,\ BL,\ y} * MCF_{s,\ treatment,\ BL,\ j} * DOC_s * UF_{BL} * DOC_F * F * 16/12 * GWP_{CH4}$ Where: $S_{j,\ BL,\ y}$ Amount of dry matter in the sludge that would have been treated by the sludge treatment system *j* in the baseline scenario (tonne) *j* Index for baseline sludge treatment system DOC_S Degradable organic content of the untreated sludge generated in the year *y* (fraction, dry basis). Default values of 0.5 for domestic sludge and 0.257 for industrial sludge shall be used. $MCF_{S,treatment,BL,j}$ Methane correction factor for the baseline sludge treatment system *j* (MCF values as per table in paragraph 21) UF_{BL} Model correction factor to account for model uncertainties (0.89) DOC_F Fraction of DOC dissimilated to biogas (IPCC default value of 0.5) *F* Fraction of CH_4 in biogas (IPCC default of 0.5)					
11. In case sludge is composted, the following equation shall be applied: $BE_{S,\ treatment,\ y} = \sum_j S_{j,\ BL,\ y} * EF_{composting} * GWP_{CH4}$ Where:	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
$EF_{composting}$ Emission factor for composting of organic waste (tCH_4/ton waste treated). Emission factors can be based on facility/site-specific measurements, country specific values ***or*** IPCC default values (table 4.1, chapter 4, Volume 5, 2006 IPCC Guidelines for National Greenhouse Gas Inventories). IPCC default value is 0.01 t CH_4/ t sludge treated on a dry weight basis					
12. (Paragraph 23) If the baseline wastewater treatment system is different from the treatment system in the project scenario, the sludge generation rate (amount of sludge generated per unit COD removed) in the baseline situation may differ significantly from the project situation. For example, it is known that the amount of sludge generated in aerobic wastewater systems is larger than in anaerobic systems, for the same COD removal efficiency. Therefore, for those cases, the monitored values of the amount of sludge generated during the crediting period will be used to estimate the amount of sludge generated in the baseline, as follows: $S_{j, BL, y} = S_{l, PJ, y} * (SGR_{BL} / SGR_{PJ})$ Where: $S_{l, PJ, y}$ Amount of dry matter in the sludge treated by the sludge treatment system *l* in year *y* in the project scenario (tonne)	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
SGR_{BL} Sludge generation ratio of the wastewater treatment plant in the baseline scenario (tonne of dry matter in sludge / tonne COD removed).This ratio will be determined as per paragraphs 26, 27 or 28 below. SGR_{PJ} Sludge generation ratio of the wastewater treatment plant in the project scenario (tonne of dry matter in sludge / tonne COD removed). Calculated using the monitored values of COD removal (i.e. *CODinflow,*i minus *CODoutflow,i*) and sludge generation in the project scenario					

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
13. (Paragraph 24) Methane emissions from degradable organic carbon in treated wastewater discharged in e.g., a river, sea or lake in the baseline situation are determined as follows: $BE_{ww,\ discharge,\ y} = Q_{ww,\ y} * GWP_{CH4} * B_{o,\ ww} * UF_{BL} * COD_{ww,\ discharge,\ BL,\ y} * MCF_{ww,\ BL,\ discharge}$ Where: $Q_{ww,\ y}$ Volume of treated wastewater discharged in year *y* (m^3) UF_{BL} Model correction factor to account for model uncertainties (0.89) $COD_{ww,discharge,BL,y}$ Chemical oxygen demand of the treated wastewater discharged into sea, river or lake in the baseline situation in the year *y* (tonnes/m3). If the baseline scenario is the discharge of untreated wastewater, the COD of untreated wastewater shall be used $MCF_{ww,\ BL,discharge}$ Methane correction factor based on discharge pathway of the wastewater in the baseline situation (e.g., into sea, river or lake) (MCF values as per table in paragraph 21)	AMS	III H	Yes Applicable and equation is used correctly	ACC	ACC
14. To determine $COD_{ww,discharge,BL,y}$: if the baseline treatment system(s) is different from the treatment	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
system(s) in the project scenario, the monitored values of the COD inflow during crediting period will be used to calculate the baseline emissions *ex post*.					
15. (Paragraph 25) Methane emissions from anaerobic decay of the final sludge produced are determined as follows: $BE_{s,final,y} = S_{final,BL,y} * DOC_s * UF_{BL} * MCF_{s,\ BL,final} * DOC_F * F * 16/12 * GWP_{CH4}$ Where: $S_{final,\ BL,\ y}$ Amount of dry matter in final sludge generated by the baseline wastewater treatment systems in the year *y* (tonnes). If the baseline wastewater treatment system is different from the project system, it will be estimated using the monitored amount of dry matter in final sludge generated by the project activity ($S_{final,PJ,y}$) corrected for the sludge generation ratios of the project and baseline systems as per equation in Paragraph 23 $MCF_{s,\ BL,\ final}$ Methane correction factor of the disposal site that receives the final sludge in the baseline situation, estimated as per the procedures described in AMS-III.G UF_{BL} Model correction factor to account for model uncertainties (0.89)	AMS	III H	Not Applicable	ACC	ACC
Project Emission (AMS III H version 16)	AMS	III H		ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
16. (Paragraph 26) Project activity emissions from the systems $PE_y = \{PE_{power,y} + PE_{ww,treatment,y} + PE_{s,treatment,y} + PE_{ww,discharge,y} + PE_{s,final,y} + PE_{fugitive,y} + PE_{biomass,y} + PE_{flaring,y}\}$ Where: PE_y Project activity emissions in the year *y* (tCO2e)	AMS	III H	Applicable and PP has utilized this equation by modifying slightly to suite the applicability conditions of monitoring parameter for baseline and project activity.	ACC	ACC
17. $PE_{power,y}$: Emissions from electricity or fuel consumption in the year *y* (tCO2e). These emissions shall be calculated as per paragraph 19, for the situation of the project scenario, using energy consumption data of all equipment/devices used in the project activity wastewater and sludge treatment systems and systems for biogas recovery and flaring/gainful use.	AMS	III H	Applicable and PP has adopted equation to calculate PE $_{power.y}$ as follows *PEpower = Panaerobic digester * Ndigesters * EFCO2 captive grid,y* To calculate Efficiency of Captive grid PP has adopted Paragraph 12 condition from AMD I.D (Version 16) and calculated weighted average emission of the current generation mix utilizing one year data. *EFcaptive grid = (_FCi,y * NCVi * EFCO2,i) / EGy = (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy* *FCdiesel,y* = (P*diesel* * *Qdiesel,y*) / 1,000 *EGy = Pbiomass boiler * Nbiomass boiler,y + Pdiesel * Ndiesel generators,y* This is addressed satisfactorily in section B.6.1. of PDD.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
18. $PE_{ww,treatment,y}$: Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery, in year *y* (tCO2e). These emissions shall be calculated as per equation in paragraph 20, using an Uncertainty factor of 1.12 and data applicable to the project situation ($MCF_{ww,treatment,PJ,k}$ and $COD_{removed,PJ,k,y}$) and with the following changed definition of parameters: 18.1 $MCF_{ww,treatment,PJ,k}$: Methane correction factor for project wastewater treatment system *k* (MCF values as per table in paragraph 21) 18.2 $COD_{,removed,PJ,k,y}$: Chemical oxygen demand removed by project wastewater treatment system k in year *y* (tonnes/m^3), measured as the difference between inflow COD and the outflow COD in system *k*	AMS	III H	Not Applicable	ACC	ACC
19. $PE_{s,treatment,y}$: Methane emissions from sludge treatment systems affected by the project activity, and not equipped with biogas recovery, in year *y* (tCO2e). These emissions shall be calculated as per equation in paragraph 22, using an uncertainty factor of 1.12 and data applicable to the project situation ($S_{l,PJ,y}$, $MCF_{s,treatment,l}$) and with the following changed definition of parameters: 19.1 $S_{l,PJ,y}$: Amount of dry matter in the sludge treated by the sludge treatment system *l* in the project scenario in year *y* (tonne) 19.2 $MCF_{s,treatment,l}$:Methane correction factor for the project sludge treatment system l (MCF values	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
as per table in paragraph 21)					
20. $PE_{ww,discharge.y}$: Methane emissions from degradable organic carbon in treated wastewater in year *y* (tCO2e). These emissions shall be calculated as per equation in paragraph 24, using an uncertainty factor of 1.12 and data applicable to the project situation ($COD_{ww,discharge,PJ,y}$, $MCF_{ww,PJ,discharge}$) and with the following changed definition of parameters: 20.1 $COD_{ww,discharge,PJ,y}$ *:* Chemical oxygen demand of the treated wastewater discharged into sea, river or lake in the project situation in year *y* (tonnes/m3) 20.2 $MCF_{ww,PJ,discharge}$ *:* Methane correction factor based on discharge pathway of the wastewater in the project situation (e.g., into sea, river or lake) (MCF values as per table in Paragraph 21)	AMS	III H	Yes the Application of MCF and COD Removal efficiency are considered while calculating $PE_{ww,discharge,y.}$ It is clearly defined in the Section B.6.1 and Calculations in Spread sheet are validated	ACC	ACC
21. $PE_{s,final,y}$ *:* Methane emissions from anaerobic decay of the final sludge produced in year *y* (tCO2e). These emissions shall be calculated as per equation in paragraph 25, using an uncertainty factor of 1.12 and data applicable to the project situation ($MCF_{s,PJ,final}$, $Sf_{inal,PJ,y}$). If the sludge is controlled combusted, disposed in a landfill with biogas recovery, or used for soil application in aerobic conditions in the project activity, this term shall be neglected, and the sludge treatment and/or use and/or final disposal shall be monitored during the crediting period and with the following changed definition of	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
parameters: 21.1 $MCF_{s,PJ,final}$: Methane correction factor of the disposal site that receives the final sludge in the project situation, estimated as per the procedures described in AMS-III.G 21.2 $S_{final,PJ,y}$: Amount of dry matter in final sludge generated by the project wastewater treatment systems in the year *y* (tonnes)					
22. $PE_{fugitive,y}$: Methane emissions from biogas release in capture systems in year *y*, calculated as per paragraph 30 (tCO2e) as below $\boldsymbol{PE_{fugitive\ y} = PE_{fugitiveww,\ y} + PE_{fugitive,\ s,\ y}}$ Where: $PE_{fugitive,ww,y}$ Fugitive emissions through capture inefficiencies in the anaerobic wastewater treatment systems in the year *y* (tCO2e) $PE_{fugitive,s,y}$ Fugitive emissions through capture inefficiencies in the anaerobic sludge treatment systems in the year *y* (tCO2e)	AMS	III H	Yes the Application of $PE_{fugitive\ y}$ is addressed adequately and it is calculated using approved equation from AMS III H (Version 16) It is clearly defined in the Section B.6.1 and Calculations in Spread sheet are validated Fugitive emission due to inefficiency in capture system in sludge treatment system (*PEfugitive,s,y*) is zero (not accounted) as there will be no sludge treatment in the project activity (i.e. anaerobic digesters system). Therefore the fugitive emission is simplified as: *PEfugitive,y = PEfugitive,ww,y*	ACC	ACC
23. $\boldsymbol{PE_{fugitive,ww,y} = (1-CFE_{ww}) * MEP_{ww,\ treatment,\ y} + GWP_{CH4}}$ 23.1 CFE_{ww} : Capture efficiency of the biogas recovery equipment in the wastewater treatment systems (a default value of 0.9	AMS	III H	Yes the Application of $PE_{fugitive\ y}$ is addressed adequately and it is calculated using approved equation from AMS III H (Version 16) It is clearly defined in the Section B.6.1 and	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
shall be used) 23.2 $MEP_{ww,\ treatment,\ y}$: Methane emission potential of wastewater treatment systems equipped with biogas recovery system in year *y* (tonnes)			Calculations in Spread sheet are validated		
24. $\boldsymbol{MEP_{ww,treatment,y} = Q_{ww,y} * B_{o,ww} * UF_{PJ} * \sum_k COD_{removed,PJ,k,y} * MCF_{ww,treatment,PJ,k}}$ Where: $COD_{removed,PJ,k,y}$ The chemical oxygen demand removed by the treatment system *k* of the project activity equipped with biogas recovery in the year *y* (tonnes/m3) $MCF_{ww,treatment,PJ,k}$ Methane correction factor for the project wastewater treatment system *k* equipped with biogas recovery equipment (MCF values as per table in Paragraph 21) UF_{PJ} Model correction factor to account for model uncertainties (1.12)	AMS	III H	Found Calculated using approved equation and values are used correctly while calculating . $\boldsymbol{MEP_{ww,treatment,y.}}$	ACC	ACC
25. $\boldsymbol{PE_{fugitive,s,y} = (1-CFE_s) * MEP_{s,treatment,y} * GWP_{CH4}}$ 25.1 CFE_s : Capture efficiency of the biogas recovery equipment in the sludge treatment systems (a default value of 0.9 shall be used) 25.2 $MEP_{s,treatment,y}$ *:* Methane emission potential of the sludge treatment systems equipped with biogas recovery system in year *y* (tonnes)	AMS	III H	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
$MEP_{s,treatment,y} = \sum_i (S_{PJ,l,y} * MCF_{s,treatmentPJ,l}) * DOC_s * UF_{PJ} * DOC_F * F * 16/12$ Where: $S_{PJ,l,y}$ Amount of sludge treated in the project sludge treatment system *l* equipped with biogas recovery system (on dry basis) in year *y* (tonnes) $MCF_{s,treatmentPJ,l}$ Methane correction factor for the sludge treatment system equipped with biogas recovery equipment (MCF values as per table in Paragraph 21) UF_{PJ} Model correction factor to account for model uncertainties (1.12)					
26. $PE_{flaring,y}$: Methane emissions due to incomplete flaring in year *y* as per the .Tool to determine project emissions from flaring gases containing methane.(tCO2e)	AMS	III H	PP has utilized the Tool for calculating methane emissions due to incomplete flaring and it is discussed in details. PP has demonstrated 7 steps to arrive at Flaring Emissions in section B 6.1. of PDD. Data and parameters used to calculate emission due to incomplete flaring found in line with the requirement of Tool and Approved methodology.	ACC	ACC
27. $PE_{biomass,y}$: Methane emissions from biomass stored under anaerobic conditions. In storage of biomass under anaerobic conditions takes place due to the project activity that doesn't occur in the baseline situation, methane emissions due to anaerobic decay of this biomass shall be considered and be determined as per	AMS	III H	Not applicable	ACC	ACC

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the procedure in the .Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site.(tCO2e)					
Leakage (AMS III H version 16)	AMS	III H	Not Applicable	ACC	ACC
If the technology is used, equipment transferred from another activity leakage effects at the site of the other activity are to be considered and estimated (LE_y).	AMS	III H	There are no leakages anticipated during this project activity.	ACC	ACC

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c. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Not Applicable	ACC	ACC
d. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	Not Applicable	ACC	ACC
e. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Not Applicable	ACC	ACC
f. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Not Applicable	ACC	ACC
g. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	Not Applicable	ACC	ACC
i. Appropriate and correct?	VVM	91	Not Applicable	ACC	ACC
ii. Applicable to the proposed CDM project activity?	VVM	91	Not Applicable	ACC	ACC
iii. Resulting in a conservative estimate of the emission reductions?	VVM	91	Not Applicable	ACC	ACC
h. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Not Applicable	ACC	ACC
i. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	Not Applicable	ACC	ACC
6. Additionality of a project activity					
a. Does the PDD describe how a proposed CDM projet activity is additional?	VVM	94	Yes it is demonstrated in the section B.5 of the PDD. PP has demonstrated the additionality of	ACC	ACC

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			project in accordance with Attachment A to Appendix B of the simplified modalities and procedure for small scale CDM Project Activities.		

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b. Were the following steps of the tool to assess additionality used:	EB 39	Ann 10	Yes	ACC	ACC
i. Identification of alternatives to the project activity?	EB 39	Ann 10	Yes, PP has evaluated various other options to treat the POME however the Anaerobic Digestion using Anaerobic digester is found as most appropriate one. Refer Feasibility Report Document Dtd. 12/11/2008.	ACC	ACC
ii. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible?	EB 39	Ann 10	Yes PP has discussed the investment barrier as one of the additionality parameter in Section B.5. PDD Section B.5 uses simple cost analysis to demonstrat Invenstment Barrier for demonstration of Additionality. The pay back period is shown as financial indicator. However the basis / consideration of Payback period is not been explained. Evidence for cross checking the financial parameters such as investment cost of different costs of the project has not been provided. Based on the CAR raised, PP has revised the Investment analysis to calculate NPV (Net Present Value) to demonstrate the project is not economically or financially attractive if CDM revienue is not considered. The Spreadsheet for the Investment analysis is validated using external finacial specialist. Based on the out come of investment analysis validation by the External Finacial specialist the CAR was closed and response to the CAR was accepted.	~~CAR 3~~	ACC
iii. Barriers analysis?	EB 39	Ann 10	Not Applicable	ACC	ACC

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iv. Common practice analysis?	EB 39	Ann 10	Not applicable	ACC	ACC
c. In step 1 (i) have all the sub-steps as below been followed?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	Not Applicable	ACC	ACC
d. Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. (a) The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. (b) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;	EB 39	Ann 10	Not Applicable	ACC	ACC
iii. (c) If applicable, continuation of the current situation (no project activity or other alternatives undertaken).	EB 39	Ann 10	Not Applicable	ACC	ACC
e. Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the	EB 39	Ann 10	Not Applicable	ACC	ACC

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relevant country/region?					
f. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly? Please briefly mention the outcome.	EB 39	Ann 10	Not Applicable	ACC	ACC
g. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.?	EB 39	Ann 10	Not Applicable	ACC	ACC
h. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Has the outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.	EB 39	Ann 10	Not Applicable	ACC	ACC
j. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	Not Applicable	ACC	ACC

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k. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	Not Applicable	ACC	ACC
iii. Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	Not Applicable	ACC	ACC
iv. Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	Not Applicable	ACC	ACC
v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	Not applicable	ACC	ACC
vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	Not Applicable	ACC	ACC
l. In sub-step 2a has the determination of appropraite method of analysis done as per the guidance as below?	EB 39	Ann 10	Yes	ACC	ACC
i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	Not Applicable	ACC	ACC
m. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity	EB 39	Ann 10	Not Applicable	ACC	ACC

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and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.					
n. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	Not applicable	ACC	ACC
o. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	Not Applcable	ACC	ACC
ii. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.	EB 39	Ann 10	Not Applicable	ACC	ACC
iii. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect	EB 39	Ann 10	Not Applicable	ACC	ACC

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private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.					
p. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case	EB 39	Ann 10	Not Applicable	ACC	ACC

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of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.					
ii. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Not Applicable	ACC	ACC
iii. Justify and/or cite assumptions.	EB 39	Ann 10	Not Applicable	ACC	ACC
iv. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Not applicable	ACC	ACC
v. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	Not Applicable	ACC	ACC
vi. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity.Please specify details for above.	EB 39	Ann 10	Not Applicable	ACC	ACC
q. Has the below guideline followed for Sub-step 2d:	EB	Ann	Not Applicable	ACC	ACC

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Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	39	10			
r. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	Not Applicable	ACC	ACC
s. In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity;	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).	EB 39	Ann 10	Not applicable	ACC	ACC
t. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country	EB 39	Ann 10	Not Applicable	ACC	ACC

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or other country investments reports of reputed origin.					
ii. (b) Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region.	EB 39	Ann 10	Not Applicable - Not Applicable	ACC	ACC
iii. (c) Barriers due to prevailing practice: The project activity is the “first of its kind”.	EB 39	Ann 10	Not Applicable	ACC	ACC
iv. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	Not Applicable	ACC	ACC
u. Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	Not Applicable	ACC	ACC
v. Has the below guideline followed for Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the	EB 39	Ann 10	Not Applicable	ACC	ACC

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alternatives (except the proposed project activity)?					
i. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers.	EB 39	Ann 10	Not Applicable	ACC	ACC
iii. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs,	EB 39	Ann 10	Not Applicable	ACC	ACC

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rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify.					
w. Has the outcome from Step 3 clearly mentioned in PDD?	EB 39	Ann 10	Not Applicable	ACC	ACC
x. In step 4: Common practise analysis have all the sub-steps as below followed?	EB 39	Ann 10	Not Applicable	ACC	ACC
i. Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	Not Applicable	ACC	ACC
ii. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10	Not Applicable	ACC	ACC
y. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	Not Applicable	ACC	ACC
z. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that	EB 39	Ann 10	Not Applicable	ACC	ACC

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the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.					
aa. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Not Applicable	ACC	ACC
bb. Has it been proved that the porject is additional?	EB 39	Ann 10	Not Applicable	ACC	ACC
cc. Has the PP demonstrated additionality by explaining Investment barrier, Access-to-finance barrier, Technological barrier, Barrier due to prevailing practice or other barriers?	EB 35	Ann 34	Not Applicable	ACC	ACC
dd. If Investment barrier has been explained, is it demonstraed that financilly more viable alternative to the project activity would have led to higher emissions? Please explain.	EB 35	Ann 34	Not applicable	ACC	ACC

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ee. If Access-to-finance has been explained, is it demonstraed that the project activity could not access appropriate capital without consideration of the CDM revenues? Please explain.	EB 35	Ann 34	Not Applicable	ACC	ACC
ff. If Technological barrier has been explained, is it demonstraed that a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertinity or low market share of the new technology adopted for the project activity and so would have led to higher emissions? Please explain.	EB 35	Ann 34	Not Applicable.	ACC	ACC
gg. If prevailing practise barrier has been explained, is it demonstrated that the prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions? Please explain.	EB 35	Ann 34	Not Applicable	ACC	ACC
hh. If other barrier has been explained, is it demonstrated that Other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies would prevent the project activity any way?	EB 35	Ann 34	Not Applicable	ACC	ACC
ii. Have the project participants identifed the most relevant barrier?	EB 35	Ann 34	Yes	ACC	ACC
jj. Have the project participants provided transparent and documented third party evidence	EB 35	Ann 34	Not Applicable	ACC	ACC

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such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent agencies etc. to demonstrate the most relevant barrier? Please explain.					

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a. Prior consideration of the clean development mechanism					ACC
Is the project ativity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	Yes	ACC	ACC
If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	Yes the Prior consideration is seen Dtd. 15/10/2009 which prior to the Project Start Date. Before prior consideration PP has taken decision to undertake the project as proposed CDM Project. Evidences of board approvals and IFC (Budget Approval Documents) seen.	ACC	ACC
Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins."?	VVM	99	Yes it is defined in the PDD.	ACC	ACC
Does the project activity require construction, retrofit or other modifications?	VVM	99	Not Applicable	ACC	ACC
If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	99	Not applicable	ACC	ACC
Is it a new project activity (project activities with staring date on or after 02 August 2008) or an existing project activity (project activities with a start date before 02 August 2008)?	VVM	100	Yes it is a new project. The baseline is existing Anaerobic lagoon (open Type) process which is replaced by the Anaerobic Biogas reactors (closed Type) with methane recovery	ACC	ACC
a. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive	VVM	101	Yes PP has informed UNFCCC on 15/10/2009, and it is validated by visiting UNFCCC website.	ACC	ACC

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Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from Hos Party DNA and/or UNFCCC secretariat).					
b. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	Not Applicable as this is a new project Activity	ACC	ACC
ii. 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, including, inter alia:	VVM	102	1. Not Applicable	ACC	ACC
a. minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	102	Not Applicable	ACC	ACC
iii. reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:	VVM	102	Not Applicable	ACC	ACC
a. contract with consultants for CDM/PDD/methodology services?	VVM	102	Yes. Final signed contract with KPMG Services Pte. Ltd. Dtd. 29/07/2010.	ACC	ACC
b. Emission Reduction Purchase Agreements	VVM	102	Not Applicable	ACC	ACC

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or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?					
c. evidence of agreements or negotiations with a DOE for validation services?	VVM	102	Yes Contract Document is available.	ACC	ACC
d. submission of a new methodology to the CDM Executive Board?	VVM	102	Not Applicable	ACC	ACC
e. publication in newspaper?	VVM	102	Not Applicable	ACC	ACC
f. interviews with DNA?	VVM	102	Not Applicable	ACC	ACC
g. earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	UNFCCC Prior Consideration Notice Dtd. 15/10/2009	ACC	ACC
b. Identification of alternatives					ACC
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	Yes, Both Approved Methodologies adopted by PP does prescribe baseline scenario hence no further analysis is required.	ACC	ACC
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	PP has considered continuing of the existing system i.e. Anaerobic ponds /lagoons for wastewater treatment with no biogas recovery and electricity generation using diesel generator as an available alternative as most plausible baseline scenario and it is adequately discussed in the PDD Section B.4	ACC	ACC
c. Does the list of alternatives given in the PDD ensure that:	VVM	106	PDD Suggests that only one alternative is considered by the PP as there is no other Method of treatment which is effective in treating POME.	ACC	ACC
i. the list of alternatives includes as one of the options that the project activity is	VVM	106	project activity is undertaken without being	ACC	ACC

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undertaken without being registered as a proposed CDM project activity?			registered as a proposed CDM project activity is not an economically viable option, hence not considered by the PP.		
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	106	The most plausible alternative PP has selected is continuation of the existing system i.e. Anaerobic ponds /lagoons for wastewater treatment with no biogas recovery and electricity generation using diesel generator	ACC	ACC
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	Yes .	ACC	ACC
c. Investment analysis					
a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	Yes	ACC	
b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	108	Yes However PDD Section B.5 uses simple cost analysis to demonstrat Invenstment Barrier for demonstration of Additionality. The pay back period is shown as financial indicator. However the basis / consideration of Payback period is not been explianed. Evidence for cross checking the financial parameters such as investment cost of different costs of the project has not been provided Due to the nature of the cashflow trend over the 25-year timeframe (i.e. positive and negative cashflows), IRR of the project could not be defined and hence is not used as financial indicator. Hence	~~CAR-3~~	ACC

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			PP has revised the investment barrier utilizing Net Present Value (NPV) as the financial indicator in Section B.5 of the PDD to clearly demonstrate that with the addition of CER revenues, the NPV of the project turns positive which allows the project to be financially viable and attractive. An excel sheet with the detail Financial Analysis of the project and the evidence of investment cost breakdown are provided in transperent manner and hence it is Accpeted. In the Financial Analysis Document provided during Validation visit Escalation on costs of operation has been considered but escalation in revenue on account of increase in diesel prices not considered. In the updated Financial Analysis PP has applied the cost and revenue items are in real terms, i.e. no escalation/inflation accounted, Base rates are considered for all parameters and hence it is accepted. The salvage values have not been considered in the Financial Analysis. PP responded that the Financial Analysis has been done over full technical lifetime of the anaerobic digester (i.e. 25 years). The salvage value at Year	~~CL 2~~ ~~CAR 5~~	ACC ACC

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			25 will be zero for the anaerobic digester and US$349,362 for the biogas engine. The revised Financial Analysis is now including the Salvage values of project equipments, which was validated by the external financial Expert and found accepted. While validating the NPV (Net Present Value) analysis Vlaidation Team noticed that PP has not carried out the Sensitivity analysis to demonstrate that the benchmark applied to arrived at project NPV is not surpassing, hence a CAR- 6 was raised as below PP has demonstrated financial additionality of the proposed CDM project using NPV, however in which scenario the project activity would pass the benchmark is not demonstrated using sensitivity analysis as per EB Guideline EB62 " Guideline on Assessment of Investment Analysis"	~~CAR 6~~	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. the most economically or financially attractive alternative?	VVM	108	No	ACC	ACC
ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	108	*No*	ACC	ACC
c. Was this shown by one of the following approaches?	VVM	109	Yes	ACC	ACC
i. Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity.	VVM	109	Not Applicable	ACC	ACC
ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	Yes	ACC	ACC
iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	Yes	ACC	ACC
d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	Yes The period of Assessment is limited the selected crediting period of 21 year.	ACC	ACC
e. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or -	EB 51	Ann 58	Yes, PP opts to prove financial additinality using NPV Approach and the NPV calcualtions reflects the period of expected operation of the project	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?			activity. The technical liftime demonstrated by the PP is found transperent and is acceptable as the selected crediting period is 21 years.		
f. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 51	Ann 58	Yes. PP has included cost of operation and maintenance expected to incurred during the period of assessment and provided relevant documents to support the cost taken for NPV calculation. PP considers cost of spares, cost of operators salary , cost of replacement of Gas engine etc.	ACC	ACC
g. Do the project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?	EB 51	Ann 58	Yes PP has justified the appropriateness of the period of assessment using Project Equipment life time. The same is demonstrated in the PDD section A.4.2 and supported the operational lifetime of project equiment using Technical Statement provided by the Equipment Supplier / Manufacturer Dated 19/04/2011	ACC	ACC
h. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	Yes	ACC	ACC
i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 51	Ann 58	Yes,	ACC	ACC
j. Does the fair value calculations include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets?	EB 51	Ann 58	NO, PP has demonstrated Financial Additionality using NPV approach and for arriving at the NPV PP has utilized cost and revenue items in real term i.e. no asset depriciation values applied.	ACC	ACC
k. Was depreciation, and other non-cash items related to the project activity, which have been	EB 51	Ann 58	NO, PP has demonstrated Financial Additionality using NPV approach and for arriving at the NPV PP	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV)?			has utilized cost and revenue items in real term i.e. no asset depriciation values applied.		
l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post-tax comparisons?	EB 51	Ann 58	NO, PP has demonstrated Financial Additionality using NPV approach and for arriving at the NPV PP has utilized cost and revenue items in real term i.e. no asset depriciation values applied.	ACC	ACC
m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant?	EB 51	Ann 58	Yes, investment decision was taken based on the cost obtained from the quations submitted by the supplier of project equipments and input values to invenstement analysis found valid and applicable at the time of investment decision. Few cost values are based on the hypothetical basis which are supported by the the relevant assumptions made bsased on the baseline operating situations ie. Manpower cost and operation and maintenance cost. hase.	ACC	ACC
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 51	Ann 58	Yes.	ACC	ACC
o. Are all the listed input values been consistently applied in all calculations?	EB 51	Ann 58	Yes	ACC	ACC
p. Does the investment analysis reflect the economic decision making context at point of the decision to recomence the project in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM?	EB 51	Ann 58	No	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 51	Ann 58	Yes Excel spreadsheet is provided by the PP.	ACC	ACC
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 51	Ann 58	Yes	ACC	ACC
s. In cases where the project participant does not wish to make such a spreadsheet available to the public has the PP provided an exact read-only or PDF copy for general publication?	EB 51	Ann 58	Not Applicable, PP has provided unprotected spreat sheet.	ACC	ACC
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 51	Ann 58	Not Applicable	ACC	ACC
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?	EB 51	Ann 58	No Public funding / Loans is taken for this project	ACC	ACC
v. In the calculation of equity IRR, has only the portion of investment costs which is financed by equity been considered as the net cash outflow?	EB 51	Ann 58	Not Applicable	ACC	ACC
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow in the calcualtion of equity IRR? (this is not allowed)	EB 51	Ann 58	Not Applicable	ACC	ACC
x. Was a pre-tax benchmark be applied?	EB 51	Ann 58	Not Applicable	ACC	ACC
y. In cases where a post-tax benchmark is applied, is actual interest payable taken into account in the calculation of income tax?	EB 51	Ann 58	Not applicable	ACC	ACC
z. In such situations, was interest calculated according to the prevailing commercial interest	EB 51	Ann 58	Not Applicable as PP utilizes real time Cost and revenue values.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years?					
aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 51	Ann 58	Not Applicable	ACC	ACC
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 51	Ann 58	Not Applicable	ACC	ACC
cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?	EB 51	Ann 58	Not Applicable	ACC	ACC
dd. In case benchmarks supplied by relevant national authorities selected is it applicable to the project activity and the type of IRR calculation presented?	EB 51	Ann 58	Not Applicable	ACC	ACC
ee. In the cases of projects which could be developed by an entity other than the project participant is the benchmark applied based on publicly available data sources which can be clearly validated?	EB 51	Ann 58	Not Applicable	ACC	ACC
ff. Have internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC) been applied in cases where there is only one possible project developer?	EB 51	Ann 58	Not Applicable PP utilized NPV approach to demonstrate financial additionality	ACC	ACC
gg. In such cases, have these values been used for	EB	Ann	Not Applicable	ACC	ACC

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similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region?	51	58			
hh. Has a minimum clear evidence of the resolution by the company's Board and/or shareholders been provided to the effect as above?	EB 51	Ann 58	Yes IFC Approval and subsequent Board of directors approvals are seen.	ACC	ACC
ii. Has a thorough assessment of the financial statements of the project developer - including the proposed WACC - to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects been conduted?	EB 51	Ann 58	Not Applicable	ACC	ACC
jj. Does the risk premiums applied in the determination of required returns on equity reflect the risk profile of the project activity being assessed, established according to national/international accounting principles? (It is not considered reasonable to apply the rate general stock market returns as a risk premium for project activities that face a different risk profile than an investment in such indices.)	EB 51	Ann 58	Not Applicable	ACC	ACC
kk. Has an investment comparison analysis and not a benchmark analysis used when the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services?	EB 51	Ann 58	Not Applicable	ACC	ACC
ll. Have variables, including the initial investment	EB	Ann	No, hence CAR 5 was raised as below	~~CAR 5~~	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	51	58	PP has demonstrated financial additionality of the proposed CDM project using NPV, however in which scenario the project activity would pass the benchmark is not demonstrated using sensitivity analysis as per EB Guideline EB62 " Guideline on Assessment of Investment Analysis"		
mm. Have a corrective action been raised for a variable to be included in the sensitivity analysis which constitute less than 20% and have a material impact on the analysis ?	EB 51	Ann 58	Please refer above CAR 5	~~CAR 5~~	ACC
nn. Is the range of variations selected is reasonable in the project context?	EB 51	Ann 58	Please refer above CAR 5	~~CAR 5~~	ACC
oo. Dos the variations in the sensitivity analysis at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances?	EB 51	Ann 58	Please Refer above CAR 5	~~CAR 5~~	ACC
pp. In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative, is an assessment done of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity?	EB 51	Ann 58	Please Refer above CAR 5	~~CAR 5~~	ACC
qq. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:	EB 51	Ann 58	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval?	EB 51	Ann 58	Not Applicable	ACC	ACC
ii. The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company)?	EB 51	Ann 58	Not Applicable	ACC	ACC
rr. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	111	Yes, Investment Analysis submitted by PP was validated using internal financial Expert as well as External Financial Expert. Validation comments of both financial experts can be seen in the form of CL's and CAR's raised. PP has addressed all CL's and CAR's appropriately,validation team along with both financial experts verified responses and found adequate hence closed.	ACC	ACC
ss. Were the parameters cross-checked agains third-party or publicly available sources, such as invoices or price indices?	VVM	111	Yes investment parameters were cross checked with the running bills raised by the manufacturer / suppliers of the project equipment's and found satisfactory.	ACC	ACC
tt. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	Not Applicable as this is not publicly funded project.	ACC	ACC
uu. Was the correctnes of computations carried out and documented by the project participants	VVM	111	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
assessed?					
vv. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	VVM	111	Refer CAR 5	~~CAR 5~~	ACC
ww. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	PP has applied benchmark as default value of 10.9 for the host country Malaysia as defined in the "Guideline on the assessment of investment analysis" (Version4) EB 62 Annex 05 and hence it is acceptable.	ACC	ACC
xx. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	Not Applicable	ACC	ACC
yy. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	112	Not Applicable	ACC	ACC
iii. assessing previous investment decisions by the project participants involved?	VVM	112	Not Applicable	ACC	ACC
iv. determining whether the same benchmark has been applied?	VVM	112	Not Applicable	ACC	ACC
v. determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	112	Not Applicable	ACC	ACC
zz. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	VVM	113	Not Applicable	ACC	ACC
xx. If yes:	VVM	113	Not Applicable	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. has the FSR 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?	VVM	113	Feasibility Study conducted by the PP was an internal assessment and mainly focuses on technological assessment. Cost analysis found to be very generic; however it is considered as the basis to take decision on technical feasibility of the project. .	ACC	ACC
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	Not Applicable	ACC	ACC
iii. If not, was the appropriateness of the values validated?	VVM	113	Not Applicable	ACC	ACC
iv. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	Yes only from technological point of view.	ACC	ACC
d. Barrier analysis					
a. Has barrier analysis been used to demonstrated the additionality of the proposed CDM project activity?	VVM	115	Yes PP utilizes Attachment A to Appendix B of the simplified modalities and procedure for small scale CDM project activity to demonstrate the additionality of the proposed CDM project. According to this PP has identified - Investment Barrier - Technological Barrier	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			- Barrier Due to Prevailing practice Amongst these selected barriers Investment barrier is the main barrier which demonstrates that the proposed project is not a financially attractive unless CDM revenue is considered. PP has utilized NPV approach for Investment analysis.		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that:	VVM	115	Yes	ACC	ACC
i. prevent the implementation of this type of proposed CDM project activity?	VVM	115	Yes , PP has justified three types of barriers - Investment Barrier - Technological Barrier - Barrier due to prevailing practices Found adequately discussed in the Section B.5 of the PDD.	ACC	ACC
ii. do not prevent the implementation of at least one of the alternatives?	VVM	115	Not Applicable	ACC	ACC
c. Are there any issues that have a clear direct impact on the financial returns of the project activity, other than: risk related barriers, for example risk of technical failure, that could have negative effects on the financial performance; or barriers related to the unavailability of sources of finance for the project activity? {If yes, these issues cannot be considered barriers and shall be assessed by investment analysis. [Refer to (6.c) above]}	VVM	116	No	ACC	ACC
d. Were the barriers determined as real by:	VVM	117		ACC	ACC
i. assssing the available evidence and/or undertaking 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?	VVM	117	Not Applicable	ACC	ACC
ii. ensuring that existence of barriers is substantiated by independent sources of	VVM	117	Yes. PP has demonstrated Investment barrier through detailed Financial analysis	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
data such as relevant national legislation, surveys of local conditions and national or international statistics?			Technological barrier and Barrier due to Prevailing practices were verified through assessment of various studies in local context and Regulatory requirements.		
iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated)	VVM	117	No The Barrier existence is substantiated using various studies and current POME treatment method in Malaysia.	ACC	ACC
e. Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives 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* the possible alternatives, in particular the identified baseline scenario?	VVM	117	PP has Considered only one alternative and that is continuation of the existing system i.e. anaerobic ponds/ lagoons for wastewater treatment with no biogas recovery and electricity generation using diesel generator sets.	ACC	ACC
e. Common practice analysis					
a. Is this a large-scale, or first-of-its kind small-scale project activity?	VVM	119	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
b. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	119	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
c. Was it assessed whether the geograpphical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
project activity's technology or industry type? (For certain technologis the relevatn region for assessment will be local and for others it may be transnational/global.					
d. Was a region other than the entire host country chosen?	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
e. If yes, was the explanation why this region is more appropriate assessed?	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
f. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
g. Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
h. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	The project activity is a small-scale project. Hence common practice analysis not required.	ACC	ACC
7. Monitoring plan					
a. Does the PDD include a monitoring plan?	VVM	122	Yes, monitoring plan has been included in the PDD. Section B.7.1, B.7.2 and Annex 4 cover the information related to the monitoring.	ACC	ACC
b. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Yes, the monitoring plan prepared by PP is based on methodology AMS III. H and AMS I.C monitoring methodology.	ACC	ACC
c. Were the list of parameters required by the the selected methodology identified?	VVM	123	Yes	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d. Does the monitoring plan contains all necessary parameters?	VVM	123	Monitoring Plan section B.7.2 does not include the charactrisitcs / configuration of the the monitoring and measurement instuments.	~~CAR 4~~	ACC
e. Are the parameters clearly described?	VVM	123	The methodology AMS III.H requires monitoring of following important parameters in project scenario - Annual Volume of untreated wastewater entering the anaerobic digester in project activity ($Q_{ww,in}$) - Chemical Oxygen Demand of the waste water entering Anaerobic Digesters(COD_{in}) - Chemical Oxygen Demand of the waste water exiting second stage of Anaerobic Digesters(COD_{out}) - Chemical Oxygen Demand of the waste water discharged to the subsequent poorly managed aerobic pond ($COD_{discharge}$) - Annual volume of biogas recovered ($BG_{recovered,y}$) - Temperature of the exhaust gas of the flare (T_{flare}) - Volumetric Flow rate of the residual gas in dry basisi at normal conditions in hour h ($FV_{RG,h}$) As per the methodology AMS I.C requires monitoring of following important parameters in project scenario - Volume of diesel used in Diesel Generatorsin year y ($Q_{diesel,y}$)	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			- Annual Electricity generated by Diesel Generator 1 & 2 (EG $_{diesel\ generator1,2}$) - Electricity Supplied from the captive grid to the project (EC$_{captive,grid}$)		

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Yes, necessary monitoring parameters as discussed in (7.e above) has been included by PP in the monitoring plan. The cross-checking mechanism for these parameters has also been incorporated by the project participant	ACC	ACC
g. Are relevant parameters monitored as indicated in the Table III.H.2. of the methodology?	AMS	III H	Yes, the parameters have been described as per the requirements of the methodology.	ACC	ACC
h. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Monitoring Plan section B.7.2 does not include the charactrisitcs / configuration of the the monitoring and measurement instuments. Validation team has verified the response given by PP to the raised CAR 4 and found that PP has updated calibration procedures, accuracy level and location of the measurement instruments in Section B.7.1 and Annex 4 (Monitoring Information) of the PDD. The updated information in revised PDD found satisfactory and hence the cAR was closed.	~~CAR 4~~	ACC
i. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes The monitoring relies on metering and laboratory analysis of various key operational parameters hence it is feasible within the project design.	ACC	ACC
j. Does the monitoring plan provide details regarding calibration of monitoring equipments/ instruments or does it include zero check as a substitute for calibration? (zero check can not be considered as a substitute for calibration)	EB 24	37	Yes, the monitoring plan provides details of the calibration. It is ensured by PP that zero check is not a substitute for calibration. Annual calibration frequency has been selected by the PP	ACC	ACC
k. Are the following means of implementation of the	VVM	123	Yes	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:					
i. data management procedures?	VVM	123	Yes, PP has defined the data management procedure in PDD section B.7.2	ACC	ACC
ii. quality assurance procedures?	VVM	123	Yes it is briefly covered in the PDD section B7.2	ACC	ACC
iii. quality control procedures?	VVM	123	Yes, it is briefly covered in the PDD section B7.2	ACC	ACC
8. Sustainable development					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Yes	ACC	ACC
b. 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?	VVM	125	- Letter of Approval from Host DNA (Vide letter Ref. No. NRE(S) 602-2/11JLD 15(32) Dated 13/04/2012) is submitted to the validation team. - Annex I DNA Approval i.e. Danish Energy Agency issued the Letter Of Approval Ref. KKR / File No. – 1602/1102-0089 Dated 07/05/2012, authorizing Nordjysk Elhandel A/S as project participant is submitted to validation Team	~~CL1~~	ACC
9. Local stakeholder consultation					
a. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the	VVM	128	Yes The stakeholders Meeting was conducted on 19/11/2009. The outcome of the Stake holders meeting is briefly discussed in the section E of PDD.	ACC	ACC

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
UNFCCC website?					
b. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	129	Yes	ACC	ACC
c. Is the summary of the comments received as provided in the PDD complete?	VVM	129	Yes	ACC	ACC
d. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	**Yes**	ACC	ACC
10. Environmental impacts					
a. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	131	There is no need of Environmental Impact assessment by the Local Regulatory body i.e. Dept. of Environment.	ACC	ACC
b. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Not Applicable in the Host country.	ACC	ACC
c. Does the host Party require an environmental impact assessment?	VVM	132	No. It is not a requirement by Host party.	ACC	ACC
d. If yes, have the project participants undertaken an environmental impact assessment?	VVM	132	Not Applicable	ACC	ACC

Table 1 Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2) and methodology AMS-I.C (Version 19) – "Thermal energy production with or without electricity"

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. Applicability of the selected methodology to the project activity					
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	Yes. The applicability conditions of the methodology and justification of the project category provided by the project participant have been assessed by the validation team. The applicability conditions of the methodology AMS I.C, Version 19 has been quoted correctly under section B.2 of the PDD.	Accepted	Accepted
c. Is the methodology correctly quoted?	VVM	70	Yes Both Methodologies used to develop this project are correctly quoted in the relevant section of PDD AMS I-C (version 19): "Thermal energy for the user with or without electricity"	Accepted	Accepted
d. Are the applicability conditions of the methodology met?	VVM	71	Yes	Accepted	Accepted
i. Does the Project Activity comprise renewable energy technologies that supply users with thermal energy that displaces fossil fuel use? (Note: Biomass based cogeneration systems that produce heat and electricity are also included in this category)	AMS	I.C	Yes, The project involves displacement of fossil fuel i.e diesel combusted using DG sets for generating Electricity in the Baseline situation which will be replaced with the Biogas Engine during Phase II of the project implementation. During Phase II implementation PP will be using Methane Gas generating from Anaerobic Digestion	Accepted	Accepted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			of POME for generating electricity using Biogas Engines.		
ii. Is the total installed/rated thermal generation capacity of the project equipment equal to or less than 45 MW thermal? (The following capacity limits apply for biomass cogeneration units: (a) If the project activity includes emission reductions from both the thermal and electrical energy components, the total installed energy generation capacity (thermal and electrical) of the project equipment shall not exceed 45 MW thermal. For the purpose of calculating this capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e., for renewable project activities, the maximal limit of 15MW(e) is equivalent to 45 MW thermal output of the equipment or the plant). (b) If the emission reductions of the cogeneration project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from electricity component), the total installed thermal energy production capacity of the project equipment of the cogeneration unit shall not exceed 45 MW thermal. (c) If the emission reductions of the cogeneration project activity are solely on	AMS	I.C	Yes, the total proposed installed / rated capacity of the project equipment ie. Biogas Engines is less than 45 MW thermal and 15 MW Electrical. The Design Capacity of the Biogas engine is 0.5 MW. Verified relevant documents to validate the rated capacity of Biogas Engines i.e. Project design Document / Purchase orders for Biogas Engines and Emission calculation sheet)	Accepted	Accepted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
account of electrical energy production (i.e. no emission reductions accrue from thermal energy component), the total installed electrical energy generation capacity of the project equipment of the cogeneration unit shall not exceed 15 MW.					
iii. Is the thermal energy generation capacity manufacturer's rated thermal energy outuput?	AMS	I.C	Not Applicable	Accepted	Accepted
iv. If not, is the thermal energy generation capacity determined by taking the difference between enthalpy of total outuput leaving the project equipment and the total enthalpy of input entering the project equipment? (For boilers, condensate return (if any) must be incorporated into enthalpy of the feed.	AMS	I.C	Not Applicable	Accepted	Accepted
v. Is this a co-fired system? (Co-fired systems uses both fossil and renewable fuels)	AMS	I.C	No, this is not a co-fired system. biogas engines will utilize Methane Gas generating from the Anaerobic Digestion of POME.	Accepted	Accepted
vi. If yes, does the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel exceed 45 MW thermal? (If yes a CAR shall be raised)	AMS	I.C	No, The total proposed Electricity generation capacity of biogas engine (Project Scenario) is 0.5 MW which is much lesser than the methodological criteria of 45 MW thermal and 15 MW electrical.	Accepted	Accepted
vii. Is electricity and/or steam/heat produced by the project activity delivered to another facility or facilities within the project boundary?	AMS	I.C	No. The electricity generated using Biogas engine will be utilized by the PP for its own usage within project boundary.	Accepted	Accepted
viii. If yes, was a contract between the supplier	AMS	I.C	Not Applicable	Accept	Accep

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
and consumer(s) of the energy entered into specifying that only the facility generating the energy can claim emission reductions from the energy displaced?				ed	ted
ix. Is the Project Activity involving the addition of renewable energy units at an existing renewable energy facility?	AMS	I.C	No.	Accept ed	Accep ted
x. If yes, does the total capacity of the units added by the Project Activity comply with capacity limits specified in item (ii) above,?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xi. Are the units added by the Project Activity physically distinct from the existing units? (Physically distinct units are those that are capable of producing thermal/electrical energy without the operation of existing units and that do not directly affect the mechanical, thermal or electrical characteristics of the existing facility)	AMS	I.C	Not Applicable	Accept ed	Accep ted
xii. Is this a charcoal based biomass energy generation project activity?	AMS	I.C	No. it is Methane gas based Biomass energy generation activity.	Accept ed	Accep ted
xiii. If yes, is charcoal produced in kilns equipped with methane recovery and destruction facility?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xiv. If not, were methane emissions from the production of charcoal considered?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xv. If yes, were these emissions calculated as per the procedures defined in the approved			Not Applicable	Accept ed	Accep ted

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methodoloy AMS-III.K, or, alternatively, were conservative emission factor values from peer reviewed literature or from a registered CDM project activity 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?					
e. Is solid biomass fuel (e.g., briquette) used?	AMS	I.C	Not Applicable	Accepted	Accepted
If yes, was it demonstrated that it has been produced using solely renewable biomass and was all project or leakage emissions associated with its production taken into account in emissions reduction calculation?	AMS	I.C	Yes, The Energy generation is solely done using renewable biomass i.e. Methane gas generating from Anaerobic digestion of POME in a controlled atmosphere. All leakages are considered under AMS III H and it is included in the emission reduction calculations.	Accepted	Accepted
f. Is the proeject activity expected to result in emissions other than those allowed by the methodology?	VVM	71	No. Project activity does not result in emission of other gases than allowed by both methodologies i.e. Methane gas.	Accepted	Accepted
g. Is the choice of the methodology justified?	VVM	71	Yes. AMS I C (Version 19) is applicable in case the technology is displacing fossil fuel with biomass to generate thermal energy or electricity. The project activity involves displacement of Diesel by Methane gas generating out of anaerobic digestion of POME, which is considered as biomass.	Accepted	Accepted
h. Have the project participants shown that the project	VVM	71	Yes. PP has demonstrated that the applicability	Accept	Accep

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
activity meets each of the applicability conditions or the approved methodology?			conditions are meeting while implementing project activities in the PD Section B.2 Table 4. Only two applicability conditions applicable as per Approved methodology AMS I.C (Version 19) Para 1 and Para 4	ed	ted
i. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	Yes . PD covers all cross references of tools and Methodological requirements where ever necessary.	Accept ed	Accep ted
j. Does the project activity substitute electricity from the grid i.e project activity supplies electricity to the grid or project activity results in savings in electricity that would have been provided by the grid?	AMS	I.C	No, Project activity does not substitute electricity from the grid, however PP has it's own captive power grid which is supplying electricity to the mill and Estate. The project activity will be only displacing usage of fossil fuel utilized for generating electricity.	Accept ed	Accep ted
i. If yes, is the latest version of the "Tool to calculate the emission factor for an electricity system" used to calculate the Operating margin, Build margin and the Combined Margin?	AMS	I.C	Not Applicable, however PP has calculated the weighted average emissions of the current generation mix in transparent manner as per paragraph 12 of AMS I.D (Version 16) "Grid connected electricity generation"	Accept ed	Accep ted
k. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	Yes the PD is having comparable information based on the local and sectoral knowledge. Size and capacity of the biogas engines are found in line with requirement of design criteria of biogas engines. Verified through the various Biogas manufacturers of similar engine capacity.	Accept ed	Accep ted
l. If yes, was the PDD cross checked against the other	VVM	71	Approved methodology is the major source to	Accept	Accep

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sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)			verify the applicability conditions, apart from this Design specifications of various other biogas engine manufacturers verified from the web site to confirm the applicability conditions	ed	ted
m. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Yes	Accept ed	Accep ted
n. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	Not Applicable	Accept ed	Accep ted
o. If answer to (5.b.c) above is "no", revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	Not Applicable	Accept ed	Accep ted
p. If yes to (5.b.l) and (5.b.m) above, a request for registration was submitted before the CDM Executive Board has approved the proposed deviation or revision?	VVM	74	Not Applicable	Accept ed	Accep ted
c. Project boundary					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	Yes. It is described in the PD section B.3 , according to the description project activity is the physical geographical site of the project equipment producing the renewable energy delineates the project boundary, the boundary also extends to the industrial facilities, consuming energy generated by the system. During Site visit baseline delineation of project activity specific to AMS I.C (baseline scenario) was also verified and found that PDD Section A.2 Table	~~CAR 1~~	Accep ted

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			1 & 2 are defined to demonstrate the baseline electricity consumption during Phase I & II, however details provided in the table are not matching with the actual installed capacity as given below Installed generation capacity of Turbine -1600 & 800 KVA as seen from the name plate Diesel Generators installed 03 numbers of capacity 400 KVA 400 KVA and 300KVA		
i. Does the project boundary delineate the physical, geographical site of the project equipment producing the renewable energy?	AMS	I.C	Yes, it is described in the PD sections B.3 Figure 5: Delineation of project Activity (Phase II)	Accepted	Accepted
ii. Does the boundary also extend to the industrial, commercial or residential facility, or facilities, consuming energy generated by the system and the processes or equipment that is affected by the project activity?	AMS	I.C	Yes boundary is extended to the industrial facilities, consuming energy generated by the system and the processes or equipment's that is affected by the project activity	Accepted	Accepted
b. Is the delineation in the PDD of the project boundary correct?	VVM	79	Yes, delineation in the PDD of the project boundary is correct and validated. There are two implementation phases in project activity as described below Phase I implementation involves Installation Anaerobic Treatment Plant for POME and its equipment's including flare, Captive grid with DG sets. Phase II Implementation involves usage of Methane gas for electricity generation through Biogas	Accepted	Accepted

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			engines. Both scenarios are clearly described by the PP in relevant PD sections.		
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Yes. As per AMS I C (Version 19), the project activity meets the general criteria on determining baseline emissions i.e. Fossil fuel consumption of the technology that would have been used in the absence of the project activity. In this case Baseline fossil fuel considered by PP is Diesel used to run Diesel generator to produce electricity to cater electricity demand of mill as well as the estate.	Accepted	Accepted
d. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Yes	Accepted	Accepted
e. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	79	Yes	Accepted	Accepted
f. If yes, have the project participants justified that choice?	VVM	79	Justification of choices of source or gas is defined in the PD section B.3 under Table 5. found satisfactorily justified.	Accepted	Accepted
g. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	Yes Justification is reasonable, PD section B.3 under Table 5 “Possible Greenhouse gas produced in the baseline and project activity”	Accepted	Accepted
d. Baseline identification					
a. Does the PDD identify the baseline for the proposed CDM project activity, defined as the	VVM	81	Yes, the baseline for the proposed CDM project activity is defined adequately using Para 13 of AMS	Accepted	Accepted

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scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?			I.C (Version 19), the simplified baseline i.e. Fossil fuel consumption in absence of the project activity, and is found most appropriate and conservative.		
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	Para 13 of AMS I.C is applied to identify the most reasonable baseline scenario.	Accepted	Accepted
i. For renewable energy technologies that displace technologies using fossil fuel, is the simplified baseline calculated as ”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” ?	AMS	I.C	Yes, Simplified Baseline of consumption of Fossil fuel in absence of the project activity is applied to the project.	Accepted	Accepted
ii. For calculating the emission factor, were reliable local or national data used?	AMS	I.C	Not applicable, As PP is using Captive Power.	Accepted	Accepted
iii. If country of project specific data are not available or demonstrably difficult to obtain, were IPCC default values used?	AMS	I.C	IPCC default values are utilized.	Accepted	Accepted
iv. For fuel switching from fossil fuel to renewable biomass in existing facilities, were historical information (detailed records) on the use of energy sources (e.g., electricity, fossil fuel) and the plant output (e.g., steam/electricity) in the baseline plant from at least 3 years prior to project implementation used in the baseline calculations?	AMS	I.C	No, emission factor of the captive grid is calculated using Condition (b) of Para 12 of AMS I.D (Version 16 using following formula EFcaptive grid = (_FCi,y * NCVi * EFCO2,i) / EGy = (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy {FCdiesel,y = (_diesel * Qdiesel,y) / 1,000 EGy = Pbiomass boiler * Nbiomass boiler,y +	Accepted	Accepted

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			Pdiesel * Ndiesel generators,y} This is calculated as 0.0705 tCO2/MWH. Diesel Consumption data is made available.		
v. For facilities that are less than 3 years old, was all historical data available (a minimum of one year data would be required)?	AMS	I.C	Not Applicable	Accepted	Accepted
vi. In case of project activity exporting to other facilities included in the project boundary, was the above historical information from the recipient plants available?	AMS	I.C	Not Applicable	Accepted	Accepted
vii. If the Project Activity produces both heat and electricity using biomass cogeneration, are one of the following baseline scenarios used? (Cases where no historical information is available, the most plausible energy supply sources shall be established in accordance with the guidance on Greenfield projects in the general guidelines to SSC CDM methodologies.)	AMS	I.C	Not Applicable	Accepted	Accepted
a. Electricity is imported from the grid and thernal energy (steam/heat) is produced using fossil fuels.	AMS	I.C	Not Applicable	Accepted	Accepted
b. Electricity is produced on an on-site captive power plant using fossil (with a possibility of export to grid) and thermal energy (steam/heat) is produced using fossil fuel.	AMS	I.C	Not Applicable	Accepted	Accepted
c. A combination of (a) and (b)	AMS	I.C	Not Applicable	Accepted	Accepted

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d. Electricity and thermal energy (steam/heat) are produced in a baseline cogeneration unit using fossil fuel (with possibility of export of electricity to the grid/other facilities and/or thermal energy to other facilities).	AMS	I.C	Not Applicable	Accepted	Accepted
e. Electricity is imported from the grid and/or produced in an onsite captive power plant using fossil fuels (with a possibility of export to the grid); steam/heat is produced from biomass.	AMS	I.C	Not Applicable	Accepted	Accepted
f. Electricity is produced in an on-site captive power plant using biomass (with a possibility of export to the grid) and/or imported from the grid; steam/heat is produced using fossil fuel;	AMS	I.C	Yes Electricity and steam is produced in an onsite captive power plant using biomass i.e. Palm Kernel Shells as well as using Diesel as fossil fuel for captive consumption.	Accepted	Accepted
g. Electricity and thermal energy (steam/heat) are produced in a biomass fired cogeneration unit (without a possibility of export of electricity either to the grid or to other facilities and without a possibility of export of thermal energy to other facilities)	AMS	I.C	Not Applicable	Accepted	Accepted
viii. For cases iv (a), (b) & (c) above, are the baseline emissions calculated as the sum of emissions from the production of electricity and steam/heat considering most recent historical records?	AMS	I.C	Baseline emissions are calculated using fossil fuel consumption for electricity generation in baseline scenario. Most recent historical records of fuel consumption are used by the PP to arrive at the baseline emissions. Verified Diesel consumption for the period of Sept 2009 to August 2010.	Accepted	Accepted
ix. Is the annual electricity produced in the Project Activity less than or equal to the sum of on-	AMS	I.C	Yes it is less than the sum of on site captive generation in the baseline scenario.	Accepted	Accepted

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site captive generation and net grid import (average of most recent 3 years data) in the baseline scenario? (Note: Net grid import is the difference of total electricity imported from the grid and total electricity exported to the grid.)			There is no import or export of electricity to grid is applicable in the baseline as well as project scenaoriosas PP is generating electricity on site for its captive consumption.		
x. If yes, is the emission factor calculated as the weighted average of on-site captive electricity generation and the net grid electricity import (average of most recent three years data) in the baseline scenario? [Note: Net grid electricity import - For example in the baseline if 80% of annual electricity requirement was met by grid import and rest by captive generation, the weighted average emission factor (EF) would be 0.8 EFgrid+ 0.2 EFcaptive.]	AMS	I.C	Yes emission factor of the captive grid is calculated using Condition (b) of Para 12 of AMS I.D (Version 16 using following formula EFcaptive grid = (_FCi,y * NCVi * EFCO2,i) / EGy = (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy {FCdiesel,y = (_diesel * Qdiesel,y) / 1,000 EGy = Pbiomass boiler * Nbiomass boiler,y + Pdiesel * Ndiesel generators,y} Which is calculated as 0.0705 tCO2/MWH.	Accept ed	Accep ted
xi. If no, is the lower of the two values i.e., emission factor of the grid or the emission factor of the captive plant, used for the incremental generation (i.e., the difference between the electricity generation in the project activity and the sum of captive generation and net grid import)?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xii. For case iv (d) – Electricity and thermal energy (steam/heat) produced in a baseline cogeneration unit using fossil fuel – Is the	AMS	I.C	Not Applicable.	Accept ed	Accep ted

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baseline calculated using the formula, BEcogen,CO2,y = [((EGpj,thermal,y + EGpj,electrical,y * 3.6)/ηcogen] * EFff,CO2,?					
xiii. Is the efficiency of the baseline units (excluding cogeneration plants) determined by adopting one of the following criteria (in a preferential order):	AMS	I.C	Not Applicable	Accepted	Accepted
a. Highest measured operation efficiency over the full range of operating conditions of a unit with similar specifications, using baseline fuel. The efficiency tests shall be conducted following the guidance provided in relevant national / international standards;	AMS	I.C	Not Applicable	Accepted	Accepted
b. Highest of the efficiency values provided by two or more manufacturers for units with similar specifications, using the baseline fuel;	AMS	I.C	Not Applicable	Accepted	Accepted
c. Default efficiency of 100%.	AMS	I.C	Not Applicable	Accepted	Accepted
xiv. For household or commercial applications/systems, whose maximum output capacity is less than 45 kW thermal and where it can be demonstrated that the metering of thermal energy output is not plausible, as in the case of cooking stoves, gasifiers, driers, water heaters etc., was efficiency of the baseline units (excluding cogeneration plants) determined by adopting one of the following	AMS	I.C	Not Applicable	Accepted	Accepted

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criteria:					
a. Highest measured operational efficiency over the full range of operating conditions of a representative sample of units with similar specifications, using baseline fuel. The efficiency tests shall be conducted following the guidance provided in relevant national / international standards;	AMS	I.C	Not Applicable	Accepted	Accepted
b. Highest of the efficiency values provided by two or more manufacturers for units with similar specifications using the baseline fuel;	AMS	I.C	Not Applicable	Accepted	Accepted
c. Highest efficiency from referenced literature values or default efficiency of 100%.	AMS	I.C	Not Applicable	Accepted	Accepted
xv. If the electricity is produced in captive plants, is the baseline emission calculated as the amount of electricity produced with the renewable energy technology (GWh) multiplied by the CO2 emission factor per unit of energy of the fuel that would have been used in the baseline plant in (tCO2/TJ) divided by the efficiency of the captive plant?	AMS	I.C	The electricity is produced in captive plant however the baseline emissions are calculated using historical fossil fuel consumption for Diesel generators which will be replaced due to the project activity.	Accepted	Accepted
xvi. For steam/heat produced using fossil fuels, is the baseline emissions calculated as, BEthermal,CO2,y = (EG thermal,/ηBL,thermal) * EFff, CO2?	AMS	I.C	Not Applicable	Accepted	Accepted
xvii. For case iv (e), is the baseline emission calculated as defined in (v) above?	AMS	I.C	No not applicable	Accepted	Accepted

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xviii. For case iv (f), is the baseline emission calculated as defined in (xiv) above?	AMS	I.C	Not Applicable	Accepted	Accepted
xix. For case iv (g), is the baseline emissions from the production of electricity that displaces grid electricity import/or supply electricity to the grid calculated as per the procedures detailed in AMS-I.D?	AMS	I.C	No Not applicable.	Accepted	Accepted
xx. Does the Project Activity involve the addition of new energy production units (e.g., turbines) at an existing facility ?	AMS	I.C	Not Applicable	Accepted	Accepted
xxi. If yes, is the net increase in thermal energy generation calculated as follows: EGthermal,add,y = EGthremal,pj,y – EGthermal,old,y?	AMS	I.C	Not Applicable	Accepted	Accepted
xxii. Are the existing units shut down, are derated, or otherwise become limited in production ?	AMS	I.C	Existing Diesel generator shall be kept as back up in case there is any breakdown / operational problems of Biogas engine. Monitoring of diesel consumption and electricity generation during such periods will be done by PP ex post.	Accepted	Accepted
xxiii. If yes, is the Project Activity claiming credits for generating thermal energy from the same renewable resources that would have otherwise been used by the existing units (or their replacements)?	AMS	I.C	Not Applicable	Accepted	Accepted
xxiv. Do the project activity seek to retrofit or modify an existing facility for renewable energy generation ?	AMS	I.C	Not Applicable	Accepted	Accepted

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xxv. If yes, is the baseline scenario calculated as follows; EGbl,thermal,retrofit,y = MAX(EGhistorical,thermal,y,EGestimated,thermal,y) until DATEBaselineRetrofit ?	AMS	I.C	Not Applicable	Accepted	Accepted
xxvi. If yes to above question, does the baseline emissions (BEretrofit,CO2,y) correspond to the difference of the thermal energy supplied by the project activity and the baseline thermal energy supplied in the case of modified or retrofit facilities multiplied by the emission factor or the fuel that would have been used to generate the incremental energy?	AMS	I.C	Not Applicable	Accepted	Accepted
xxvii. Were the requirements concerning demonstration of the remaining lifetime of the replaced equipment met as described in the general guidelines for SSC CDM methodologies?	AMS	I.C	Not Applicable	Accepted	Accepted
xxviii. Does the remaining lifetime of the affected systems increase due to the project activity?	AMS	I.C	No.	Accepted	Accepted
xxix. If yes, is the crediting period limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project actitivy? (If not, a CAR shall be raised)	AMS	I.C	Not Applicable	Accepted	Accepted
xxx. In order to estimate the (DATEBaselineRetrofit), has the project participant followed the procedures described	AMS	I.C	Not Applicable	Accepted	Accepted

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in the general guidelines?					
c. Does the selected methodology require use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario?	VVM	82	No	Accepted	Accepted
d.If yes, was the methodology consulted on the application of thes tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	Not Applicable	Accepted	Accepted
i.Does the project activity displace grid electricity import and/or supply electricity to grid?	AMS	I.C	No. PP has it own Captive grid and the project activity only displaces fossil fuel consumption i.e. Diesel.	Accepted	Accepted
ii.If yes, was the emission factor of the grid calculated as per the procedures detailed in AMS-I.D?	AMS	I.C	No Not Applicable	Accepted	Accepted
iii.Is the latest version of the 'Tool to Calculate the Emission factor for an Electricity System' used in the project activity?	AMS	I.C	No. PP has selected option (b) stated in AMS I.D (Version 16) to calculate weighted average emission of the current generation mix.	Accepted	Accepted
iv.Is the baseline determined by using the 6 steps outlined in the tool?	AMS	I.C	Not Applicable	Accepted	Accepted
v.Are the calculations of the Operating Margin, Build Margin and the Combined margin transparently described in the PDD?	AMS	I.C	Not Applicable	Accepted	Accepted
vi.Is the latest version of the CEA data used in the calculations?	AMS	I.C	Not Applicable	Accepted	Accepted
vii.Are the emission factor calculations using any other	AMS	I.C	Emission factor calculation is done using AMS I.D	Accept	Accep

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data apart from the CEA data?			(Version 16), Para 12. PP has utilized condition (b) i.e. calculating weighed average emissions of the current generation Mix utilizing one year hypothetical data (theoretical Data). Emission Factor for captive grid is calculated utilizing formulae EFcaptive grid = (_FCi,y * NCVi * EFCO2,i) / EGy = (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy {FCdiesel,y = (_diesel * Qdiesel,y) / 1,000 EGy = Pbiomass boiler * Nbiomass boiler,y + Pdiesel * Ndiesel generators,y} Which is calculated as 0.0705 tCO_2/MWH.	ed	ted
e.Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No	Accepted	Accepted
f.If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	83	Not Applicable	Accepted	Accepted
g.Has any reasonable alternative scenario been excluded?	VVM	83	Not Applicable	Accepted	Accepted
h.Is the baseline scenario identified reasonably supported by:	VVM	84		Accepted	Accepted
i.Assumptions?	VVM	84	Yes	Accept	Accep

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				ed	ted
ii.Calculations?	VVM	84	Yes	Accept ed	Accep ted
iii.Rationales?	VVM	84	Yes	Accept ed	Accep ted
i.Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	Yes	Accept ed	Accep ted
j.Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	Yes, the information provided in the PDD was cross checked using documents provide by Equipment Suppliers on equipment specifications. PP provided Manufactureres specifications and DOE verified information provided by various other manufacturers through internet.	Accept ed	Accep ted
k.Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	Yes	Accept ed	Accep ted
l.Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	Yes	Accept ed	Accep ted
m.Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	Yes.	Accept ed	Accep ted
e.Algorithms and/or formulae used to determine emission reductions					

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a.Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	Yes	Accepted	Accepted
b.Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Yes	Accepted	Accepted
i.If the steam/heat is produced using fossil fuels, is the baseline emission calculated as, BEthermal,CO2,y = (EGthermal,y/ηBL,thermal) * EFff,CO2?	AMS	I.C	No. Not Applicable. This CDM Project involves Electricity generation.	Accepted	Accepted
ii. If electricity and thermal energy (steam/heat) is produced in a baseline cogeneration unit, using fossil fuel, are the baseline emisions calculated using the following formula, BEcogen,CO2,y = [(EGpj,thermal,y + EGpj,electricl,y * 3.6)/ηbl,cogen] * EFff,CO2?	AMS	I.C	No. Not applicable	Accepted	Accepted
iii.For project activities that involve the addition of new energy production units (e.g., turbines) at an existing facility, was the increase in energy production associated with the project (EGy in MWh/ year) calculated as follows: EGy = TEy – WTEy?	AMS	I.C	No. Not Applicable	Accepted	Accepted
iv.Is WTEy calculated as MAX(WTEactual,y , WTEestimated,y)?	AMS	I.C	Not Applicable	Accepted	Accepted
v.For project activities that seek to retrofit or modify an existing facility for renewable energy generation, is the baseline scenario calculated as the following: EGbl,thermal,retrofit,y = MAX(EGhistorical,thermal,y,EGestimated,thermal,y)	AMS	I.C	Not Applicable	Accepted	Accepted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
until DATEBaselineRetrofit?					
vi.Is the emission factor for grid electricity calculated as per the procedures detailed in AMS I.D?	AMS	I.C	Emission factor calculation is done using AMS I.D (Version 16), Para 12. PP has utilized condition (b) i.e. calculating weighed average emissions of the current generation Mix utilizing one year hypothetical data (theoretical Data). Emission Factor for captive grid is calculated utilizing formulae EFcaptive grid = (_FCi,y * NCVi * $EFCO_2$,i) / EGy = (Qbiomass,y * NCVbiomass * 0 + FCdiesel,y * NCVdiesel * EFdiesel) / EGy {FCdiesel,y = (_diesel * Qdiesel,y) / 1,000 EGy = Pbiomass boiler * Nbiomass boiler,y + Pdiesel * Ndiesel generators,y} Which is calculated as 0.0705 tCO_2/MWH.	Accepted	Accepted
vii.If yes, is the calculation of the Operating Margin (OM) emission factor EFgridOMy based on one of the 4 methods described?	AMS	I.C	Not Applicable	Accepted	Accepted
viii.If the simple OM method is used, is it shown that the low-cost/must-run resources constitute less than 50% of total grid generation in:	AMS	I.C	Not Applicable	Accepted	Accepted
a.average of the five most recent years; or	AMS	I.C	Not Applicable	Accepted	Accepted
b.based on long-term averages for hydroelectricity production.	AMS	I.C	Not Applicable	Accepted	Accepted
ix.For the simple OM, are the emissions factor calculated	AMS	I.C	Not Applicable	Accept	Accep

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
using either of the two following data vintages:				ed	ted
a,Ex-ante option	AMS	I.C	Not Applicable	Accept ed	Accep ted
b.Ex-post option	AMS	I.C	Not Applicable	Accept ed	Accep ted
x.Is the data vintage chosen as indicated above, documented in the CDM PDD?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xi.If the dispatch data analysis OM is chosen, is the year in which the project activity displaces grid electricity used?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xii.For dispatch data analysis OM, is it indicated that the emission factor would be updated annually during the monitoring?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xii.Is the Operating Margin Emission factor, according to the selected method, calculated as per Step 3 of the latest version of the ”Tool to calculate the emission factor for an electricity system”?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xiv.Is the Build Margin (BM) emission factor calculated as EFgrid,BM,y = (Σ EGm,y X EFEL,m,y)/(Σ EGm,y)?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xv.Is the combined margin emission factor calculated as, EFgrid,CM,y = EFgrid,OM,y X W OM + EFgrid,BM,y X W BM?	AMS	I.C	Not Applicable	Accept ed	Accep ted
xvi.Are the percent weightages of OM and BM emission factors used as per the tool?	AMS	I.C	Not Applicable	Accept ed	Accep ted
c.Does the methodology provide for selection between	VVM	90	Not Applicable	Accept	Accep

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
different options for equations or parameters?				ed	ted
d.If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	Not Applicable	Accept ed	Accep ted
e.If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Refer to (5.e.b) above	Accept ed	Accep ted
f.Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Not Applicable	Accept ed	Accep ted
g.If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	Yes	Accept ed	Accep ted
i.Appropriate and correct?	VVM	91	Yes	Accept ed	Accep ted
ii.Applicable to the proposed CDM project activity?	VVM	91	Yes	Accept ed	Accep ted
iii.Resulting in a conservative estimate of the emission reductions?	VVM	91	Yes	Accept ed	Accep ted
h.Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Yes. Some data and parameters such as Electricity generation through Biogas engines will be available only in 2nd phase project implementation.	Accept ed	Accep ted
i.If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	Yes, It is based on the design capacity of the biogas engine	Accept ed	Accep ted
h.Metering the thermal and electrical energy produced?	AMS	I.C	Electrical energy produced using biogas engine shall be metered, a provision of monitoring this electricity generation is made by PP and it will be	Accept ed	Accep ted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			implemented during Phase II of the project. Monitoring plan is found incorporated in the PDD section B.7.1 and EG_{biogas} shall be monitored using calibrated metres.		
i.In the case of heat energy (e.g. hot air, hot water), direct measurement of flow and temperature is required.	AMS	I.C	Not Applicable	Accepted	Accepted
ii.In the case of steam energy, direct measurement of flow, temperature, pressure is required to determine enthalpy of the steam.	AMS	I.C	Not Applicable	Accepted	Accepted
i.If the emissions reduction per system is less than 5 tonnes of CO2e a year:	AMS	I.C	Not Applicable	Accepted	Accepted
i.Recording annually the number of systems operating (evidence of continuing operation, such as on-going rental/lease payments could be a substitute), if necessary using survey methods;	AMS	I.C	Not Applicable	Accepted	Accepted
ii.Estimating the annual hours of operation of an average system, if necessary using survey methods. Annual hours of operation can be estimated from total output (e.g. tonnes of grain dried) and output per hour if an accurate value of output per hour is available.	AMS	I.C	Not Applicable	Accepted	Accepted
iii.Are these household or commercial applications where it can be domonstrated the metering of thermal energy output is not plausible, as in the case of biomass stoves, gasifiers, driers, water heaters etc?	AMS	I.C	Not Applicable	Accepted	Accepted
If yes, was the project output energy estimated based on consumption of the biomass (in terms of energy quantity)	AMS	I.C	Not Applicable	Accepted	Accepted

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
times the efficiency of the project equipment? BEy = [HGpj,y/ηbl] * EFff,CO2 = {[Bbiomass,pj,y * NCVbiomass * ηpj]/ηbl} * EFff,CO2					
If the Project Activity is using only biomass or biomass and fossil fuel, are the amount of biomass and fossil fuel used being monitored ?	AMS	I.C	Project activity is using only Methane generating from the POME (Palm oil mill effluent) treatment process and the methane utilized for generating electicity using biogas engine will be monitored. PDD Section B.7 comprises of Methane consumption monitoring.	Accepted	Accepted
What are the various types of fuels used in the Project Activity ?	AMS	I.C	Project Activity will be using two types of fuels 1. Biomass i.e. Palm Kernel Shells and (Which is a continuation of baseline in Biomass boiler), which is not a part of project activity. 2. Methane gas generating from the POME Treatment process. 3. Diesel for Generating Electricity in the Phase I implementation of project activity.	Accepted	Accepted
Is the consumption of each type of fuel used in the Project Activity monitored ?	AMS	I.C	Consumption of Methane gas for generating electricity in the project scenario will be monitored and Monitoring plan is found covering this parameter.	Accepted	Accepted
In the case of project activity consuming biomass and fossil fuel to produce thermal and or electrical energy, was the specific energy consumption of each type of fuel (biomass or fossil) to be used specified ex ante?.	AMS	I.C	Yes	Accepted	Accepted
Is the consumption of each type of fuel monitored?	AMS	I.C	Yes	Accept	Accep

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
				ed	ted
If more than one type of biomass is consumed in the Project Activity, are each type of biomass monitored separately ?	AMS	I.C	Not Applicable	Accept ed	Accep ted
For the specific case of co-fired plants, was the baseline emissions for the amount of thermal energy or electricity produced corresponding to biomass fuels use calculated as follows? BEcofire,y = [∑(FCbiomass,k,y X NCVbiomass,k,y)]/(SECpj,j,y,measured X ηbl) X EFbl	AMS	I.C	Project activity is not a co-fired plant hence it is not applicable.	Accept ed	Accep ted

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
CAR 1 PDD Section A.2 Table 1 & 2 are defined to demonstrate the baseline electricity consumption during Phase I & II, however details provided in the table are not matching with the actual installed capacity as given below - Installed generation capacity of Turbine - 1600 & 800 KVA as seen from the name plate - Diesel Generators installed 03 numbers of capacity 400 KVA 400 KVA and 300KVA	3.d.i (AMS III H) / C.a (AMS I.C)	The nameplate capacities of the turbines are in kW and those for the diesel generators are in kVA. Table 1 and Table 2 of the PDD are updated as follows: - There will be three (3) biomass based turbines onsite with nameplate capacities of 1,600 kW (2 units, including one currently being added). At any point in time, only one of the two 1,600 kW turbines will be operated while the other 1,600 kW turbine and the 900 kW turbine will remain as back-ups. The nameplate and rated capacities are shown in Table 1 of the updated PDD. - The 300 kVA diesel generator will not be connected to the captive grid during the crediting period. The capacities shown in Table 1 of the updated PDD includes only the diesel generators used. - Table 2 of the PDD shows the power supply from the three operating units (i.e. 1,600 kW biomass based turbine and two of 400 kVA diesel generators), power demand and balance in the updated PDD. Note: 1kVA = 0.8 kW. The two diesel generators have an equivalent power generating capacity of 320 kW each.	PDD Section A.2 is corrected based on the CAR rasied. The corrected valuses of installed capacity of Energy generating device verified and found utilized correctly by the PP to arrive at baseline and project emission calculations, hence accepted and closed the CAR 1.

CL 1 DNA Approval was not evidenced for the project druing site vist	1.c	- Letter of Approval from Host DNA (Vide letter Ref. No. NRE(S) 602-2/11JLD 15(32) Dated 13/04/2012) is submitted to the validation team. - Annex I DNA Approval i.e. Danish Energy Agency issued the Letter Of Approval Ref. KKR / File No. – 1602/1102-0089 Dated 07/05/2012, authorizing Nordjysk Elhandel A/S as project participant is submitted to validation Team	Validation team has verified original LoA's submitted and concluded that both are authentic and hence the CL1 is closed.
CAR 2 PDD does not provide the time line for implementation of Phase II of the project activity where Biogas engine is to be installed to utilize methane for elctiricty generation. And there is no evidence of formal approval of the investment, however PDD Section B.5 Table 6 claims that the Board approval has been obtained for the entire project.	CAR 2	The Board Meeting minutes (dated 11 Feb 2010) includes the financial approval to start Phase I. Phase II will be inplemented one year after Phase I (refer to section A2 of PDD) and subsequent approval for additional budget will be provided during implementation of the project activity until Phase II. Table 6 (section B.5 of PDD) has been updated accordingly.	PDD Section B.5 is found updated accoredingly and found accepted, verified subsequent implementation stages of Phase II and hence the CAR 2 was closed.

CAR 3 PDD Section B.5 uses simple cost analysis to demonstrat Invenstment Barrier for demonstration of Additionality. The pay back period is shown as financial indicator. However the basis / consideration of Payback period is not been explianed. Evidence for cross checking the financial parameters such as investment cost of different cost heads of the project has not been provided.	c.b / 3.o.i /6.b.ii	Payback period is no longer used in the updated PDD. Due to the nature of the cashflow trend over the 25-year timeframe (i.e. positive and negative cashflows), IRR of the project could not be defined and hence is not used as financial indicator. Thus, the investment barrier has been updated with the use of Net Present Value (NPV) as the financial indicator in Section B.5 of the PDD to clearly demonstrate that with the addition of CER revenues, the NPV of the project turns positive which allows the project to be financially viable and attractive. An excel sheet with the detail Financial Analysis of the project and the evidence of investment cost breakdown attached.	PP has revised the simple cost analysis and applied NPV analysis to demonstrate fincial additionality of the Project. Values used for the NPV analysis are found transperent and the method of Financial anlysis found most approporiate. Complete financial Analysis was validate internallly and by appointing external financial agency, based on the conclusion of finacial experts the financial analysis proposed by the PP is found transperent and hence the CAR 3 was closed.

CAR 4 Monitoring Plan section B.7.2 does not include the charactrisitcs / configuration of the the monitoring and measurement instuments.	7.h / 3.s.ii.b/ 3.s.iii.c	The calibration procedures, accuracy level and location of the measurement instruments have been updated in Section B.7.1 and Annex 4 (Monitoring Information) of the PDD. The details will be verified during the first verification.	PDD section B.7.1 is found updated in line with the CAR 4. The description provided by PP regarding characteristics and configuration of the monitoring and mesaurement instruments including accuracy levels found satisfactory hence CAR 4 was closed.
CL2 In the Financial Analysis Document provided during Validation visit Escalation on costs of operation has been considered but escalation in revenue on account of increase in diesel prices not considered.	C.b	In the updated Financial Analysis (attached), the cost and revenue items are in real terms, i.e. no escalation/inflation accounted.	PP has done the financial analysis using NPV approach and only basic cost of project is considered. There is no escalations, inflation and taxation considered, hence the clarification provided by the PP is accepted and hence the CL 2 is closed.

CL 3 It was noticed that PDD Section B.7.1 Data and parameters monitored is showing changes in Electricity Generated against parameter $EG_{diesel\ generator\ 1\ \&\ 2}$. Earlier Electricity Generation Quantities mentioned in PDD version 01 were 496.4 MWH (DG 1) and 817.6 MWH (DG 2). In Version 2 of PDD there is a significant change in these quantities, please explain why these quantities are changed significantly in Version 2 of PDD.	CL 3	The difference of electricity generated by diesel generators ($EG_{diesel\ generator\ 1\ and\ 2}$) between version 1 of the PDD (i.e. uploaded onto CDM-UNFCCC website) and the updated version 2 (i.e. sent to you on 23/11/2011) has already been explained in our response to CAR1 and DOE has accepted the response and closed it. This is related to changes shown in Table 1 and Table 2 for existing installed capacities in the two diesel generators. On-site, there are three diesel generators (2 sets of 400 KVA and 1 set of 300 KVA). The 300 KVA will not be connected to the captive grid during the crediting period. Therefore the generating capacity of the two connected generator sets will be = 400 KVA *0.8 kW/KVA = 320 kW = 0.32 MW each. The expected operational hours of the diesel generators are 8 hours per day (8*365 = 2,920 hours/year). Therefore the electricity generated by each generator will be = 0.32 MW * 2,920 hours/year = 934.4 MWh.	In line with CAR 1 raised PP has corrected error in PDD and the change in quantity of electricity generation using Diesel Generators is justified and hence CL3 is closed.
CAR 5 The salvage values have not been considered in the Financial Analysis.	c.b / c.kk.ii	The Financial Analysis has been done over full technical lifetime of the anaerobic digester (i.e. 25 years). The salvage value at Year 25 will be zero for the anaerobic digester and US$390,469 for the biogas engine.	Finacial Analysis is validated using internal financial expert and external financial expert and found that salvage values are considered appropriately and hence the CAR 5 is closed.

CL 4 As per the description of the Project boundary Delineation in PDD section B.3., it was noticed that a 1.2 MW Biomass Based boiler is in operation to generate electricity and supplying the same to the captive grid for internal consumption, it is not clear whether this Biomass boiler is a part of any CDM Project.	3.j.i	In the updated PDD submitted to the DOE (PDD version 2), the biomass based turbine which is supplying electricity to the captive grid has a capacity of 1.6 MW not 1.2 MW. This biomass based turbine is within the project boundary and is not part of any CDM project.	PP's declaration that the Biomass boiler supplying steam for the turbine which are identified as a part of project boundary was verified from the UNFCCC web site and found that this biomass boiler is not a part of any CDM project, hence the CL 4 was closed.

CL 5 It is observed that there are changes in the emission reduction values in PDD version 02 (refer Table shown in PDD section A.4.3) Emission reductions are found increased from 22,702 tCO_{2e} (PDD Version 01) to 24,378 tCO_{2e} (PDD Version 02). Please justify this change in emission reduction values.	CL 5	The net increase of emission reduction (ER) from version 1 to version 2 of the PDDs are due to the following changes: 1. Decrease of project emissions from electricity consumption 2. Decrease of project emissions from discharge of wastewater 3. Increase of fugitive emissions. 4. Increase in flaring emissions of year 2 onward **Project emissions from electricity consumption:** In the PDD version 2, there is an update on the configuration of power generation system in the project compared to that in PDD version 1. Power generation units connected to captive grid in PDD version 1: - 1.2 MW biomass based turbine - 170 kW diesel generator set - 280 kW diesel generator set Power generation units connected to captive grid in PDD version 2: - 1.6 MW biomass based turbine - 2*320 kW diesel generator sets The result of this change in capacity and configuration is on the captive grid emission factor. The captive grid emission factor in the PDD version 1 is 0.0705 tCO_2/MWh The captive grid emission factor in the PDD version 2 is 0.0533 tCO_2/MWh The lower captive grid emission factor in the later version of the PDD results in lower project emissions from electricity consumption.	Revised PDD was verified in detail and found that the section changed which are having impact on the Emission reduction calculation is correct and conservative hence the CL 5 was closed

		Project emissions from discharge of wastewater and fugitive emissions There was an error in the PDD version1 on the total COD removal efficiency of the project activity. In this version of the PDD, the total COD removal efficiency of the system was 80%. However, the PDD version 2 has been updated to show a total COD removal efficiency of 90% (from both stage 1 and stage 2). Both project emissions from discharge of wastewater and fugitive emissions depend on the COD removal efficiency of the system. The increase of total COD removal efficiency has led to a decrease in project emissions from discharge of wastewater and an increase in fugitive emissions. The summary of these changes is shown in the table of Section B.6.4 of the PDD. **Flaring emission** In the updated PDD, we have refined the use of NCV of biogas using the **upper-limit** value of IPCC 2006 (as per Table 1.2 of IPCC 2006 Volume 2 Chapter 1).The choice of this upper-limit value is therefore conservative (i.e. higher project emissions to be accounted *ex-ante*).	Project Emission from discharge of waste water and fugitive emission calculations were verified and found correct. COD reduction during anaerobic digestion of POME is found now applied correctly.
CL 6 Link provided as a reference point 10 under Table 10 of PDD is not correctly showing the value obtained to justify ρ_{Diesel} = 0.841 g/ml	CL 6	The scan copy of the document for diesel density from IEA is available in the pdf format.	Verified all submitted documents by PP and found in line with the IEA values, hence CL6 was closed.

CAR 6 PP has demonstrated financial additionality of the proposed CDM project using NPV, however in which scenario the project activity would pass the the benchmark is not demonstrated using sensitivity analysis as per EB Guideline EB62 " Guideline on Assessment of Investment Analysis"	CAR 6	This is a small-scale CDM project activity, hence as per attachement A to appendix B of the simplified modalities and procedures for SSC CDM project activities the project is only required to demonstrate one or more of the barriers such as: investment barrier, technological barrier, barrier due to the prevailing practice and other barriers. As such the project has used investment barrier instead of investment analysis in the PDD. As per EB35 Annex 34 "Non-binding best practice examples to demonstrate additionality for SSC project activities", best practice examples to demonstrate investment barrier include the following alternative: - The application of investment comparison analysis using a relevant financial indicator; - Application of a benchmark analysis; or - Simple cost analysis (where CDM is the only revenue stream such as end-use energy efficiency) PP has an option to choose any of the above mentioned alternatives, therefore application of NPV as a financial indicator has been chosen. Sensitivity analysis has also been conducted and provided in Section B.5. of the updated PDD.	PP has done the Sensitivty analysis and presented transperently in the PDD section B.5 under "Investment Barrier"and in the financial anlysis spread sheet, the sensitivity of the NPV is done using Range 0 to +/-10 %. This indicate that ± 10% variation in the fuel savings, operating cost, investment cost and CERs revenues, the NPV values of the project activity without the potential CDM revenues are negative, while these values with potential CDM revenues are positive within the range of variation. Therefore, the NPV estimates presented by PP are not sensitive for major variations in major investment parameters and are robust. Hence the CAR 6 was closed.

CL 7 Cost of Flow Meter – Spread sheet submitted for Maintenance & Repair Cost General shows the price of Biogas flow meter as 97,973 (RM) and the Phase II Investment break down sheet for the same Item shows the price as 52000 (RM) – Why this discrepancy in the price for same item?	CL 7	The cost of flow meter i.e. 97,973 (RM) provided in the spread sheet for maintenance and repair cost is the total of 30,000+15,972+52,000 (RM) for 4" flowmeter x2No's, 3" flow meter x 2 No's and biogas flow meter x 1 No's respectively. Phase II Investment break down sheet provides information on only cost of biogas flow meter which is 52,000 (RM). The support documents for cost of individual flowmeter are provided as scanned copies for validation purpose.	Response to the clarification was verified and found satisfactory hence closed. Supporting documents for cost of flow meters verified and found in line with the information provided in the Spread sheet of Financial analysis.
CL 8 Recurring Cost of Biogas engine – Recurring cost of biomass engine i.e. USD 659764 is taken to arrive at the NPV calculation – Please clarify whether entire system is required to be changed every 10 years or only biogas engine will be changed?	CL 8	There are only 3 items in the Phase II, which will not be re-incurred i.e. Expenses on Building for Dewatering System (Item B.3.3), Civil work for biogas engine (Item 2.1.1.5) and Building for Biogas engine Facility(Item 2.1.5). Revised NPV calculation and updated PDD is attached for your review.	Accepted and Closed.
CL 9 PDD version 01 shows 80% as COD reduction efficiency, however PDD version 02 utilizes 90% as COD removal efficiency, please explain this change in the parameter $COD_{ww.discharge}$ used for arriving at emission reduction calculations.	CL 9	PDD Version 2 is ammended with the changes in the COD reduction Efficiency as there was an error in the earlier PDD varsion 01. COD removal is based on the treatment process, Project scenario involves Two stage anaerobic treatment of POME, in stage I anaerobic treatment 80% COD removal takes place and in II nd stage 50% of COD is removed from the partially treated Pome in Stage I Anaerobic Process. Based Mass balance equation the Overall COD removal Efficiency in two stage Anaerobic process is therotically calculated as 90%, and hence COD removal efficiency value was corrected from 80% to 90% in PDD version 2.	The justification provided by the PP on changes in the process efficiency to reduce COD was validated using therotical calcualtions and found satisfcatory, hence CL 9 was closed

Appendix B : Response to Global Stakeholder Comments:

Global Stakeholder Comments		
Comment	**Response by PP**	**Validation team conclusion**
It is evident from the PDD that the values are consistent and it is definitely forged and cooked up values to show a non CDM project as a CDM project. What is this? 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. After careful study of PDD it is found that DPR/FR is in different versions made and submitted with different purposes to different agencies which is totally unacceptable, illegal and unethical. PP/Consultant may 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. 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. In this particular project there is clear cut evidence that DPR/FR values are changed/ fabricated mischievously and intentionally. This 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	The total investment required for this project activity is provided through owner's equity. The project does not involve the participation of any banks or agencies for financing. As such, the PP has not submitted any Detail Project Report (DPR) or Feasibility Report (FR) to any banks or agencies. The argument in the comment is therefore irrelevant to this project activity	Each point in the stake holder comment was reviewed by the Validation team internally and verified project specific conditions during site visit as given below 1. Requirement of DPR And FR 2. Condition of Equipment's – 3. Internal Feasibility study report for assessing the technical feasibility of the selected option of treatment method 4. Payment Certification by the Project consultant From above evidences Validation Team confirms that 1. PP has utilized internal fund, and there is no public fund / bank

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. 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. This project is a fabricated and fake CDM project and must be rejected by the DOE right away. DOE should not support this kind of projects otherwise CDM EB should suspend this DOE for at least one year		loan is involved to finance the project hence the Feasibility study carried out by PP was for internal assessment purpose only to check the feasibility of the treatment method. 2. All project equipment's are purchased new and the PP has presented relevant evidences. Validation Team assessed the condition of equipment's during site visit and found that all equipment's installed during Phase 1 installation are found new and there is no equipment found old. Gate entries of all project equipment's are maintained by the PP. 3. PP has appointed a project management consultant (third Party) for supervision of construction and installation of project

		equipment's, Payment advices are found certified by the Consultant and records all such project specific clearances were verified by the validation team and found satisfactory. Hence the response given by PP was accepted and the CAR was closed.