

# FINAL VALIDATION REPORT

## Organic Waste Composting at Takon Palm Oil Mill, Malaysia

REPORT NR. 01 997 9105043209

REVISION No. 03.1

Date of first issue: 2007-11-10	Project No.: 01 997 9105043209	<i>TÜV Rheinland Japan Ltd.</i>
Approved by:  Dr. Brinkmann ( only final report )	Organisational unit: System Certification Group, Industrial Engineering Services	
Client: Sankina Oil Mill Sdn. Bhd.,	Client ref.: Mr. Tay Chwee Leong	Shin Yokohama Daini Center Bldg., 3-19-5, Shin Yokohama Kohoku-ku, Yokohama 222-0033  Certificate Number: 01 997 9105043209

**Executive Summary:**

**Project Name:** Organic Waste Composting at Takon Palm Oil Mill, Malaysia

**Country:** Malaysia

**Methodology:** AM0039

**Version:** 1

**GHG reducing Measure/Technology:** Co-composting process for treatment of the organic wastewater and the bioorganic waste

**ER estimate:** 58,734 t CO<sub>2e</sub>/yr

**Size**

☒ Large Scale

☐ Small Scale

**Validation Phases:**

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

**Validation Status**

☒ Corrective Actions Requested

☒ Clarifications Requested

☐ Full Approval and submission for registration

☐ Rejected

In summary, it is TÜV Rheinland's opinion that the project "Organic Waste Composting at Takon Palm Oil Mill, Malaysia" as described in the PDD version 2 dated 30 June 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0039 Version 01, TÜV Rheinland thus requests the registration of the project as a CDM project activity.

Report No.: 01 997 9105043209	Subject Group: Environment & Energy
Report title: Organic Waste Composting at Takon Palm Oil Mill, Malaysia	
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**Indexing terms**

Climate Change  
 Kyoto Protocol  
 Large Scale Project Validation  
 Clean Development Mechanism

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## Abbreviations

*Explain any abbreviations that have been used in the report here.*

AMS	Approved Methodology Small Scale
BAU	Business as Usual
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH <sub>4</sub>	Methane
CL	Request for Clarification
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	Carbon Dioxide Equivalent
COD	Chemical Oxygen Demand
DNA	Designated National Authority
DoE	Department of Environment
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EFB	Empty Fruit Bunch
ER	Emission Reductions
FFB	Fresh Fruit Bunch
GHG	Greenhouse Gases
GWP	Global Warming Potential
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MCF	Methane Correction Factor
MoV	Means of Verification
MP	Monitoring Plan
MPOB	Malaysia Palm Oil Board
N <sub>2</sub> O	Nitrous Oxide
NGO	Non-Governmental Organization
ODA	Official Development Assistance
O & M	Operation and Maintenance
PDD	Project Design Document
PE	Project Emissions
POME	Palm Oil Mill Effluent
QA/ QC	Quality Assurance / Quality Control
RM	Ringgit Malaysia
SOP	Standard Operating Procedures
t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change

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Appendix A: Validation Protocol

## **1 EXECUTIVE SUMMARY – VALIDATION OPINION**

TÜV Rheinland has performed a validation of the proposed CDM project “Organic Waste Composting at Takon Palm Oil Mill, Malaysia”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have been provided with sufficient evidence to determine the fulfilment of stated criteria.

The host country is Malaysia and the Annex I country is United Kingdom of Great Britain & Northern Ireland. Malaysia ratified the Kyoto Protocol on 04 September 2002 whilst the United Kingdom of Great Britain & Northern Ireland on 31 May 2002. The DNA from Malaysia confirmed that the project assists in achieving sustainable development. Both the countries DNAs have approved the project and authorized the project participants to request the said project to be considered for registration with UNFCCC

The project correctly applies the approved methodology AM0039 “Methane emissions reduction from organic waste water and bioorganic solid waste using co-composting”, version 1.

The project activity is to prevent uncontrolled land filling and utilisation of organic compost to combat soil degradation caused by inorganic based fertilisers. The project results in reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project 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.

The total emission reductions from the project are estimated to be on the average 58,734tCO<sub>2</sub>e per year over the selected fixed 10 years crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been already developed and will be further implemented.

In summary, it is TÜV Rheinland’s opinion that the proposed CDM project “Organic Waste Composting at Takon Palm Oil Mill, Malaysia, as described in the PDD version 02 dated 30 June 2008, meets the relevant UNFCCC and host country requirements for the CDM and correctly applies the baseline and monitoring methodology AM0039, version 1. Responsibilities for project management, monitoring and reporting and QA/QC procedures have been determined and will be implemented with the project activity.

Thus, TÜV Rheinland requests the registration of the project as a CDM project activity.

## **2 INTRODUCTION**

Sankina Oil Mills Sdn. Bhd., has commissioned TÜV Rheinland to perform a validation of the CDM project “Organic Waste Composting at Takon Palm Oil Mill”, Malaysia (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

### **2.1 Objective**

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

### **2.2 Scope**

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

The only purpose of a validation is its use during the registration process as part of the CDM project cycle. Hence, TÜV Rheinland cannot be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

### 3 METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

#### 3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ LFGC Corp and Certification Body, Internal Meeting and Discussions on Submitted Clarification Request to UNFCCC, October 26<sup>th</sup> and November 1<sup>st</sup>, 2007.
- /2/ IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5 - Waste
- /3/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /4/ AM0039 "Methane emissions reduction from organic waste water and bioorganic solid waste using co-composting" (version 1)
- /5/ Tool for the demonstration and assessment of additionality (version 3)
- /6/ Documentation on CDM Public Forum for Takon Palm Oil Mill
- /7/ Draft Project Design Document for CDM project "Organic Waste Composting at Takon Palm Oil Mill, Sabah, Malaysia", Version 1, dated 24 August 2007.
- /8/ Department of Environment letter on waste water discharge limits for increase of mill capacity. Dated 31 January 2007
- /9/ MPOB Approved Capacity License. Dated 25 September 2007
- /10/ Department of Environment License. Dated 25 October 2005
- /11/ EFB chemical analysis issued by Envilab Sdn. Bhd., dated 24 May 2007
- /12/ Effluent Test Report issued by KDC Laboratory dated 11 May 2007
- /13/ Organisation Chart Undated
- /14/ Environment of Department letter for no EIA required for compost plant. Dated 04 February 2008
- /15/ Board resolution on CDM consideration dated 28 April 2007
- /16/ POME ponds data. Dated 31 May 2007
- /17/ Effluent Treatment Plant Pond capacity. Dated 20 June 2005
- /18/ Advertisement for local stakeholder process meeting. Daily Express, Borneo Post and Shihwa Daily dated 06 May 2007 and 10 May 2007
- /19/ Layout Plan for Proposed Compost Plant. Dated 24 September 2007
- /20/ Dimension of Anaerobic Pond. Undated

- /21/ Company Registration. Dated 21 November 1996
- /22/ Organisation chart of Compost Plant Undated
- /23/ Environment of Department acknowledgement of application for compost plant. Dated 26 September 2007
- /24/ Ministry of Natural Resource and energy acknowledgement of payment for compost plant. Dated 17 September 2007
- /25/ Effluent discharge, FFB processing and EFB table undated
- /26/ Project Design Document for CDM project "Organic Waste Composting at Takon Palm Oil Mill, Sabah, Malaysia", Version 2, dated 30 June 2008
- /27/ AM0039 Baseline, Project Emissions Calculation undated
- /28/ Financial Calculations undated
- /29/ Composting Technology undated
- /30/ Data on monthly temperature issued by metrological department in Sabah undated
- /31/ Public Bank loan interest rate scheme undated
- /32/ Change of Annex 1 project participant
- /33/ Company registration for Aretea Ltd.
- /34/ QA/QC Standard Operating Procedures undated
- /35/ LoA issued by United Kingdom DNA date 28 April 2008
- /36/ LoA issued by Malaysia DNA dated 29 February 2008
- /37/ Industrial Process & the Environment (Handbook No. 3) Crude Palm Oil Industry released by Department of Environment December 1999
- /38/ Equipment list & Power requirement undated
- /39/ Quotation of organic compost from Ancom Crop Care dated 12 March 2007
- /40/ EFB waste management justification undated
- /41/ Behavior of a municipal landfill from field measurement data during a waste-disposal period by Yeon-Soo Jang and Yong-In Kim (Environmental Geology 2003)

When TÜV Rheinland received the initial PDD version 1 dated 24 August 2007, /7/ it was made publicly available at TÜV Rheinland's webpage as well as on the UNFCCC CDM-webpage for a 30 day global stakeholder consultation process (GSP). The final PDD version 2 dated 30 June 2008 /26/ will form the basis for the final evaluation as presented by this report. Information on the first and final PDDs versions are presented at page 3 of the PDDs.

Main changes between the initial version published for the 30 days stakeholder commenting period and the final version submitted for registration as follows:

- Baseline and project emissions calculations. /27/
- Project and operations costs /28/
- Change of project starting date and crediting period starting date
- Data and parameter monitored



- Monitoring Standard Operating Procedures /34/
- Change of Annex I party and Annex 1 project participant /32/

### 3.2 Follow-up Interviews with Project Stakeholders

*Identify any personnel who have been interviewed and/or provided additional information to the presented documentation.*

	<b>Date</b>	<b>Name</b>	<b>Organization</b>	<b>Topic</b>
/1/	2007-10-09	Mr. Tay	Sankina Oil Mills	<ul style="list-style-type: none"> <li>• Effluent Ponds location and layout plan</li> <li>• EFB dump sites</li> </ul>
		Chwee Leong		
		Mr. William Kok	Takon Palm Oil Mill	<ul style="list-style-type: none"> <li>• Mill Operations Data and Licensing</li> <li>• Proposed Compost Site</li> </ul>
		Mr. Wong Ngau Sam		
		Mr. Jukli Hosin	Melewar Palm Oil Mill	<ul style="list-style-type: none"> <li>• Current Wastewater treatment system</li> <li>• Supply of FFB</li> </ul>
		Mr. Cheong Choon Wah		
		Mr. Edward Beasius	Takon Plantation	<ul style="list-style-type: none"> <li>• Power / steam generation</li> <li>• Stakeholders consultation</li> </ul>
		Mr. T.P. Varughese		
/2/	2007-10-16	Mr. See Shean Leong	Aretae Pte. Ltd.,	
		Mr. Tay		
		Chwee Leong	Sarkina Palm Oil Mills	<ul style="list-style-type: none"> <li>• Technology</li> <li>• Baseline</li> <li>• Additionality</li> <li>• Monitoring Plan</li> <li>• Financial Analysis</li> <li>• EIA Compliance</li> <li>• Project participants</li> <li>• Annex I party</li> <li>• Qulaity Assurance</li> <li>• Project lifespan</li> <li>• ERPA</li> <li>• Board Resolution</li> <li>• Project and Crediting period starting dates</li> </ul>
		Mr. See Shean Leong		

### 3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to TÜV Rheinland's positive conclusion on the project design. The initial validation contains in this draft validation report (revision 01) six corrective action requests (CARs) and eighteen requests for clarification (CLs), which have been presented to the project proponent. The project proponent's response to TÜV Rheinland's initial findings will be incorporated in the next version of the validation report with reference to the overworked PDD.

The project proponent's response to TÜV Rheinland's initial findings and the subsequent findings of the final technical review, which resulted in additional eleven corrective action requests (CARs) and sixteen requests for clarification (CLs), is incorporated in the final version of the validation report with reference to the overworked PDD.

In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, 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 validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project "Organic Waste Composting at Takon Palm Oil Mill, Indonesia" is enclosed in Appendix A to this report.

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

- i) mistakes have been made with a direct influence on project results;
- ii) CDM and/or methodology specific requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

<b>Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities</b>		
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements or a request for <b>Clarification (CL)</b> where further clarifications are needed.</i>

<b>Validation Protocol Table 2: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>corrective action request (CAR)</b> due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

<b>Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Draft report clarifications and corrective action requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Summary of project owner response</b>	<b>Validation conclusion</b>
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

**Figure 1 Validation protocol tables**

### 3.4 Technical Quality Control

The draft validation report including the initial validation findings underwent an technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.

### 3.5 Validation Team

<b>Role/Qualification</b>	<b>Last Name</b>	<b>First Name</b>	<b>Affiliation</b>
Team Leader	Cheong	Robert	TÜV Rheinland Malaysia Sdn. Bhd.
Sectoral Expert	Kober	Ralf	TÜV Rheinland Immissionsschutz und Energiesysteme GmbH
Auditor	Seidel	Kurt	TÜV Rheinland Immissionsschutz und Energiesysteme GmbH
Technical Reviewer	Dr. Brinkmann	Manfred	TÜV Rheinland Japan Ltd.

## **4 VALIDATION FINDINGS**

The findings of the draft validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

### **4.1 Participation Requirements**

The project participants are Aretae Limited a private company located in Jersey, a territory of United Kingdom and Sankina Oil Mills Sdn. Bhd., a private company from Malaysia. The host party is Malaysia and the Annex I party is United Kingdom of Great Britain & Northern Ireland met the requirements to participate the CDM.

The Letter of Acceptance (LoA) /36/ dated 29 February 2008 issued by the Malaysia DNA confirms that the proposed project assists in Malaysian sustainable development. The LoA /35/ dated 28 April 2008 issued by the United Kingdom of Great Britain & Northern Ireland DNA confirms Aretae Limited is the project partner of the proposed CDM project.

The LoAs issued by both Malaysia and United Kingdom of Great Kingdom & Northern Ireland DNAs have been reviewed and deemed appropriate in confirming that CDM is a voluntary participation and when the countries ratify the Kyoto Protocol.

There is not indication of any include any public funding for the project from Parties included in Annex I of the UNFCCC.

### **4.2 Project Design**

The project aims to reduce GHG emissions through the implementation of a co-composting plant for waste from Palm Oil Mills, comprising the Empty Fruit Bunches (EFB) and the Palm Oil Mill Effluent (POME) from mill residues.

The project applies a proven technology for composting process /29/ with equipment technology from Germany and microbe technology from Canada. The equipment are mechanised that required both skilled and unskilled labour to operate the plant. The project will allow transfer of technology for locals to acquire for improvement of the technical skills of the community.

The project has a design processing capacity of 160 tons of waste daily generating 80 tons of compost.

Furthermore, the project will realize methane reductions by diverting POME from anaerobic ponds at the mill and high organic waste from dumping at landfills to a composting plant. The PDD version 2 dated 30 June 2008 states that prior to the start of the crediting period a monitoring team will be organised and their tasks and responsibilities will be clearly assigned. For this purpose, a formal set of monitoring standard operation procedures /34/ have been established.

The project has chosen a fixed crediting period of 10 years. The starting date of the crediting period will be 30 August 2008 or after the date of registration, whichever occurs later.

According to the PDD version 2 dated 30 June 2008, the expected operational lifetime of the project is 30 years.

The estimated amount of emission reductions is 587,337 tonnes CO<sub>2e</sub> over the fixed ten-year crediting period, which equals annual average emission reductions of 58,734 tCO<sub>2e</sub>.

The revised PDD version 2 dated 30 June 2008 identifies 01 March 2007 as the starting point of the project and 01 May 2008 as the date for project construction.

### 4.3 Baseline Determination

The proposed CDM project applies the approved baseline methodology AM0039 “Methane emissions reduction from organic waste water and bioorganic solid waste using co-composting” (version 1) /4/ of 29 September 2006. Its applicability has been justified to TÜV Rheinland due to the requirements in the methodology. The chosen baseline is the continuation of the current situation which means using anaerobic ponds to treat POME and land filling of the EFB wastes without any methane recovery or aerobic composting of the POME and the EFB waste to convert into compost fertilizer.

The baseline assumption is determined based on the mill approved annual processed capacity of 216,000 tons FFB by MPOB /9/, generating 47,520 tons of EFB and 129,600 m<sup>3</sup> of POME. The determination of the EFB and POME values are based on industry values on each ton of FFB processed will generate 22% of EFB and 0.6m<sup>3</sup> of POME.

For determining an appropriate baseline the revised PDD version 2 dated 30 June 2008 applies IPCC default values, palm oil industry standard values and the “**Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site**” approved at the EB39 meeting for the percentage of degradable organic carbon of the waste (DOC<sub>i</sub>) and the decay rate of the waste (k<sub>j</sub>).

The system boundaries have been clearly determined in accordance with the methodology (see following table). A comprehensive overview about all emissions included in the project boundary is provided in the PDD section B.3.

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	CO <sub>2</sub> , CH <sub>4</sub>	CO <sub>2</sub> and CH <sub>4</sub> emissions either from biomass disposed in unmanaged landfills, open lagoons, transportation or auxiliary equipment are included in the baseline calculations as requested from the methodology.
<i>Project emissions</i>	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	CO <sub>2</sub> , N <sub>2</sub> O and CH <sub>4</sub> emissions either from the composting process, leaked waste water, additional transportation due to project activity or auxiliary equipment are included in the baseline calculations as requested from the methodology.
<i>Leakage</i>	Nil	No leakage emissions are required to be considered by the methodology.

The project is located at 7.7 km off the 65<sup>th</sup> KM Lahad Datu – Tungku Road, Mukim Ulu Tungku, Lahad Datu, Sabah, Malaysia.

#### **4.4 Additionality**

The project participants have applied the whole procedure for the selection of the most plausible scenario as per the methodology AM0039 using the “Tool for the demonstration and assessment of additionality version 03 /5/ as stated in Part B of the PDD demonstrate that the project faces financial barriers.

The project has chosen a benchmark of 5,8% as the indicator for the investment calculation. This figure consists of 3,8%<sup>1</sup> indicated as interest rate for Malaysia National Bonds added by a 2% technology risk rate, since composting on such large scale and associated technology is new in the country.

Based on the provided investment and operational data the project's IRR /28/ without the revenues of CERs is negative. Thus, the project would be obviously unattractive and would not have been realized with the revenues from the CDM.

A sensitivity analysis has been assessed in the PDD with regards to an increased compost fertilizer selling price of 10% and the reduction in operational and maintenance costs by 10%. Sensitivity analysis has included additionally the 10% reduction in investment costs.

The sensitivity analysis shows without the income from CER sales the IRR of the proposed project is still near to zero.

With the income from CER sales, the IRR has been increased to 13% and with this being higher than the chosen benchmark, it has made the project sufficiently financial attractive to the investor.

TÜV Rheinland was able to verify that CDM has been introduced and considered prior the project starting point. /15/

Finally, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project is not likely the baseline scenario, and that emission reductions resulting from the project are additional.

#### **4.5 Monitoring**

The project activity applies the approved monitoring methodology AM0039 “Methane emissions reduction from organic waste water and bioorganic solid waste using co-composting” (version 1). The selected monitoring methodology is applicable to the project as the project comprises the reduction of methane emissions by using co-composting of organic waste water (POME) and bioorganic solid waste (EFB).

##### **4.5.1 Parameters determined ex-ante**

The following data are determined ex-ante:

- Maximum methane producing capacity of the inlet effluent
- Degradable Organic Carbon dissimilated to landfill gas
- Oxidation factor waste
- Methane Correction Factor

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<sup>1</sup> "City Treasury Morning Call", 26. January 2007



- Fraction of degradable organic carbon
- Decay rate of waste
- Global Warming Potential of methane
- Global Warming Potential of nitrous oxide
- Net calorific value of fuel type used in the project activity
- CO<sub>2</sub> emission factor for fuel type used in the project activity
- Oxidation factor of fuel type
- Fraction of anaerobic degradation due to depth
- Fraction of anaerobic degradation due to temperature

The IPCC default value of 0.21 kg CH<sub>4</sub> / kg COD for the methane potential (B<sub>0</sub>) is in accordance to the methodology stated value.

The Global Warming Potential selected for CH<sub>4</sub> and N<sub>2</sub>O is in line with the current crediting period default value.

Methane conversion factor applied is in accordance methodology. The depth of the anaerobic pond is not less than 2 metres /20/ in compliance to the Department of Environment Approval Permit /8/ to construct and commission wastewater treatment plant issued by the Department of Environment. The depth of the EFB landfill is more than 5 metres in height as seen during the on site assessment.

The values chosen are appropriate and the selection of the values is transparent and conservative.

In line with the application of the approved monitoring methodology the following parameters are determined ex-ante (not monitored during project duration, as listed in section 6.3 of the PDD):

- o Methane (CH<sub>4</sub>) emissions from waste water in anaerobic lagoons or open storage tanks;
- o Methane (CH<sub>4</sub>) emissions from decay of bioorganic solid waste in disposal sites;
- o CO<sub>2</sub> emissions from transportation of organic wastewater and bioorganic solid waste;
- o CO<sub>2</sub> emissions from fossil fuels used for energy requirements and
- o CO<sub>2</sub> emissions from grid electricity consumption.

#### **4.5.2 Parameters monitored ex-post**

The baseline and project emission parameters that are monitored ex-post are indicated in Section B.7.1 and Annex 3 of the PDD.

The following parameters will be monitored ex-post:

- COD<sub>baseline,m</sub> at the inlet of project activity
- Fraction of methane in the landfill gas



- $COD_{outlet,total,y}$  at the outlet of the project activity
- Amount of organic waste disposed in the landfill (per year)
- Distances travelled per trip in year y
- Amount of fossil fuels consumed in the project for energy requirements during the year y
- Amount of fossil fuels consumed for transportation during the year
- Number of vehicles used for transportation
- Amount of electricity consumed by the project
- Grid electricity emission factor
- Number of samples with oxygen deficiency
- Total number of samples
- Quantity of compost produced during the year y

The GHG indicators, parameters, monitoring methods, frequencies and measurement equipments are acceptable.

Where applicable, the parameters and assumptions are according to the respective default and available values of IPCC 2006 that are current crediting period values. Local values and data will be applied where applicable and available

The monitoring of emission reductions generated by the project activity will be carried out systematically according to the monitoring plan. All relevant parameters are monitored as required by methodology and to ensure aerobic conditions occurs throughout the project activity implementation

It has been assessed that all parameters required by the methodology have been included in the PDD Section B.7.1.

All monitoring data will be electronically archived for a period of 2 years after crediting period.

#### **4.5.3 Management system and quality assurance**

TÜV Rheinland assessed the proposed management system and how quality will be assured by the proposed project activity. A monitoring plan has been provided in the PDD Section B.7.2.

The PDD describes, that a formal set of monitoring SOPs /34/ (Standard Operating Procedures) that have been established including the organisation, control and steps required for the key monitoring system features.

- Training of staff
- Data collection
- Data quality control and quality assurance
- Record keeping and archiving
- Equipment calibration

- Equipment maintenance
- Equipment failure

All measurements will use calibrated measurement equipment that is maintained regularly and checked for its functioning. QA/QC procedures for the parameters to be monitored are illustrated sufficiently in the PDD via tables.

Hence, all indicators of importance for controlling and reporting of projects performance are incorporated in the monitoring plan (respectively in the planned formal set of monitoring SOPs).

## 4.6 Estimate of GHG Emissions

The emission reductions are generated through the methane emissions reduction from organic waste water and bioorganic solid waste using co-composting.

In the absence of the project activity:

- POME is treated in an open anaerobic pond and methane would have been emitted to the atmosphere in an uncontrolled manner
- EFB will be landfill causing methane be emitted into the atmosphere in an uncontrolled manner through the natural decaying process.

The emission reductions will be directly monitored and calculated ex-post using the approach of AM0039.

The baseline emissions potential are represented by the below formula:

$$BE_y = BE_{CH_4, WW, y} + BE_{CH_4, SW, y} + BE_{CO_2, Trans, y} + BE_{CO_2, FF, y} + BE_{CO_2, Elec, y}$$

Where:

$BE_y$  is the total baseline emissions during the year  $y$ , (tCO<sub>2</sub>e)

$BE_{CH_4, WW, y}$  is the baseline methane emissions from wastewater in open storage systems.

The wastewater methane emission is based on the POME generated by the mill of approximated 129,600 m<sup>3</sup> per year.

$BE_{CH_4, SW, y}$  is the baseline methane emissions from decay of bioorganic solid waste in disposal site.

The methane emission of the bioorganic solid waste (EFB) is the expected future landfill gas emissions and thus emission reductions were estimated using the first-order decay model. The parameters  $k_j$  and  $DOC_j$  applied were in accordance to the **“Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site”** approved at the EB39 meeting.

Specific conservative default values of  $DOC_i$  and  $k_i$  for Empty Fruit Bunches ( EFB's ) were defined by UNFCCC at EB 35 ( annex 10 in combination with annex 8 ) and at EB 39 ( annex 9 ) as follows:

Status	$DOC_i$ (wet waste)	$k_i$ (wet, tropical)
EB 35	0.43	0.035
EB 39	0.20	0.17

The project developer has decided to use the default values for EFB as agreed at EB 39, which are also close to first findings of ongoing research for determination of  $DOC_i$  and  $k_i$  for EFB, which was made available to the validation team.

In case local values for EFB would be established and recognized in a later stage of the project cycle, which would result in higher values, the project participants consider to submit a Deviation Request within the process of periodic verification to UNFCCC secretariat before applying such local values.

**$BE_{CO_2,Trans,y}$**  is the  $CO_2$  emission from transportation of organic wastewater and bioorganic solid waste

The  $CO_2$  emissions from the transportation are considered to be zero as the EFB are dumped within the mill and the wastewater is piped into the open lagoon system.

**$BE_{CO_2,FF,y}$**  is the  $CO_2$  emissions from fossil fuels used for energy requirements

The use of fossil fuel is considered to be zero as there is no fossil fuel currently being used for energy and steam generation by the mill. The mill used the biomass waste of mesocarp fibre and palm kernel shell as fuel.

**$BE_{CO_2,Elec,y}$**  is the  $CO_2$  emissions from grid electricity consumption

The mill is not connected to the electricity grid and the emission is consider as zero.

The project emissions are calculated based on the following:

- $N_2O$  emissions from composting of bio-organic waste
- $CH_4$  emissions from composting of bio-organic waste
- $CH_4$  emissions from the wastewater discharged after the project activity
- $CO_2$  emissions from transportation in the project situation
- $CO_2$  emissions from use of fossil fuels in the project
- $CO_2$  emissions from grid electricity consumption in the project situation

There is no electricity imported from the grid to run the project activity operations. Electricity consumed by the project activity will be supply by the mill own power generation using biomass waste of mesocarp fibre and palm kernel shell.

The total emission reductions achieved by this project are calculated by subtracting the project emissions from the baseline emissions.

The emission reductions can be calculated using the following formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER<sub>y</sub>: Emissions Reductions (t CO<sub>2</sub>e) in year y

BE<sub>y</sub>: Emissions in the baseline scenario (t CO<sub>2</sub>e) in year y

PE<sub>y</sub>: Emissions in the project scenario (t CO<sub>2</sub>e) in year y

LE<sub>y</sub>: Leakage emissions (t CO<sub>2</sub>e) in year y

All equipments are new and not transferred from another activity. Therefore, no leakages are expected.

The calculations for the emissions reductions have been provided transparently.

Hence, the expected emissions reductions were calculated to be 587,337 tCO<sub>2</sub>e over a 10 (ten) years crediting period.

#### **4.7 Environmental Impacts**

The possible environmental impacts that might occur in relation to the project activity are summarized in the PDD. No significant negative impacts are anticipated from the project.

The project might have some minor negative environmental impact during the operational phase in form of odour emissions. In order to keep those emissions as low as possible, odour reduction technologies are considered. Moreover, the composting plant is located remotely away from populated areas. On the other hand compost can improve the soil conditions and will improve crop production. It contributes much more to a better environment than the usage of chemical fertilizers.

The project does not require an EIA study according to the host country requirements. A letter /14/ issued by the Department of Environment dated 04 February 2008 confirmed that the project does not require an EIA.

#### **4.8 Comments by Local Stakeholders**

Comments by local stakeholders have been invited by a public forum that was held with 12 participants at Lahad Datu Executive Hotel, Lahad Datu, Sabah, Malaysia on 17 May 2007. The relevant stakeholders have been invited via invitation letters and public invitations through local newspapers /21/ – Daily Express, The Borneo Post, Shihwa Daily dated 6 May 2007 and 10 May 2007./18/

There is no legal requirement for carrying out the stakeholder process for this project.

Comments received were regarding carbon credit mechanism, funding for project and cost of compost. Participants at this consultation did not raise any objections or concerns to the implementation of the project.

A summary of the comments has been provided in the PDD Section E.1.

#### **4.9 Comments by Parties, Stakeholders and NGOs**

The PDD version 01 of 24<sup>th</sup> August 2007 was made publicly available on TÜV Rheinland's climate change website

(<http://www.tuvdotcom.com/pi/web/TuvdotcomIdSearchResults.xml?TUVdotCOMID=9105042289>)

and Parties, stakeholders and NGOs were invited through the CDM website to provide comments during a 30 days period from 7<sup>th</sup> September to 6<sup>th</sup> October 2007.

No comments were received.

## **APPENDIX A**

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### **CDM VALIDATION PROTOCOL**

#### **Organic Waste Composting at Takon Palm Oil Mill, Sabah, Malaysia**

REPORT NR. 01 997 9105043209

REVISION No. 03

**Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities**

Requirement	Reference	Conclusion	Cross Reference / Comment
<b>About Parties</b>			
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK	Table 2, Section A.2.1 Annex I Party is from the United Kingdom of Great Britain & Northern Ireland. The Annex 1 party during the web publishing is Canada.
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK	Table 2, Section A.2.1
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CAR-1</del> OK	Approvals of voluntary participation from the DNAs in Malaysia and the United Kingdom of Great Britain & Northern Ireland have been received.
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	<del>CAR-2</del> OK	Table 2, Section A.2.2 Confirmation by Malaysia DNA has been received (LoA).
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK (No public funding involved)	The review of documents and the interviews during the on-site assessment showed that no ODA is used for the project financing.

Requirement	Reference	Conclusion	Cross Reference / Comment
development assistance and is separate from and is not counted towards the financial obligations of these Parties.			
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK	Malaysia DNA is Conservation and Environmental Management Division, Ministry of Natural Resources and Environment; United Kingdom of Great Britain & Northern Ireland DNA is Department of Environment, Food and Rural Affairs.
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK	Malaysia ratified the Kyoto Protocol on 04 September 2002; The United Kingdom of Great Britain & Northern Ireland ratified the Kyoto Protocol on 31 May 2002.
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK	
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK	



Requirement	Reference	Conclusion	Cross Reference / Comment
<b>About additionality</b>			
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.3
<b>About forecast emission reductions and environmental impacts</b>			
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK	Table 2, Section B.4 to B.7
<b>For large-scale projects only</b>			
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	No EIA is required for this project by Host Party.

Requirement	Reference	Conclusion	Cross Reference / Comment
<b>About small-scale project activities (if applicable)</b>			
13. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Not Applicable	
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	Not Applicable	
15. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not Applicable	
<b>About stakeholder involvement</b>			
16. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK	Table 2, Section E.1.1 & E.1.2 The public stakeholder consultation forum was announced in local newspapers Daily Express, The Borneo Post and Shihwa Daily on 06 May 2007 and 10 May 2007. The public stakeholder

Requirement	Reference	Conclusion	Cross Reference / Comment
			consultation forum was conducted on 17 May 2007.at Hotel Executive, Lahad Datu, Sabah.
17. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK	The PDD version 01 dated 24 August 2007 was published for invitation of comments for a 30 days period from 7 <sup>th</sup> September to 6 <sup>th</sup> October 2007.and no comments were received.
<b>Other</b>			
18. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK	The baseline and monitoring methodology was approved at EB 26 on 29 September 2006.
19. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK	The baseline has been established in a transparent manner as stated in the PDD.
20. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK	This has been considered in the project emissions.
21. The project design document shall be in conformance with the UNFCCC CDM-	CDM Modalities and Procedures Appendix B, EB Decision	OK	The PDD is in conformance with UNFCCC format CDM-PDD Version 03.1

Requirement	Reference	Conclusion	Cross Reference / Comment
PDD format.			
22. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK	This has been considered in the monitoring plan.

**Table 2 Requirements Checklist**

<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>						
<b>A.1. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>						
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?			DR	<p><i>The project is located 7.7km Off the 65th KM Lahad Datu-Tungku Road, Mukim Ulu Tungku, Lahad Datu, Sabah, Malaysia. Latitude – 5.0540°N, Longitude – 118.7869° E</i></p> <p><b>CL.1:</b> In order to identify the unique location of the other new neighbouring mills / potential suppliers of EFB and their landfill sites please identify the exact longitude and latitude of these other project parts, belonging also to the project boundary, if there are any.</p>	CL.1	OK
A. 1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?			DR	<p><i>Yes. The project boundary includes the composting site where the waste is treated. Possible emissions coming from fuel consumption during project operation will be accounted as project emissions.</i></p>	OK	OK
<b>A.2. Participation Requirements</b>						

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>						
A.2.1. Which Parties and project participants are participating in the project?			DR	<i>Sankina Oil Mill Sdn, Bhd., a private company is the project participant in Malaysia (host Party). LFGE participates as Annex 1 party from Canada.  The annex 1 party has been change to Aretae Ltd from Jersey, a territory of United Kingdom.</i>	OK	OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?				<b>CAR 1:</b> The confirmation of the host country and the Annex 1 country has not been received yet. The Malaysian Designated National Authority as well as the responsible authority of United Kingdom of Great Britain & Northern Ireland requires a draft validation report and protocol to issue the Letter of Approval.	CAR 1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation			DR	<i>Yes. Malaysia ratified the Kyoto Protocol in 2002 for voluntary participation in GHG emissions. Ministry of Natural Resource and Environment is the designated national</i>	OK	OK

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
- Designated a National Authority				<i>authority.</i>		
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.			DR	<i>The review of documents did not reveal any information indicating, that ODA is used for financing the project. No diversion of ODA occurs.</i>	OK	OK
<b>A.3. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>						
A.3.1. Does the project design engineering reflect current good practices?			DR	<i>The project design engineering reflects current good practices in Malaysia.</i>	OK	OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?			DR	<i>Yes. The project activity employs state of the art technology which is above the local standard.</i>	OK	OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?			DR	<i>The operational structure that will be implemented has been described in the PDD section B.7.</i> <b>CL 2:</b> The description of the applied composting technology is general in the PDD. What technology of composting will be used and which amounts of raw materials (EFB, POME, decanter cake, sludge,	CL 2	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<p>etc.) are used hourly/daily/yearly? What amounts of POME will be recycled for composting? Which amounts will return into the lagoons? A flow diagram with mass flows and measuring points has to be submitted to the validation team, the figure 4 (Project Boundary) has to be amended accordingly.</p> <p>The requested procedure on documentation and responsibilities assignation shall be applied for the project activity. Please submit a site-specific organization chart with task allocation that includes management structure, operational, maintenance and training plan.</p> <p>Tables with time series data, additional documentation of measurement equipment, procedures, etc. should be included in Annex 4 – Monitoring Information (Annex 4 is currently missing) for data collection. The monitoring plan should reflect good monitoring practice appropriate to the project type. Provide any further background information in Annex 4.</p>		
<b>A.4. Contribution to Sustainable Development</b>					



<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
<i>The project's contribution to sustainable development is assessed.</i>						
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?		DR		<b>CAR 1:</b> The letter of approval which confirms the project's assistance in achieving sustainable development has not been received, yet.	CAR 1	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?		DR		<i>The plant will be semi-mechanised, but will create a large number of jobs, in particular for less-educated workers. The project will avoid methane be emitted from the EFB dumping and POME, thus improve air quality</i>	OK	OK
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>						
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>						
B.1.1. Does the project apply an approved methodology and the correct version thereof?		DR		<i>Yes. The project is applying the approved baseline methodology AM 0039 "Methane emission reduction from organic waste water and bio-organic solid waste using co-composting", Version 01.</i>	OK	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?		DR	Yes. The project fulfils the application criteria as it is land filling of bioorganic waste (empty fruit bunches) and anaerobic lagoons or open tanks will be built for the treatment of organic waste water from the POME (palm oil mill effluent).	OK	OK
<b>B.2. Baseline Scenario Determination</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?		DR	<p>The baseline scenario is the continuing use of anaerobic ponds to treat POME and land filling of the EFB wastes without methane recovery or aerobic composting of POME and EFB waste.</p> <p>In the absence of the proposed project activity, seven other alternatives have been identified for the treatment of the organic wastewater:</p> <ul style="list-style-type: none"> <li>• BAU: anaerobic lagoons or open storage tanks without methane recovery and flaring</li> <li>• Anaerobic lagoons or open</li> </ul>	OK	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<p><i>storage tanks with methane recovery or flaring</i></p> <ul style="list-style-type: none"> <li><i>Anaerobic lagoons or open storage tanks with methane recovery and utilization for electricity/heat generation</i></li> <li><i>Building of new anaerobic lagoons or open storage tanks without methane recovery and flaring</i></li> <li><i>Building of new anaerobic lagoons or open storage tanks with methane recovery and flaring</i></li> <li><i>Using organic wastewater for co-composting (project activity without CDM)</i></li> <li><i>Other treatment options</i></li> </ul> <p><i>For bioorganic solid waste treatment the PDD discussed the following eight scenarios:</i></p> <ul style="list-style-type: none"> <li><i>Waste used for co-composting (project activity without CDM)</i></li> <li><i>Uncontrolled open burning</i></li> <li><i>Waste returned to plantation for</i></li> </ul>		

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p><i>mulching</i></p> <ul style="list-style-type: none"> <li>• <i>Waste incinerated in controlled conditions or used for energy purposes including power generation</i></li> <li>• <i>Waste disposed on a landfill without the capture of landfill gas</i></li> <li>• <i>Waste disposed on a landfill where landfill gas is captured and flared</i></li> <li>• <i>Waste disposed on a landfill where landfill gas is captured and utilized for electricity generation</i></li> <li>• <i>Waste disposed on a landfill where landfill gas is captured and delivered to nearby industries for heat generation.</i></li> </ul> <p><i>The PDD discussed the alternatives sufficiently and came to conclusion that the continuation of the current practise of using anaerobic ponds to treat POME and land filling the EFB waste is the most plausible baseline scenario.</i></p>		
B.2.2. What other alternative scenarios have been			<i>No alternative scenarios have not been</i>	OK	OK

<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
considered and why is the selected scenario the most likely one?				<i>considered, as this is not required by the methodology</i>		
B.2.3. Has the baseline scenario been determined according to the methodology?			DR	<b>CAR 2:</b> The methodology AM0039 requests the application of the "procedure to identify the most plausible baseline scenario". There are, 5 steps need to be applied to select the most plausible baseline scenario. Currently the PDD applies only the "tool for the demonstration and assessment of additionality". Although the PDD discussed most of the points requested from the missing steps, it has to be in line with the formalities requested by the methodology.	CAR 2	OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?			DR	<i>The baseline scenario has applied conservative assumptions for calculating the baseline emissions the project.</i>	OK	OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?			DR	<i>Yes. There is presently no Government regulations or policies in place to ban landfill of EFBs or to recover methane from anaerobic lagoons in the palm oil industry. It is in compliance with the local and national regulations</i>	OK	OK
B.2.6. Is the baseline scenario determination compatible			DR	<b>CL 3.</b> The amount of empty fruit bunch	CL 3	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
with the available data and are all literature and sources clearly referenced?			in tons stated in the PDD does not correspond to the capacity of the mill. Additional amount purchased from neighbouring mills has to be justified to the validation team that will make up to the total amount of EFB stated in the PDD		
B.2.7. Have the major risks to the baseline been identified?		DR	<i>Major risks to the baseline have been identified</i>	OK	OK
<b>B.3. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?		DR	Yes. The PDD applies the comprehensive "Tool for the demonstration and assessment of additionality (version 3)". <u>Step 1: Identification of alternatives to the project activity consistent with current laws and calculations.</u> The different alternatives have been already provided above. The only realistic alternative for this field is the continuing use of anaerobic ponds to treat POME and land filling EFB wastes without any methane recovery or the	OK	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<p><i>aerobic composting of the POME and the EFB waste to convert into compost fertilizer, which is the project activity.</i></p> <p><u><i>Step 2:Investment Analysis</i></u></p> <p><i>The alternatives presented are not common practise in Malaysia, thus only the benchmark analysis is applicable. The project chooses as benchmark 5,8%, which consists of 3,8% as interest rate for local investors and additionally a 2% risk factor. This would be the minimum hurdle for the project.</i></p> <p><i>The PDD calculated the following financial indicators for the project without CER revenues (Alternative):</i></p> <p><i>NPV =( 6.749 US \$)</i></p> <p><i>IRR = negative</i></p> <p><i>For the project scenario (including CER revenues) the PDD calculates:</i></p> <p><i>NPV = 8.380 US \$</i></p> <p><i>IRR = 42.6.7%</i></p> <p><i>Furthermore, a sensitivity analysis has been provided in the PDD calculating with a 10% increase in the fertilizer selling price and a 10% reduction of operational costs.</i></p>		

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p><i>Outcome:</i>  <i>Without the additional revenue from the CER sales the project would not have been realized. The use of EFB as a fertilizer also contributes to sustainable agricultural practises for the industry.</i></p> <p><u>Step 3: Barrier Analysis</u>  <i>No barrier analysis has been conducted since the only barrier is the economic one.</i></p> <p><u>Step 4: Common Practise Analysis</u>  <i>To date there has been limited development of composting projects using EFB in Malaysia. The PDD provides a list of few companies that are involved in the compost and organic fertilizer business. There are a number of small composting operations in the area, but none are very profitable. This has been discussed in the PDD (Sub-Step 4b).</i></p>		
B.3.2. Are all assumptions stated in a transparent and conservative manner?		DR	<b>CL 4:</b> Please clarify the acronym Mth/yr on page 74ff. Furthermore, please always apply SI units as requested by UNFCCC (e.g. [Mt] instead of [mt] )	CL 4	OK



<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<b>CL 5:</b> Clarify why depreciations are included in the IRR and NPV calculations?  <b>CAR 3:</b> The project's revenues have been calculated with the CDM expenses as positive income. This is contradictory as they are either negative income or belong to the project's expenses. (Although, their impact on total IRR calculation is minor, the values need to be amended).	CL 5  CAR 3	OK  OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?		DR	<b>CL 6:</b> please provide evidence for assumptions on prices for selling fertilizer as well as costs for biomass and microbes (e.g. link to trading websites or similar).	CL 6	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?		DR	<i>The project starting date will be after the project validation.</i>	OK	OK
<b>B.4. Calculation of GHG Emission Reductions – Project emissions</b>  <i>It is assessed whether the project emissions are stated according to the methodology and whether</i>					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
the argumentation for the choice of default factors and values – where applicable – is justified.						
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?			DR	<p>Yes. The calculations have been provided in a transparent manner.</p> <p><b>CL 7:</b> Please clarify in the PDD, why CH<sub>4</sub> emissions from leaked wastewater (PE<sub>CH4,bww,y</sub>) have not been calculated. Furthermore, please provide the table calculating N<sub>2</sub>O emissions from composting in the corresponding paragraph ((a) N<sub>2</sub>O emissions from composting (PE<sub>N2O, comp,y</sub>). The project proponent has to justify that the runoff water (incl. rainwater from heavy rainfall and its COD concentration is negligible as project emission. The annual quantity of run off water including rainwater and its COD concentration has to be calculated and monitored (project emissions during standard operation and during emergencies). The PDD assumes that the GHG emissions from the combustion of fossil fuels by the project activity are negligible. Calculations of emissions due to combustion of fossil fuels (daily for start up, during rest of</p>	CL 7	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			the day after shut off of the cogeneration plant, during general maintenance) should provide to demonstrate that related project emissions from fossil fuel combustion are negligible.  The energy demand of the composting plant (energy demand in KW and in KWh, list of installed capacity of electricity consumers) has to be re-calculated according to these findings in order to justify a possible neglecting. The project emissions from the diesel source have to be taken into account and has to be monitored by a separate power meter.		
B.4.2. Have conservative assumptions been used when calculating the project emissions?		DR	<b>CL 8:</b> Please provide evidence on the selected specific very low diesel consumption and NCV of Diesel (NCV = 42.7 MJ/l). The IPCC default value is 43 TJ/kg <sup>1</sup> . Furthermore, the PDD is requested to avoid inconsistencies in the applied units (e.g. both is provided in the PDD: NCV = 42.7 MJ/l and NCV = 42.7 MJ/kg). project emissions	CL 8	OK

<sup>1</sup> 206 IPCC Guidelines. Volume 2. Table 1-2.

<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
				caused by transport. <b>CAR 4:</b> The fuel consumption $FC_y$ [l/yr] needs to be multiplied with the density of diesel in order to further calculate with the diesel net calorific value, because the NCV is calculated in [TJ/kg]. Therefore, the project emission (respectively the emission reduction) calculations need to be amended.	CAR 4	OK
				<b>CAR.5:</b> Please provide justification and further evidence on the selected baseline and the applied calculation factors, with actual scaled photographs and layout drawings (landfills, anaerobic lagoons) and calculations. Please justify that the retention time of the POME in the anaerobic lagoon is more than 30 days. Please add an overview table of applied parameters in the PDD.	CAR 5	OK
				<b>CAR.6:</b> The monthly historic data of 2005, 2006, 2007 and 2008 (planned) for the use of EFB (landfilling – with statement of other utilization than 100 % landfilling like mulching, incineration, fibre production) and POME have to be	CAR 6	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			collected and disclosed to the validation team. The currently in the landfill(s) stored volume (m3) of EFB has to be estimated in order to justify the historic data by technical quantity survey of the volume of the EFB-landfill in total ( length x width x depth = m3 x density t/m3 = t ). It has to be justified too by plausibility check, how the quantities of empty fruit bunches EFB (.... tonnes / a) and POME (.... m3 / a) are corresponding to the capacity of the mill/s (FFB / day, FFB / a and palm oil mill best practice benchmarks for percentage of EFB from FFB in total and percentage of POME from FFB in total.		
B.4.3. Are uncertainties in the project emission estimates properly addressed?		DR	<i>Yes. All uncertainties are addressed</i>	OK	OK
<b>B.5. Calculation of GHG Emission Reductions – Baseline emissions</b>  <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and		DR	<i>Yes. The calculations provided are complete and in accordance with the</i>	OK	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
transparent manner?			<i>approved methodology AM0039 (version 1).</i>		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?		DR	<i>Yes. The waste disposal site is managed with mechanical compacting.</i>	OK	OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?		DR	<i>See CL 3 above.</i>	CL 3	OK
<b>B.6. Calculation of GHG Emission Reductions – Leakage</b> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
6.3. Are uncertainties in the leakage emission estimates properly addressed?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
<b>B.7. Emission Reductions</b> <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.		DR	<i>Yes. The ex-ante calculation results in annual emission reductions that are real, measurable and give long-term benefits related to the mitigation of climate change.</i>	OK	OK
<b>B.8. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?		DR	<i>Yes, the project activity applies the approved monitoring methodology AM 0039 (Version 1) in a complete and transparent manner.</i>	OK	OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?		DR	<i>Yes. The monitoring plan requests to keep required monitoring data for two years after the end of the crediting period.</i>	OK	OK
<b>B.9. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?		DR	<i>Yes, the data collection system for monitoring data those are required for baseline and project emissions determination reflect good monitoring practise. Detailed monitoring</i>	OK	OK

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
				<i>arrangements and procedures according to the used monitoring plan will be applied during the periodic verification process.</i>		
B.9.2. Are the choices of project GHG indicators reasonable and conservative?			DR	<i>Yes. They are in accordance with the requirements of the applied monitoring methodology AM0039.</i>	OK	OK
B.9.3. Is the measurement <i>method</i> clearly stated for each GHG value to be monitored and deemed appropriate?			DR	<i>Yes. The project emissions indicators will be monitored through on-site measurements, and summarised in B.7.1 and Annex 4.</i>	OK	OK
B.9.4. Is the measurement <i>equipment</i> described and deemed appropriate?			DR	<i>Yes. The monitoring equipments used for on-site measurements are indicated in B.7.1.</i>	OK	OK
B.9.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?			DR	<i>Yes. The PDD describes measurement procedures in table form and also includes procedures in case in failure.</i>	OK	OK
B.9.6. Is the measurement <i>interval</i> identified and deemed appropriate?			DR	<i>The measurements frequency is determined in the tables in Section B.7.2.</i>	OK	OK
B.9.7. Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?			DR	<i>Yes. The PDD provides a table defining rough operational procedures and responsibilities for monitoring and quality assurance of emission</i>	OK	OK



<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<i>reductions</i>		
B.9.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?		DR	<i>Yes. See above.</i>	OK	OK
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)		DR	<b>CL 9:</b> Please specify these procedures more detailed in your monitoring plan. The PDD does not specify how tests for POME (COD, m3), DOC <sub>j</sub> , k <sub>j</sub> will be conducted. It has to be justified how a representative sampling of these parameters is organised and which laboratories will be used at which frequency (mill's in house lab, accredited lab. Other lab, DOE lab).	CL 9	OK
<b>B.10. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?		DR	<i>Yes. The monitoring plan considers objectives, organisation, equipment, data collection, calibration activities and data management to determine baseline emissions during the crediting period (Section B.7.1.).</i>	OK	OK
B.10.2. Are the choices of baseline GHG indicators		DR	<i>Yes, the choice of baseline indicators is</i>	OK	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
reasonable and conservative?			<i>reasonable.</i>		
B.10.3. Is the measurement <i>method</i> clearly stated for each baseline indicator to be monitored and also deemed appropriate?		DR	<i>Yes, the choices of baseline indicators are in accordance to AM0039 and are reasonable.</i>	OK	OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?		DR	<i>Yes, the choices of baseline indicators are in accordance to AM0039 and are reasonable.</i>	OK	OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?		DR	<i>The PDD provides a table including corresponding responsibilities for measurements and for procedures in case of failure.</i>	OK	OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?		DR	<i>Yes. Measurement accuracy are addressed and deemed appropriate as described in the PDD.</i>	OK	OK
B.10.7. Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?		DR	<i>Yes.</i>	OK	OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?		DR	<i>Calibration procedures have been provided in the PDD on page 56.</i>	OK	OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)		DR	<b>CL 10:</b> Please specify these procedures more detailed in your monitoring plan.	CL 10	OK
<b>B.11. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
B.11.2. Are the choices of project leakage indicators reasonable and conservative?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
B.11.3. Is the measurement <i>method</i> clearly stated for each leakage value to be monitored and deemed appropriate?		DR	<i>No leakage effects need to be accounted under this methodology.</i>	OK	OK
<b>B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?		DR	<i>No, monitoring of data concerning environmental, social and economic impacts is not requested by the host country.</i>	OK	OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?		DR	<i>Not applicable. See above.</i>	OK	OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?		DR	<i>Not applicable. See above.</i>	OK	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>B.13. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>						
B.13.1. Is the authority and responsibility of overall project management clearly described?			DR	<i>Responsibilities are roughly described in the PDD which tasks will be done by the regional manager, by the site engineer, by the project developer.</i>	OK	OK
B.13.2. Are procedures identified for training of monitoring personnel?			DR	<b>CL 11:</b> Procedures for training and monitoring personnel have not been provided yet. Please specify such procedures in your monitoring plan	CL 11	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?			DR	<i>Currently no procedures for emergency cases where they can cause unintended emissions are foreseen in the PDD.</i> <b>CL 12:</b> Please clarify if such procedures will be implemented.	CL 12	OK
B.13.4. Are procedures identified for review of reported results/data?			DR	<b>CL 13:</b> Please specify in the monitoring plan, how these procedures will be applied?	CL 13	OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?			DR	<b>CL 14:</b> Please specify in the monitoring plan, how these procedures will be applied?	CL 14	OK
<b>C.1 Duration of the Project/ Crediting Period</b>						

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview					
<i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?		DR	<b>CL 15:</b> The confirmed dates for construction start and finishing have to be adjusted. <i>The PDD identifies July 2007 as the starting point for project construction. During the on-site visit in October 2007 no construction work has been seen. Please clarify this issue and amend the dates. Please provide timeline schedule from project planning to start up operation.</i>	CL 15	OK
C.1.2. Is the start of the crediting period clearly defined and reasonable?		DR	<b>CL 16.</b> The PDD states project chooses a 10 years first crediting period and the starting date is 01/01/2008. <i>Basing on the modalities and procedures, crediting period will either renewable period of 7 years with 2 renewable or 10 years fixed period.</i> Please specify the correct crediting period.	CL 16	OK
<b>D. Environmental Impacts</b>					
<i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>EIA should be provided to the validator.</i>						
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?			DR	<i>The environmental impacts have been sufficiently assessed in the PDD, Section D.</i> <b>CL 17:</b> The PDD says that environmental approval will be available during validation. Please send these document(s) to the DOE.	CL 17	OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?			DR	<i>There are no host country requirements for an EIA.</i>	OK	OK
D.1.3. Will the project create any adverse environmental effects?			DR	<i>No significant negative impacts are anticipated from the project. The project might have some minor negative environmental impact during the operational phase in form of odour emissions. In order to keep those emissions as low as possible odour reduction technologies are applied.</i>	OK	OK
D.1.4. Are transboundary environmental impacts considered in the analysis?			DR	<i>No transboundary environmental impacts to other regions or countries have been identified.</i>	OK	OK
D.1.5. Have identified environmental impacts been addressed in the project design?			DR	<i>Environmental impacts have been identified in the PDD within section D.</i>	OK	OK
D.1.6. Does the project comply with environmental			DR	<i>Yes. The project complies with all</i>	OK	OK

<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
legislation in the host country?				<i>regulations related to establishment and operations of composting sites and solid waste and wastewater treatment.</i>		
<b>E.1. Stakeholder Comments</b>						
<i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>						
E.1.1. Have relevant stakeholders been consulted?			DR	<b>CL 18:</b> The local stakeholders consultation does not include the employees and communities around the project activity.  The project participant is requested to conduct a 2 <sup>nd</sup> stakeholder meeting to obtain feedback.	CL 18	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?			DR	<i>Yes. The public forum was announced in local newspapers Daily Express, The Borneo Post, The Asia Times and Shihwa Daily on 06 May 2007 and 10 May 2007.</i>	OK	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?			DR	<i>No stakeholder process is required by law in the host country.</i>	OK	OK
E.1.4. Is a summary of the stakeholder comments received provided?			DR	<i>Yes. A detailed summary of comments received is provided in the PDD Section</i>	OK	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<i>E.</i>		
E.1.5. Has due account been taken of any stakeholder comments received?		DR	<i>Yes. All comments raised during the consultation are addressed and indicated in the PDD Section E.2.</i>	OK	OK



**Table 3 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p><b>CAR.1:</b> The confirmation by the host country in form of the host country approval has not been received yet.</p> <p>Please clarify in this context, how the project activity meets the sustainable development criteria and national criteria of the host country. The sustainable development effects like local employment during construction and operation, know how and technology transfer, fulfillment of national CDM criteria for sustainable development and other voluntary criteria has to be explained and justified to the validation team.</p>	<p>A.2.2, A.4.1</p>	<p>The host country letter of approval (LOA) has been issued by Malaysia DNA, upon fulfilment of the national criteria by the project. A copy of it is attached.</p> <p>The project activity will convert the solid waste, Empty Fruit Bunches (EFB) and liquid waste, Palm Oil Mill Effluent (POME) into organic compost. This will not only promote the mill to move towards Zero Waste discharge, but also produce organic compost that is good for soil conditioning and fructification of palm trees. As a result, the surrounding local community will have an improved living environment which is less polluted. In addition, the implementation of compost plant will generate additional local employments. This will improve local community social-economic benefits. Transfer of co-composting technology will also allow the local community to acquire new skill which</p>	<p>Host country letter of approval has been received.</p> <p>The summary of the amendments has been included in the revised PDD page 2 and deemed appropriate.</p> <p>CAR 1 is resolved and closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		will upgrade their living standard. Therefore, implementation of the project activity will contribute to the local sustainable development. This aligns with the National CDM Criteria for sustainable development. (PDD page 2)	
<b>CAR.2:</b> The methodology requests the application of 5 different steps to select the most plausible baseline scenario. Currently the PDD only applies step 1, the other 4 are missing. Although the PDD discusses most of the points requested in the missing steps, it has to apply the formalities request by the methodology.	B.2.3	The PDD has been revised accordingly. Please refer to PDD page 12-16.	The amendments had been made in the respective pages of the PDD.  CAR 2 is resolved and closed.
<b>CAR.3:</b> The project's revenues have been calculated with the CDM expenses as positive income. This is contradictory as they are either negative income or belong to the project's expenses. (Although, their impact on total IRR calculation is minor, the values need to be amended).	B.3.2	The financial analysis has been corrected. The CDM Program Expenses should be grouped under the "Operating Expenses" instead of "Revenue". However, it should be noted that the CDM Program Expenses is not calculated as positive income, but negative income in the "Revenue" section of the original spreadsheet. Therefore, the	The revised financial analysis has been received and reviewed with corrections made.  CAR 3 is resolved and closed.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		IRR analysis is not affected (PDD page 83). The revised financial analysis spreadsheet is attached.	
<p><b>CAR.4:</b> The fuel consumption <math>FC_y</math> [l/yr] needs to be multiplied with the density of diesel in order to further calculate with the diesel net calorific value, because the NCV is calculated in [TJ/kg]. Therefore, the project emission (respectively the emission reduction) calculations need to be amended.</p> <p><b>CAR.5:</b> Please provide justification and further evidence on the selected baseline and the applied calculation factors, with actual scaled photographs and layout drawings ( landfills, anaerobic lagoons ) and calculations. Please justify that the retention time of the POME in the anaerobic lagoon is more than 30 days. Please add an overview table of applied parameters in the PDD.</p>	B.4.2	<p>The calculation of project emission due to diesel fuel consumption <math>FC_y</math> (l/yr) has been revised to include the density of diesel (0.85 kg/l) (PDD page 45). The spreadsheet has been submitted together with this response to TUV for review.</p> <p>Photographs of landfills and anaerobic lagoons as well as an overview table of parameters have been added in the PDD in Annex 3 Baseline Information (page 72-73). The baseline emission spreadsheet is attached. It should be noted that relevant evidences on the selected baseline such as certified construction drawing of the anaerobic pond showing its depth, and the actual landfills and anaerobic lagoons sites have been validated by the TUV during the validation.</p>	<p>The calculations have been revised in the PDD respective pages. CAR 4 is resolved and closed.</p> <p>The information have been included in the respective pages revised PDD and supporting documents have been submitted to support the respond. CAR 5 is resolved and closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p><b>CAR.6:</b> The monthly historic data of 2005, 2006, 2007 and 2008 ( planned ) for the use of EFB ( landfilling – with statement of other utilization than 100 % landfilling like mulching, incineration, fibre production ) and POME have to be collected and disclosed to the validation team. The currently in the landfill(s) stored volume (m3) of EFB has to be estimated in order to justify the historic data by technical quantity survey of the volume of the EFB-landfill in total (length x width x depth = m3 x density t/m3 = t). It has to be justified too by plausibility check, how the quantities of empty fruit bunches EFB (.... tonnes / a) and POME ( .... m3 / a) are</p>		<p>The total volume of the anaerobic lagoons is 76,900 m<sup>3</sup>. Takon's milling capacity is 45 tons FFB per hour (TPH). Therefore, the retention time is 71.2 days (76,900 / 45 TPH / 24 hours per day</p> <p>Please refer to the attached word file named "Response to CAR 6" for the EFB data.</p> <p>Please refer the revised PDD Annex 3 (page 72-73) for the POME ratio and data.</p>	<p>Document received and reviewed deemed appropriate.</p> <p>The revised PDD has been reviewed with the amendments made in the respective pages.</p> <p>CAR 6 is resolved and closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
corresponding to the capacity of the mill/s (FFB / day, FFB / a) and palm oil mill best practice benchmarks for percentage of EFB from FFB in total and percentage of POME from FFB in total.			
<b>CAR.7:</b> Title of section B.3 not in line with the PDD format.	(CAR01) PDD, B.3	Title of Section B.3 is revised to "Description of the sources and gases included in the <u>project boundary</u> " (PDD page 9)	The title of section B.3. was corrected and is now in conformance with the "GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT (CDM-PDD), AND THE PROPOSED NEW BASELINE AND MONITORING METHODOLOGIES (CDM-NM) Version 06.2". CAR 7 is resolved and closed.
<b>CAR.8:</b> The "large number of jobs" should be quantified.	(CAR02) PDD p2	The plant will be mechanized, but will still create a number of jobs (min. 10-15 jobs), in particular for less educated workers. (PDD page 2)	According to background investigations and follow-up interviews this number is reasonable. The methodology does not require a monitoring of this parameter and other sustainable development effects

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
			from applying composting within the premises of Asia Palm Oil Mill. CAR 8 is closed.
<b>CAR.9:</b> Project boundary does not correspond to the methodology with respect to the anaerobic wastewater treatment.	(CAR03) PDD p10, Figure 4 bottom	The project boundary is revised corresponding to the methodology with respect to the anaerobic wastewater treatment. (PDD page 10 Figure 4 bottom)	The wastewater treatment plant is removed from the project boundary according to methodology AM0039, page 2. CAR 9 is closed.
<b>CAR.10:</b> Consideration of GHG sources does not correspond to the methodology, particularly exclusion of CO <sub>2</sub> project emissions from transportation are not justified.	(CAR04) PDD p11, Table 1	The GHG sources has been revised according to the methodology. (PDD page 11)	Additional GHG emissions caused by additional emissions from additional transportation needs in comparison to the baseline are taken into account in the revised PDD. CAR 10 is closed.
a) <b>CAR.11:</b> Reasons for excluding uncontrolled open burning is not substantiated. (see also p17)  b) alternative 2: "huge investments" are to be quantified and substantiated	(CAR05) PDD 13/14 &VR	a) Malaysia has banned uncontrolled open burning in palm oil industry. It only allows certain open burning activities according to its Environmental Act. (Refer to attached references: Open Burning Regulation & Open Burning Ban)	The statements could be confirmed by background investigations as well during the on-site assessments and follow-up interviews and verified by the local sectoral waste expert Robert Cheong.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>c) alternative 3:  - same as b);  - selling of fibers/shells would result in revenues, it is not a barrier in the first place.</p> <p>d) alternative 7: statement "no other treatment .. " to be substantiated.</p> <p>Alternative D: stated cost for connecting grid should be indicated.</p>		<p>b) There is no legal requirement to recover and destroy methane from the process. Also, this alternative will require high investment for new methane recovery system, lagoons, storage tanks and flaring equipments etc. For example, TSH Bio-Gas Sdn Bhd had invested RM 16.5 million for their biogas recovery project at 50TPH mill. In addition, in this remote there is no market for electricity or heat generated by the capturing of biogas from these lagoons given that the mill has sufficient energy supply from burning mesocarp fiber and palm kernel shells. Therefore, it would not be an attractive option without any additional revenues. This alternative is ruled out.</p> <p>c) Methane recovery from the anaerobic lagoons is possible. However, since the mill has sufficient mesocarp fibers and shells for all the energy and power needed</p>	<p>CAR 11 is closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		<p>for the mill, they will not prefer to recover methane due to high investment (as stated in Alternative 2) and additional material handling. This alternative is ruled out.</p> <p>d) As listed in Table 6.3, Volume 5, Chapter 6 of the IPCC2006 Guidelines for Greenhouse Gas Inventory, other options include (a) direct discharge of untreated wastewater which is not permitted by Malaysia's regulation; and (b) aerobic treatment facility. Aerobic waste water treatments systems are suitable for relatively low BOD/COD wastes but not for the high BOD/COD wastes generated by the palm oil industry. They are used for polishing treatment after anaerobic treatment to reduce the BOD/COD to a level that is acceptable for discharge to surface waters. A fully aerobic waste water treatment process for raw POME is not technically feasible, nor would it be economically feasible at the moment.</p>	



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<p><b>CAR.12:</b></p> <p>a) barriers due to prevailing practice are not conclusive and should be removed from the PDD.</p> <p>Step 4 of the methodology is not correctly applied as per the methodology, also because alternatives 3, B &amp; C are ruled out prematurely.</p>	<p>(CAR06) PDD p15/16</p>	<p>Barrier due to prevailing practise is removed.</p> <p>Step 4 of the methodology is revised. (Please see PDD page 16).</p>	<p>According to the “Tool for the demonstration and assessment of additionality” it is an option that project participants may also select to complete both steps 2 (investment analysis) and 3 (barrier anaslysis ).</p> <p>Anyhow, the project participant has decided not to further elaborate step 3.</p> <p>Step 4 of methodology AM0039 has been further elaborated for all alternatives, before any conclusion with regard to the remaining alternatives has been done, see PDD on page 16.</p> <p>CAR 12 is revised and can be therefore considered as resolved and closed.</p>
<p><b>CAR.13:</b></p> <p>The risk factor of 2% is neither substantiated nor validated to be appropriate. Calculation tables include "CDM Program Expenses", which is inappropriate</p>	<p>(CAR07) PDD p18</p>	<p>The loan offered by Malaysia financial institutions typically has a 6.25% base lending rate which include a risk factor. As the bond rate of return is 3.8%, the risk factor considered is typically about 2.5%.</p>	<p>The explanation is sufficient and can be considered as conservative compared to benchmark IRRs of 15 % for CDM projects in the waste sector according to studies on the CDM</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
in this context.		<p>For conservativeness, a 2% is applied.</p> <p>The “CDM Program Expenses” is removed.</p>	<p>potential in waste sectors in Malaysia. The IRR of the project activity under consideration of IRR is very low and would be negative without CDM revenues. The item “CDM Program Expenses” was removed from the operational costs.</p> <p>CAR 13 is resolved and closed.</p>
<p><b>CAR.14:</b></p> <p>Sensitivity analysis does not account for variations/uncertainty in investment as a major factor affecting the project viability.</p>	<p>(CAR08)</p> <p>PDD p20</p>	<p>Sensitivity analysis has included the 10% reduction in investment costs which may affect the project viability.</p>	<p>The sensitivity analysis was extended by the item “reduction in investment costs”.</p> <p>CAR 14 is resolved and closed.</p>
<p><b>CAR.15:</b> DOC<sub>f</sub>:</p> <p>IPCC default value of 0.77 is selected, but it is not clearly demonstrated whether or not lignin-C is included in the estimated amount of degradable organic carbon; in that case a lower value of 0.5 should be used.</p> <p>(AM0039v01, p13)</p> <p>NCV<sub>i</sub> and EFCO<sub>2,i</sub>: No justification is provided for using</p>	<p>(CAR09)</p> <p>PDD p28</p>	<p>DOC<sub>f</sub> is determined based on excluding lignin carbon. These have been shown in the document titled “Estimation of the DOC<sub>j</sub> value for EFB”</p> <p>NCV<sub>i</sub> and EFCO<sub>2,i</sub> IPCC default values are applied because there are no country-specific values available. This is validated.</p> <p>Fuels provider such as Exxon Mobil only provides specifications of</p>	<p>According to 2006 IPCC Guidelines for National Greenhouse Gas Inventories was the default value of DOC<sub>f</sub> ( Fraction of DOC decomposing under anaerobic conditions ) reduced to 0.500, which is also reflected in the Methodological tool “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site”.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
IPCC default values instead of local values.		density and calorific values of diesel, but not for the net calorific value.	<p>Since methodology AM00039, version 1 allows the application of a default value of 0.77, which was further justified and could not be disproved, this approach is therefore acceptable.</p> <p>The approach for the calculation of minor project emissions with default values is appropriate.</p> <p>CAR 15 is sufficiently addressed and can therefore be considered as closed.</p>
<b>CAR.16:</b> Justification for neglecting emissions arising from transportation of compost into the plantations is not conclusive and must be included as per methodology.	(CAR10) PDD p46	<p>The CO<sub>2</sub> emissions of the project from transportation are considered to be zero because:</p> <ol style="list-style-type: none"> <li>1) The composting site is within the palm oil mill compound and there is no increment in distance and emissions compared to the baseline.</li> <li>2) The POME is transported using a piping system both in the baseline and project</li> </ol>	<p>The explanation given was validated as sufficiently justified during the on-site assessment and follow-up interviews by the local sectoral waste expert Robert Cheong.</p> <p>CAR 16 is closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		<p>activity, which is within the palm oil mill compound. The pumps for the piping system are powered by biomass boiler and steam turbine which is carbon neutral.</p> <p>3) The trucks that currently deliver the FFB to the palm oil mill return empty after delivering the load. In the project activity these trucks, instead of returning empty will carry back the compost to the plantation. Also the compost is reduced to about half the volume and weight.</p> <p>4) Also, chemical fertilizer usage is replaced partially by the compost usage. Thus, it is the same transportation currently used to deliver the chemical fertilizer which will eventually transport compost back to the plantation. With more usage of compost, it is actually reduce the</p>	

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		transportation of chemical fertilizer to the mill, thus, reducing the transportation emission, which is not included here.	
<b>CAR.17:</b> Financial calculations indicate electricity cost, but the electricity used by the plant is supplied by the mill; how was the (chargeable) supply contract with the mill taken into account for the operational expenses, including tariff?	(CAR11) PDD p80 & VR:	The supply contract with the mill has not been discussed and ready yet. It will only be determined after the project is registered. As such, the electricity cost is removed.	Further elaboration will be done on this issue at a later project implementation stage. This cost item was removed from the operational expenses for conservative reasons.
<b>CL.1:</b> In order to identify the unique location of the other new neighbouring mills / potential suppliers of EFB and their landfill sites please identify the exact longitude and latitude of these other project parts, belonging also to the project boundary, if there are any.	A.1.1	It has been decided by the owner that there is no more consideration of purchasing additional EFB from neighbouring mills. Therefore, this is not applicable (PDD page 10).	Reviewing the respond a telephone communication with project owner to confirm that there will be not external purchase of EFB for the project. Amendments have been made in the revised PDD. CL 1 is resolved and closed.
<b>CL.2:</b> The description of the applied composting technology is very general in the PDD. Which	A.3.3	The CDM Project Activity will only involve EFB and POME as the raw materials for co-composting.	The proposed technology document has been received as stated in revised PDD.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>technology of composting will be used and which amounts of raw materials (EFB, POME, decanter cake, sludge, etc.) are used hourly/daily/yearly? Which amounts of POME will be recycled for composting? Which amounts will return into the lagoons? A flow diagram with mass flows and measuring points has to be submitted to the validation team, the figure 4 (Project Boundary) has to be amended accordingly. The requested procedure on documentation and responsibilities assignment shall be applied at every project site.</p>		<p>Microbial technology from Canada may be included in the composting process. However, it is still in evaluation phase (PDD page 5). An introduction of the microbial technology is attached.</p> <p>Attached also the proposal from equipments manufacturer for the information and specifications of respective equipments applied for the composting. It should be noted that the electricity is supplied by the mill existing boiler and additional boiler (planned for the expansion of the mill).</p> <p>50% of total POME from the first primary anaerobic lagoon will be used in the co-composting process. Therefore, only 50% POME is included in the baseline CER calculation. The compost plant is designed such that no remainder of POME will be pumped back to the anaerobic lagoons. Any remainder of POME will be stored in a Holding</p>	<p>The equipment list has been received that addressed the rated power to be consumed by the project activity.</p> <p>The respond deem appropriate that has been indicated in the revised PDD pages and the project boundary and layout diagram.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>Therefore please submit a site-specific organigram with task allocation and training plan to the DOE.</p> <p>Tables with time series data, additional documentation of measurement equipment, procedures, etc. should be provided in Annex 4 – Monitoring Information (Annex 4 is currently missing). Furthermore, please clarify the detailed operational and management structures that</p>		<p>Tank. It will be recycled for the co-composting (PDD page 5).</p> <p>In the case of technology failure, the POME will be pumped back to the lagoons for traditional anaerobic treatment. Its volume will be measured by flow meter and treated as Project Emission (PDD page 53-54).</p> <p>The Figure 4 Project Boundary has been revised accordingly (PDD page 10).</p> <p>The site-specific organigram has been included in the PDD (page 56). Training, operation, maintenance and monitoring manuals are attached. It should be noted that all the manuals are subjected to change according to the actual implementation conditions of the project.</p>	<p>The relevant pages of the revised PDD address in the event there is failure to the system.</p> <p>Amendments have been made in the revised PDD relevant page.</p> <p>The organisation chart for the site-specific has been included in the revised PDD.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>will be implemented by the project.</p> <p>Please describe operational and management structures, clearly indicate responsibilities and institutional arrangements for data collection.</p> <p>The monitoring plan should reflect good monitoring practise appropriate to the project type. Provide any further background information in Annex 4.</p>		<p>Please refer to Annex 4 of the PDD (page 74-75) for the monitoring information.</p>	<p>Amendment has been made in the PDD.</p> <p>CL 2 is closed.</p>
<p><b>CL.3.</b> The amount of empty fruit bunch in tons stated in the PDD does not correspond to the capacity of the mill. Additional amount purchased from neighbouring mills has to be justified to the validation team that will make up to the total amount of EFB stated in the PDD</p>	<p>B.2.6 B.5.3</p>	<p>Takon has decided not to purchase any EFB from neighbouring mills.</p> <p>With the current potential maximum production of at least 216,000MT FFB, equivalent to 47,520MT of EFB, the same volume that has been estimated to be produced from 2008 onwards.</p> <p>Please refer to the “Response for CAR 6” and “TPOM FFB Calendar Year” for the EFB and FFB records</p>	<p>The approved maximum annual throughput by MPOB is 216,000MT that will generate 47,500MT EFB which is a correct estimation.</p> <p>The respond has been reviewed and deemed appropriate in justifying the assumptions.</p>



Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		over the years.	CL 3 is closed.
<b>CL.4:</b> Please clarify the acronym Mth/yr on page 74ff. Furthermore, please always apply SI units as requested by UNFCCC (e.g. [Mt] instead of [mt] )	B.3.2	The acronym Mth/yr has been revised to “mth” as it means the number of months in the calendar year (page 77). All the units have been revised to follow SI units system.	Amendments have been made in the revised PDD. CL 4 is closed.
<b>CL.5:</b> Clarify why depreciations are included in the IRR and NPV calculations?	B.3.2	The depreciations are included in the Profit and Loss analysis. However, it is not included in the IRR and NPV calculations as the depreciations are not part of the initial investment. This is shown in the IRR Spreadsheet provided to TUV.	Amendments have been adjusted in the calculations. CL 5 is closed.
<b>CL.6:</b> please provide evidence for assumptions on prices for selling fertilizer as well as costs for biomass and microbes (e.g. link to trading websites or similar).	B.3.3	The project has included the possibility to produce organic fertilizers which are fortified by special formulated microbes, instead of common organic compost. The production cost estimated for 1MT of organic fertilizer is about USD50. Therefore, a relatively high selling price (USD80) is determined with a margin of profit. In order to	The project participant has demonstrates the comparison of the pricing structure to the current market price. The price used for the IRR calculation is appropriate. CL 6 is closed.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		substantiate the determined selling price, a quotation of organic fertilizer from ANCOM CROP CARE SDN BHD was requested. It was shown that the unit price of 1 bag (25kg) of ABS 2006-Compost (Organic Fertilizer) is RM12. The total cost of 1 MT of the organic fertilizer is RM480, which is approximately equal to USD 142. This is almost 2 times more expensive than the organic fertilizer produced by the project. However, EFB organic compost has not yet proven in the market for its value to be comparable to existing organic fertilizer. Therefore, a relatively low selling price is set.	
<b>CL.7:</b> Please clarify in the PDD, why CH <sub>4</sub> emissions from leaked wastewater (PE <sub>CH<sub>4</sub>,bww,y</sub> ) have not been calculated.	B.6.1	The project activity is designed such that all the 50% POME pumped from the anaerobic lagoon to the composting plant is fully applied. In addition, any unabsorbed POME will be stored in and recycled from the Holding Tank. The retention time of POME in the tank is less than 10 days. Therefore, there is no leaked wastewater which causes emission. However, any leaked wastewater will	The monitoring plan in the revised PDD has addressed the concerned with relevant monitoring of the leaked wastewater during the project implementation period.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>The project proponent has to justify that the runoff water (incl. rainwater from heavy rainfall) and its COD concentration is negligible as project emission. The annual quantity of run off water including rainwater and its COD concentration has to be calculated and monitored (project emissions during standard operation and during emergencies).</p> <p>The PDD assumes that the GHG emissions from the combustion of fossil fuels by the project activity are negligible. Calculations of emissions due to combustion of</p>		<p>be measured (stated in monitoring plan) ex post if it does occur. (PDD page 5 and 53-54)</p> <p>The compost plant will be covered by roofing. The heavy rainfall will not have any effect on the POME. In addition, separate drainage will be built internally and externally for POME and rainwater. The rainwater drainage will not be connected to any lagoons or POME Holding Tank, but to the common drainage discharge point. With regards to the POME drainage, it will be connected to the Holding Tank which the POME will be pumped, stored and recycled. The amount and COD of the POME (influent and effluent at any point) will be measured. It is included in the monitoring plan (PDD page 74-75).</p> <p>The PDD actually includes the estimation of GHG emissions from the combustion of fossil fuels by the project activity for some machinery. However, the actual fuel consumption</p>	<p>The revised PDD has addressed the rain water where the compost plant will be roofed. Any POME discharge back to the open ponds will be monitored and measured.</p> <p>The used of diesel for genset has been included in the monitoring plan as stated in revised PDD.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>fossil fuels (daily for start up, during rest of the day after shut off of the cogeneration plant, during general maintenance) should provide to demonstrate that related project emissions from fossil fuel combustion are negligible.</p> <p>The energy demand of the composting plant (energy demand in KW and in KWh, list of installed capacity of electricity consumers) has to be re-calculated according to these findings in order to justify a possible neglect. The project emissions from the diesel source have to be taken into account and has to be monitored by a separate power meter.</p>		<p>and GHG emissions which includes the daily start up by genset will be monitored for ex post CER calculation. The PDD has not stated before that the GHG emissions from the combustion of fossil fuels by the project activity are negligible (PDD page 46-47).</p> <p>The energy demand of the composting plant will be provided from the biomass power plant of the mill (PDD page 47). Therefore, project emissions from the diesel are limited. However, separate power meter will be installed to monitor whatever diesel usage and included in the project emissions during the implementation of project and its monitoring process (PDD page 74-75).</p>	<p>The revised PDD has addressed the stated respond in the respective pages.</p> <p>CL 7 is closed.</p>
<p><b>CL.8:</b> Please provide evidence on the selected specific very low diesel consumption and NCV of Diesel (NCV = 42.7 MJ/l). The IPCC default value is 43 TJ/kg<sup>2</sup>.</p>	<p>B.4.2</p>	<p>The diesel consumption is estimated for transportation of EFB from the mill to the composting plant. The diesel consumption per km has been</p>	<p>Corrections have been made in the revised PDD relevant pages for the values and data applicable.</p>

<sup>2</sup> 2006 IPCC Guidelines. Volume 2. Table 1-2.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>Furthermore, the PDD is requested to avoid inconsistencies in the applied units (e.g. both is provided in the PDD: NCV = 42.7 MJ/l and NCV = 42.7 MJ/kg). The distances from the different locations of the cluster mills, where EFB will be sourced for the composting plant have to be clarified and revised accordingly for the calculation of the project emissions caused by transport.</p>		<p>revised to 32.85L/100km according to study conducted in Malaysia in May 2005. The reference “UM Transport Study May 2005” is attached (please refer to page 200). The distance between the mill and the composting plant has been stated clearly in the revised PDD (page 45).</p> <p>The IPCC default value of 43 TJ/kg for NCV if diesel is applied. Any inconsistencies in the applied units have been revised (PDD page 31).</p>	<p>The applied data is according to the reference provided.</p> <p>Amendments are made to the applied value as made in revised PDD. CL 8 is closed.</p>
<p><b>CL.9:</b> Please specify these procedures more detailed in your monitoring plan. The PDD does not specify how tests for POME ( COD, m3 ), DOC<sub>j</sub>, k<sub>j</sub> will be conducted. It has to be justified how a representative sampling of these parameters is organised and which laboratories will be used at which frequency ( mill’s in house lab, accredited lab. Other lab, DOE lab ).</p>	B.9.9	<p>Yes, daily records of all parameters involved will be required. All the procedures are clearly defined in the Monitoring Plan (PDD page 74-75) and SOPs.</p> <p>Testing of POME’s COD will be done in accredited laboratory. The relevant reports will be properly filed and available during verification. In house testing of POME’s COD may be included to supplement the result</p>	<p>The records are appropriate as stated in revised PDD.</p> <p>Test results issued by laboratory have been reviewed and appropriate.  CL 9 is closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		done by accredited laboratory.	
<b>CL.10:</b> Please specify these procedures more detailed in your monitoring plan.	B.10.9	Yes, this has been included in the monitoring plan attached both in PDD and Monitoring SOP.	Monitoring SOP has been received. CL 10 is closed.
<b>CL.11:</b> Procedures for training and monitoring personnel have not been provided yet. Please specify such procedures in your monitoring plan	B.13.2	Please refer to the Training SOP and Monitoring SOP.	Monitoring SOP has been received. CL 11 is closed.
<b>CL.12:</b> Please clarify if such procedures will be implemented.	B.13.3	Please refer to the Monitoring Plan and SOP.	Monitoring SOP has been received. CL 12 is closed.
<b>CL.13:</b> Please specify in the monitoring plan, how these	B.13.4	Please refer to the Monitoring Plan	Monitoring SOP has been

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
procedures will be applied?		and SOP.	received. CL 13 is closed.
<b>CL.14:</b> Please specify in the monitoring plan, how these procedures will be applied?	B.13.5	Please refer to the Monitoring Plan and SOP.	Monitoring SOP has been received. CL 14 is closed.
<b>CL.15:</b> The confirmed dates for construction start and finishing have to be adjusted.	C.1.1	The respective dates have been revised accordingly. Please refer to revised PDD on page 63	The revised PDD indicates the amended dates. CL 15 is closed.
<b>CL 16.</b> The PDD states project chooses a 10 years first crediting period and the starting date is 01/01/2008. <i>Basing on the modalities and procedures, crediting period will either renewable period of 7 years with 2 renewable or 10 years fixed period.</i> Please specify the correct crediting period.	C.1.2	The respective crediting period has been corrected accordingly. Please refer to revised PDD on page 63.	The revised PDD indicates the revised crediting period. CL 16 is closed.
<b>CL.17:</b> The PDD says that environmental permit approval will be available at validation.	D.1.1	The Letter of No Objection issued by Malaysia Environment Department is attached.	The project participant has submitted the letter. CL 17 is closed.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
Please send this document(s) to the DOE.			
<b>CL.18:</b> The local stakeholder consultation does not include the employees, and communities around the project activity. The project participant is requested to conduct a 2 <sup>nd</sup> stakeholder meeting to obtain feedback.	E.1.1	There was an internal stakeholders meeting held at the mill site to inform the internal employees and surrounding communities about the project. The relevant information can be found in revised PDD page 65-68. The attendance list is attached.	The 2 <sup>nd</sup> stakeholder consultation held for the employees had been conducted as stated in revised PDD. CL 18 is closed.
<b>CL.19:</b> Please explain the meaning and purpose of the sentence "Delivery of CER will start from 2008".	(CI01) PDD p2	The CER is most likely to be delivered in year 2009 instead of year 2008. Thus, it is revised to "Delivery of CER will start from 2009".	The mistake in writing was removed and corrected accordingly. CL 19 is closed.
<b>CL.20:</b> What is the source for the statement, that the "carbon-nitrogen ratio of 35-50 is optimum for aerobic composting?"	(CI02) PDD p2:	The source is "Compost Fundamentals" by Washington State University ( <a href="http://whatcom.wsu.edu/ag/compost/fundamentals/needs_carbon_nitrogen.htm">http://whatcom.wsu.edu/ag/compost/fundamentals/needs_carbon_nitrogen.htm</a> ). (See attached)	This statement is correct and can be supported also by other sources. CL 20 is closed.
<b>CL.21:</b> How was the following statement justified: "there is no viable alternative for the EFB to be used except for	(CI03) PDD p9	The statement is revised to "the EFB to be used is disposed in a landfill, which is the current practice."  Most of the mills have performed disposal of EFB in their premises	This current practice in Malaysia was observed by the validation team members at different palm oil mills in Malaysia, because incineration is as explained before not an option anymore.



Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>disposal in a landfill".</p> <p>How was the alleged current practice (landfill within the mill premises) justified?</p>		<p>either by random dumping or landfilling. In this project, the landfills built from past 2-3 years have been validated by TUV on site.</p>	<p>The statement was validated as sufficiently justified during the on-site assessment and follow-up interviews by the local sectoral waste expert Robert Cheong.</p>
<p><b>CL.22:</b></p> <p>Alternative C:</p> <p>How was the "problems" with composting in the plantation justified?</p> <p>What is the amount of the transportation cost, and why are they prohibitive? It is comparable for the compost.</p> <p>Alternative D:</p> <p>What are the 'difficulties in obtaining an environmental permit'?</p> <p>What are the reasons?</p> <p>Alternative E:</p> <p>how was the current practice justified? Is it legal, and continues to be so?</p>	<p>(CI04) PDD p14</p>	<p>Alternative C:</p> <p>The "problems" stated in the PDD can be justified by the reference titled "Empty Fruit Bunches Evaluation – Mulch in Plantation vs Fuel for Electricity Generation".</p> <p>The transportation cost is much higher for EFB mulching compared to applying EFB compost. This is because mulching is transporting fresh EFB which contains high moisture of typically about 55-70%. However, compost moisture content is typically about 20-30%. The effective dry weight is two to three folds different. Also, fresh EFB is bulky. The bulk density which can be carried by the truck is lesser than that of compost. As such, EFB mulching requires more transportation. In</p>	<p>This current practice in Malaysia was observed by the validation team members at different palm oil mills in Malaysia, because incineration is as explained before not an option anymore and mulching of EFB is not common practice. The statement about the alternatives in the PDD was validated as sufficiently justified during the on-site assessment and follow-up interviews by the local sectoral waste expert Robert Cheong.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
		<p>addition, the material handling is more difficult for applying bulky EFB than fine compost. This could increase the material handling costs as well.</p> <p>Alternative D:</p> <p>As Malaysia has banned incineration in plantation and ratified Kyoto Protocol, it is difficult to obtain the environmental permit for such activity. The permit will only be issued if the activity planned falls into the categories defined in Environmental Quality (Declared Activities) (Open Burning) Order 2003.</p> <p>Alternative E</p> <p>Currently, there is no regulation restricting landfill activities within private plantations as long as they are managed. Most private plantations practise dumping of EFB within their estates. Some plantations have managed their dump sites as a proper landfill site.</p>	

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<b>CL.23:</b> What is the source for the applied inflation rate?	(CI05) PDD p18	The inflation rate is based on the World Economic Outlook April 2004 which is the latest copy released (PDD page 19)	The source for the mentioned inflation rate was referenced on page 19 of the PDD. CL 23 is closed.
<b>CL.24:</b> How was the common practice analysis be executed, particularly with respect to alleged differences of "Asia Green Environmental SdnBhd", and the stated commercial problems ("None are very profitable").  The paragraph "This project does not have an integration..." states that it must take the risk of acquiring the EFB, whereas the calculation tables show no cost for the EFB.  => The entire common practice analysis may need rework.	(CI06) PDD p21-27:	A market research was done by gathering information on current practice by local fertilizer industries, as shown in Table on page 22-24.  The discussion of sub-step 4b is revised.	An extensive market research was done, more than required. According to the Methodological Tool "Tool for the demonstration and assessment of additionality" (Version 05) common practice analysis should be limited only to projects that are „operational“.  After revision of the content of sub-step 4b the common practice analysis sufficiently addresses all important issues.  CL 24 is resolved and closed.
<b>CL.25:</b> How was the non-default selection of MCF (1.0) justified ? (.e., controlled landfill site with heaps >5m and cover/mechanical compacting/or levelling of	(CI07) PDD p28-29	MCF (1.0) is selected as the solid waste disposal sites is (a) > 5m in height; (b) mechanically compacted; (c) fire safety is planned by having fire extinguisher and water tanks on	The statement about the selected MCF value ( Methane Correction Factor ) is substantiated with photos and further information during the on-site assessment. It

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
waste)?		sites. This has been validated by TUV. Relevant photos have also been included in the PDD (page 76)	was validated as sufficiently justified during the on-site assessment and follow-up interviews by the local sectoral waste expert Robert Cheong.
<b>CL.26:</b> k <sub>j</sub> : Please explain the statement "Local value will be applied..."	(CI08) PDD p30/31	AM0039 version 1 (page 12) states that "if local measurements have been undertaken for decay rates and if these are documented, and can be considered as more reliable, these may be used instead of the default-values in table 4. Project participants should consider future revisions to the decay-rate constants when available, including revisions of IPCC guidelines."  As such, this project will apply local measurement on decay rate if the local decay rate is accepted in future during verification period.	The option of AM0039 version 1 allows the application of local values for the waste stream Empty Fruit Bunches ( EFB ) used instead of default values. Relevant investigations were subcontracted to agricultural research institutes and local universities. After relevant results are available and acknowledged, these approach is planned. CL 26 is therefore considered as closed.
<b>CL.27:</b> Where does the value MCF <sub>baseline</sub> =0.356 stem from, and how is that value justified?	(CI09) PDD p34	The MCF baseline should be 0.367 as determined by the formula and calculation stated in PDD page 37. Please also refer to the excel spreadsheet.	The MCF=0.367 is correctly calculated according to AM0039 for the methane correction factor ( MCF ) of the open storage systems.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
			CL 27 is closed.
<b>CL.28:</b> Please clarify how the factor F should be determined from local landfills.	(CI10) PDD p39	The most conservative default value of 0.5 is applied according to AM0039 version 1 page 13 guidelines.	The methodology AM0039 is applying a default value of 0.5, which was correctly applied. CL 28 is closed.
<b>CL.29:</b> Please provide evidence ( e.g. layout drawing ) about the the location& distance of the composting plant from the mill.	(CI11) PDD p40	The distances between the mill and the planned composting plant were checked during the on-site assessment.	The statement about the planned location of the composting plant was validated during the on-site assessment and follow-up interviews by the local sectoral waste expert Robert Cheong. CL 29 is closed.
<b>CL.30:</b> The table "Emissions from Composting" (N2O-emissions) appears to be misplaced from page 43, please clarify.	(CI12) PDD p44	The respective table "Emissions from Composting" has been replaced correctly under (a) N <sub>2</sub> O emissions from composting. (PDD page 43)	The amendment has been done. CL 30 is closed.
<b>CL.31:</b> a) How is CEF=0.8 t/MWh calculated and this calculation justified ? b) indication for "IPCC-values" for items 16, 17, 21-24 missing	(CI13) PDD p61/62	a) IPCC default value of CEF is applied.  b) Relative IPCC-values are included. Also, items 21, 22 and 24 are deleted as they are not involved in the calculations.	The approach for the calculation of minor project emissions with default values is appropriate.  The option of AM0039 version 1 allows the application of local values for the waste stream Empty Fruit Bunches ( EFB ) used instead of default values.

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>c) item 4-5: unclear whether IPCC value or the preferred country-specific values are to be applied</p> <p>item 20: What does "Assumption to be approved by DOE" mean?</p>		<p>c) IPCC default value is applied in the event when country-specific values are not available.</p> <p>Item 20 is revised to "distance measured value confirmed ex-ante"</p>	<p>Relevant investigations were subcontracted to agricultural research institutes and local universities. After relevant results are available and acknowledged, this approach is planned in case of a successful registration of the CDM project activity.</p> <p>The distances of transport will be checked by a DOE during verification.</p> <p>CL 31 is therefore considered as closed.</p>
<p><b>CL.32:</b> Please clarify whether the "environment approval" has been received and submitted to the validation team.</p>	<p>(CI14) PDD p65 and VR</p>	<p>The "environmental approval" has been received and submitted to the validation team. It is known as "Letter of No Objection".</p>	<p>CL 32 is considered as resolved and closed.</p>
<p><b>CL.33:</b> Question 1 of internal stakeholder mtg. suggests the composting plant may accept EFB from other mills. The</p>	<p>(CI15) PDD p69</p>	<p>It was planned to purchase outside mills' EFB initially. However, the project owner decided not to purchase any outside mill's EFB later</p>	<p>CL 33 is considered as resolved and closed.</p>

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>monitoring plan does not account for such situation and the assumptions do not hold.</p> <p>How is it assured that only EFB out of the mill itself will be used?</p>		<p>on. They will only process own mill EFB as it is sufficient in supply. As such, there is no outside mills' EFB involved in this project activity.</p>	
<p><b>CL.34:</b> Please confirm whether Jersey (registered address of Aretae Ltd.) is part of the United Kingdom and how the LoA of the United Kingdom was obtained.</p>	<p>(CI16) VRp13</p>	<p>UK DNA has confirmed with email that UK' ratifications of the Kyoto Protocol and the UNFCCC were extended to Jersey on 7 March 2007. Also, BBC has also released the news about this on 16 May 2007. (Please refer to attached references)</p>	<p>Sufficient evidence was provided to the validation team.</p> <p>CL 34 is considered as resolved and closed.</p>

## Qualification

Cheong, Robert (Chun Yuen) /

### Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 – Energy industries (renewable – / non-renewable sources)  
CDM 13 – Waste handling and disposal

Add. qualification:  
(zus. Qualifikation)

First Appointment: 2007/09/10  
(Erstberufung)

Valid to: 2010/09/09  
(Gültig bis)

Remarks:

Languages:

Chinese  
English  
Indonesian  
Mandarin

### Experience Exchange

Date

Location

Remarks

Accredita

### Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next  
Monitoring:  
(nächste  
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

### History of scope allocation

Date: 2008-05-25  
Change: EAC CDM, CDM added  
By: Manfred Brinkmann  
Reason:

### History

Created: 2008/05/25 19:24:27 Manfred Brinkmann/Jpn/TUV



Modified: 2008/05/25 19:24:42 Manfred Brinkmann/Jpn/TUV

## Qualification

Kober, Ralf /

### Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 – Energy industries (renewable – / non-renewable sources)  
CDM 07 – Transport  
CDM 13 – Waste handling and disposal

Add. qualification:  
(zus. Qualifikation)

First Appointment: 2007/08/03  
(Erstberufung)

Valid to:  
(Gültig bis)

2010/08/02

Remarks: Valid for both CDM and JI

Languages: German  
English

### Experience Exchange

Date

Location

Remarks

Accredita

### Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next  
Monitoring:  
(nächste  
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

### History of scope allocation

Date: 2007-09-10  
Change: EAC CDM, CDM, CDM added  
By: Manfred Brinkmann  
Reason:

### History

Created: 2007/06/24 16:49:41 Manfred Brinkmann/Jpn/TUV  
Modified: 2007/09/10 16:17:54 Manfred Brinkmann/Jpn/TUV



## Qualification

Seidel, Kurt Friedrich /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No. :  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level: Auditor  
(Qualifikationsstufe)

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes:  
(EAC Branchen)

Add. qualification:  
(zus. Qualifikation)

CDM 01 Energy Industries  
CDM 02 – Energy Distribution  
CDM 03 – Energy Demand

First Appointment:  
(Erstberufung)

2004/03/05

Valid to:  
(Gültig bis)

2010/03/04

Remarks:

Languages:

German  
English  
Russian

## Experience Exchange

Date

Location

Remarks

Accredita

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next  
Monitoring:  
(nächste  
Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

Date: 2004-03-05  
Change: Non-EAC CDM 01 Energy Industries, CDM 02 – Energy Distribution, CDM 03 – Energy Demand  
added  
By: Klaus-Dieter Fritsch  
Reason:

## History

Created: 2003/12/17 20:57:47 -  
Modified: 2008/04/25 16:43:14 Kurt Seidel/TAT/DE/TUEV

## Qualification

Brinkmann, Manfred /

### Emission Trading United Nations Framework Convention on Climate Change

Auditor No. :  
(AuditorenRegNr)

Appointed :  
(Zugelassen)

☒ ja

Qualification Level : Auditor  
(Qualifikationsstufe)

External :  
(Externer)

☐ ja

Add. reviewer :  
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes :  
(EAC Branchen)

CDM 03 – Energy demand  
CDM 04 – Manufacturing industries  
CDM 05 – Chemical industry  
CDM 10 – Fugitive emissions from fuels (solid; oil and gas)  
CDM 11 – Fugitive emissions from production and consumption  
of halocarbons and sulphur hexafluoride  
CDM 12 – Solvents use  
CDM 01 – Energy industries (renewable – / non-renewable  
sources)  
CDM 06 – Construction  
CDM 13 – Waste handling and disposal

Add. qualification :  
(zus. Qualifikation)

First Appointment : 2004/03/03  
(Erstberufung)

Valid to : 2010/03/03  
(Gültig bis)

Remarks :

Languages :

German  
English  
French

### Experience Exchange

Date

Location

Remarks

Accredita

### Monitoring

Latest Monitoring :  
(letzte Beurteilung)

Next  
Monitoring :  
(nächste  
Beurteilung)

Remarks :

[View / Edit Monitoring](#)

### History of scope allocation

Date : 2004-03-05  
Change : EAC CDM, CDM added

By: Klaus-Dieter Fritsch  
Reason:  
  
Date: 2004-03-03  
Change: EAC CDM, CDM, CDM, CDM, CDM, CDM added  
By: Klaus-Dieter Fritsch  
Reason: Qualification is based on the applicant's ISO 14001 auditor qualification.

## History

Created: 2003/12/11 14:27:13 -  
Modified: 2007/11/22 12:00:46 Manfred Brinkmann/Jpn/TUV