ASSESSMENT OPINION FOR ASSESSMENT OF CHANGES FROM THE PROJECT ACTIVITY AS DESCRIBED IN THE REGISTERED PDD & REVISION OF REGISTERED MONITORING PLAN

A.T. Biopower Co., Ltd.

A.T. Biopower Rice Husk Power Project in Pichit, Thailand

UNFCCC Ref. No. 1026

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Abbreviations

ATB	A.T. Biopower Co., Ltd
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO_2	Carbon Dioxide
COD	Commercial Operation Date
DOE	Designated Operation Entity
$EC_{PJ,y}$	On-site electricity consumption attributable to the project activity
EGAT	Electricity Generating Authority of Thailand
EPPO	Energy Policy and Planning Office
FAR	Forward Acton Request
GHG	Green House Gas
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MP	Monitoring Plan
MW	Mega Watt
NCV	Net Calorific Value
OECD	Organization for Economic Co-operation and Development
PDD	Project Designed Document
$PE_{EC,y}$	CO_2 emissions from consumption of electricity
PEA	Provincial Electricity Authority
PP	Project Participant
PPA	Power Purchase Agreement
SPP	Small Power Producer
UK	United Kingdom of Great Britain and Northern Ireland
UNFCCC	United Nation Framework Conventional on Climate Change

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1. Assessment Opinion

SGS United Kingdom Ltd has been contracted by A.T. Biopower Co., Ltd. to perform such a validation of the changes from the project activity as described in the registered PDD and a validation of the revision of monitoring plan according to the procedure detailed in annexes 66 and 67 to EB 48 meeting report and Annex 28 to EB 49 meeting report.

Paragraph 62(g) of the CDM Modalities and Procedure requires that the DOE contracted by the project participant to perform verification shall identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Paragraphs 247-250 of the Clean Development Mechanism Validation and Verification Standard version 02.0, Clean Development Mechanism Project Standard Version 01.0, Paragraph 132 of Clean Development Mechanism Project Cycle Procedure, Annex 66 to EB 48 meeting report request the DOE to provide a validation opinion on whether changes from the registered PDD identified during verification raise concerns on the additionality of the project activity, the scale of the CDM project activity and the applicability and application of Approved Baseline Methodology under which the project activity has been registered.

The Fifty-Ninth meeting of the CDM Executive Board (Paragraph 66) clarified that where a DOE identifies both changes from the project activity, as described in the registered PDD, and changes to the registered monitoring plan, those changes may be included in one submission. The Board further clarified that in respect to the changes to the registered monitoring plan, the validation opinion shall address the requirements of paragraph 9 of the "Procedures for revising monitoring plans in accordance with paragraph 57 of the Modalities and Procedures for the CDM".

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Clean Development Mechanism Validation and Verification Standard version 02.0.

This opinion is based on the assessment of the revised PDD including the revised monitoring plan.

The application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable methodology.

The project activity involves electricity generation using rice husk which would have been left to decay or burnt in open air. It involves the construction and operation of a new rice husk power plant in Pichit province, Central Thailand. The electricity generated is sold to Electricity Generating Authority of Thailand (EGAT) through a 25 year power purchase agreement.

According to this assessment opinion is reported by following the VVS Version 02 and the CDM project standard Version 01, so the post registration changes are separated into the correction, temporary deviations from the registered monitoring plan or applied methodology, permanent changes from the registered monitoring plan or applied methodology, changes to the project design of a registered project activity and Types of changes specific to afforestation or reforestation project activities. However, the changes relate to this project activity is the correction and the permanent changes from the registered monitoring plan or applied methodology.

In the registered PDD version 02 dated 25/01/2007, the PDD has described that the project activity involves the construction and operation of a new rice husk power plant in Pichit province, central Thailand, with approximately 22 MW gross generating capacity, 20MW net. However, the actual installation of electricity generating capacity is 22.5 MW which found 0.5 MW increasing from the description of the registered PDD. The 22.5 MW of generating capacity has been installed and operated since the project activity commissioned, COD under SPP producer on 21/12/2005 (refer SPP data at http://www.eppo.go.th/power/data/). . During verification site visit of second monitoring period with reference to on-site observation and document review the assessment team has identified this aspect and also confirms that there are no further changes or modification of the electricity generating capacity since the installation and commissioning of the power plant. The registered PDD has erroneously mentioned the gross generating capacity as "*approximately 22 MW*" instead of 22.5 MW in specific and subsequently CERs for first monitoring period (21/12/2005 – 30/06/2007) was issued on 04/06/2008 which was prior to the initial adoption of "Procedures for Notifying and Requesting Approval of Changes from the Project Activity as Described in the Registered PDD as Annex 66 of EB 48 dated 17/07/2009. To present this information more

transparently, inline with paragraph 269 to 282 of the VVS Version 02 the PP has updated the project description (section A.2) in the revised PDD to reflect the real implementation.

The participants of the project activity have been changed from the registered PDD, which there were 2 Parties with 3 entities. Mitsubishi UFJ Securities Co., Ltd was changed the name to Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. The MOC Annex 2 in change authorized signatory, name or contact detail was valid from 27/01/2011. Then, Chubu Electric Power Co., Inc. signed the voluntary withdrawal letter and the Party from United Kingdom of Great Britain and Northern Ireland was added to the name list. The voluntary withdrawal letter and adding project participant letter were valid on 12/04/2011. After that, Gazprom Marketing & Trading Singapore Pte. Ltd, Mitsubishi UFJ Morgan Stanley Securities Co., Ltd and A.T. Biopower Co., Ltd. changed the address detail and contact information. The MoC Annex 2 in change/update authorized signatory, name or contact detail was web-hosted on 10/10/2012. All the documents have been cross checked and found consistent on the UNFCCC website (http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view).

By applying this proposed revision of monitoring plan, the moisture content of biomass residue, and on-site electricity imported attributable to the project activity ($EC_{PJ,y}$) is added as a monitoring parameters to improve the accuracy of the monitoring plan. The net calorific values (NCV) of rice husk and diesel oil are revised to be measured at least every six months, taking at least three samples for each measurement. The NCV of residual oil is removed and not required for monitoring as it has never has been and will not be used in the project activity. The assessment team has validated the plant records, and observed this during site visit. It found that the residual oil has never been used and the oil storage tank is the diesel tank. Thus it is found reasonable to remove NCV of residual oil from the monitoring parameter. The calibration frequency of the weight meter for measuring quantity of rice husk combusted in the ATB plant (BF) in the revised PDD is specified to once in two years and the energy balance for cross checking is revised to conduct annually. The fossil fuel consumption for on-site transportation of rice husk ($FF_{project\ site}$) is revised to calibrate the fuel meter to once in two years. An average return trip distance between biomass fuel supply sites or the origin of the biomass and ATB plant (AVD) is revised by stating that this parameter will be recorded when the supplier agree to provide the rice husk to site and will be checked against maps from rice husk source to site. Source of methane emission factor for combustion of rice husk at ATB plant (EF_{CH4}) is revised to comply with applied methodology by using from default value as provided in Table 3 of the methodology. The average CO_2 emission factor for transportation of rice husk ($EF_{km,CO2}$) is revised source of data by applying an alternative choice from the methodology provided. The emission factor is selected an applicable for rice husk types used from public domain literature in a conservative manner. Then the data will be cross checked with emission factor referred to in the literature. The CO_2 emission factor of diesel ($EF_{CO2,diesel}$) is revised to comply with the methodology. Source of data is revised to select a reliable local or national data where available. Where such is not available, the IPCC default value can be applied. If this is deemed to reasonably represent local circumstances, the most conservative manner will be chosen. The net quantity of electricity generated from ATB plant is more specified that this electricity will export to the grid. The on-site fossil fuel consumption of diesel for start up/auxiliary use is revised in the documentation evidence for cross checking from fuel purchase invoices in the registered PDD to an energy balance to comply with applied methodology. The amount of fossil fuel consumed by each power source (F_{pp}), CO_2 emission coefficient of fossil fuel ($COEF_{fuel}$), electricity generation of power source (GEN_{pp}), power source for OM, power source for BM from the section B.7.1 in the registered PDD were moved to section B.6.2 because they will be revised once upon renewal of a crediting period. The revision of the registered monitoring plan is in accordance with the approved methodology ACM006 version 4 and national regulation. In addition, the calibration frequency of each parameter is added for transparency. This revision improves the accuracy of information provided and consistency in the registered PDD and the monitoring plan.

As the residual oil has never been used and will not be used in the project activity, the qualification of fuel in ex-ante calculation of CO_2 emission from on-site consumption of fossil fuel has been changed from residual oil to diesel. Moreover, the project participant has clarified that the amount of fossil fuel, which was used in boiler start up per time has changed from 500-600 liters in the registered PDD to 10,000 liters. To confirm the correctness of information, the PP also provided the self declaration letter to the assessment team. This causes the changes in estimation of project activity emission from 2,974 tCO_2e in the registered PDD to 3,235 tCO_2e per annum. Then, it affects the amount of emission reduction from 70,772 to 70, 508 per annum. Due to the diesel oil was used and no other fuel oil was used during MP1, this has been confirmed by cross checking with the verification report of MP1[4]. Hence this has no any impact on MP1.

As the on-site electricity imported attributable to the project activity ($EC_{PJ,y}$) is the missing parameter in the registered PDD and will be added in the revised monitoring plan, then the project emission "CO2 emissions due to electricity consumption at the project site ($PE_{EC,y}$)" will be accounted under the section B.6. Its calculation is done by multiply the amount of electricity import with grid emission factor (EF_{grid}).

Furthermore, the description of the monitoring parameters related to $FF_{project\ site}$ and leakage assessment in the registered PDD are found inconsistent with the applied methodology. The parameter $FF_{project\ site}$ is revised to the quantity of fossil fuel combusted at the project site for other purposes that are attributable to the project activity. In the leakage assessment, the amount of rice husk which consumed in the geographical region is revised the description to comply with the methodology. It is revised to the quantity of biomass residues of biomass that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region. The result of this revising in the description of monitoring parameters has no any impact on the ER calculation as it is editorial correction.

In our opinion, the changes, as outlined in revised PDD version 05.1 dated 28/11/2012, from the project activity as described in the registered PDD does not have an impact on the following aspects:

(i) Additionality of the project activity;

(ii) Scale of CDM project activity;

(iii) Applicability and application of Approved Baseline Methodology under which the project activity has been registered.

Moreover, almost the permanent changes and proposed revisions in the monitoring plan does not have any impact on MP1. Excluded, an impact on emission reduction of MP1 from the electricity imported to consume in project activity. So the project emission due to the electricity imported from the grid during MP1 (during 21/12/2005 – 30/06/2007) at 557 tCO_2 will be deducted from the total emission reduction of MP2 (01/07/2007 – 31/12/2007).

However, according to paragraph 262 to 268 of the VVS Version 02, require the DOE to access permanent changes from the registered monitoring plan and/or monitoring methodology. The Project Participants are revised monitoring plans in order to improve accuracy and/or completeness of information,

The project activity is fallen under permanent changes from the registered monitoring plan or applied methodologies. From paragraph 4 in the Appendix 1 of the project standard Version 01, the Board is required to approve in this project activity because some parameters, which missed from the registered PDD, are included into the revise monitoring plans. This has been done to comply with the applied methodology and improve accuracy completeness of information.

Based on the above conclusion, following Clean Development Mechanism Validation and Verification Standard version 02.0, SGS will Submit a request for approval of changes to EB.

We further confirm that:

(a) the proposed revision points have been described, and an assessment has been provided to substantiate the reasons for each of the proposed revision points of the registered monitoring plan, using objective evidence;

(b) the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions;

(c) the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity whilst ensuring the conservativeness of the emission reductions calculation.

(d) there is no FARs and any other open issues from the verification report for the first monitoring period (01/07/2007 to 31/12/2007). The same has been checked against verification report and found satisfactory.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Siddharth Yadav

Date: 03/01/2013

2. Introduction

2.1 Objective

Paragraph 62(g) of the CDM Modalities and Procedure requires that the DOE which is contracted by the project participant to perform verification shall identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Annex 66 to EB 48 meeting report requests DOE to provide a validation opinion on whether changes from the registered PDD identified during verification raise concerns on the additionality of the project activity, the scale of the CDM project activity and the applicability and application of Approved Baseline Methodology under which the project activity has been registered. Paragraph 57 of the modalities and procedures for the CDM allows project participants to revise monitoring plans in order to improve accuracy and/or completeness of information, subject to the revision being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by A.T. Biopower Co.,Ltd. to perform such a validation of:

The changes from the project activity as described in the registered PDD and RMP according to the procedure detailed in Paragraph 66 to EB 59 meeting report, annexes 66 and 67 to EB 48 meeting report and annex 28 to EB 49 meeting report.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM), Clean Development Mechanism Validation and Verification Standard version 02.0, Clean Development Mechanism Project Cycle Procedure version 02.0, Annexes 66 and 67 to EB 48 meeting report and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed the revised project design documentation, using a risk based approach and conducted follow-up actions (e.g. site visit, telephone or e-mail interviews/delete or add as appropriate) and also the review of the applicable methodology.

2.2 Scope

The scope of the validation is defined as an independent and objective review of the revised project design document and other relevant documents. The information in these documents is reviewed against the Kyoto Protocol requirements, the UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, 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 Client/the project. However, SGS may issue requests for clarifications and/or corrective actions which may provide input for improvement of the project design.

2.3 GHG Project Description

As per http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view the project was registered on 18th June 2007 against ACM0006 - Consolidated methodology for grid-connected electricity generation from biomass residues version 4 under UNFCCC reference number 1026.

2.4 The Names and Roles of the Validation Team Members and Technical Review Team Members

Name of validation team members	Role
Mr. Pitipoom Tungsirisuteekul	Lead Assessor/Team Leader
Ms. Nattarin Thunsiri	Assessor
Ms. Kasamol Sansanakul	Local Assessor
Mr. Sandeep Kurmi	Technical Area Expert (Scope 1 : Energy industries (renewable/ non-renewable sources –

	TA 1.1 Biomass based thermal/electricity utilization)

3. Methodology

3.1 Review of the revised CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available revised project design document. The assessment is performed by trained assessors using a validation protocol.

A site visit is necessary because the project design does not fall under Tier 1, refer to the project proposal (Proposal for Review of Changes to the project activity as described in the registered PDD). The permanent changes from the registered monitoring plan and applied methodology fall under "Case 2. Request for changes to the project activity as described in the registered PDD (If the changes to the project activity fall under this category a detailed validation assessment would be needed)",

Therefore, the site visit was conducted between 17/03/2012 – 18/03/2012, by the lead assessor, assessor, local assessor and sectoral expert TA1.1.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual, partly on the experience of SGS with the validation of CDM projects and the Clean Development Mechanism Validation and Verification Standard version 02.0. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	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.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). A Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **Clarification Request (CL)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR is issued, where:

I. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

II. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
III. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A Forward Action Request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The validation process may be halted until the project activity information meets the CDM EB/UNFCCC's requirements. Failure to address a CL/FAR may result in a CAR. Information or clarifications provided as a result of a CL/FAR may also lead to a CAR.

Corrective Action Requests, Clarification Requests and Forward Action Requests are raised in the draft validation protocol and detailed in a separate form (Findings Overview). In this form, the Project Developer is given the opportunity to respond to CARs, CLs and FARs. The detailed Finding Overview is attached with this document as Annex 2.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to an independent Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

Name of technical review team members	**Role**
Mr. Michael -SM Wu	Technical Reviewer
Mr. Thyagaraj Subbarayan	Technical Area Expert (Scope 1 : Energy industries (renewable/ non-renewable sources – TA 1.1 Biomass based thermal/electricity utilization)

4. Validation Findings

4.1 Post registration changes

According to this opinion report is assessed by following the VVS version 02 and CDM project standard version 01, then the post registration changes related to the project activity are correction and the permanent changes from the registered monitoring plan or applied methodology. The descriptions are justified below;

4.1.1 Corrections

This is the correction to the project information of the registered CDM project activity that related to the correction of generator turbine rated power capacity, the changing in the Project Participants, the description of monitoring parameters and the editorial correction. They do not affect the design of the project activity.

A. RATED POWER CAPACITY OF STEAM TURBINE

In the registered PDD version 02 dated 25/01/2007/2/, it has been described that the project activity involves the construction and operation of a new rice husk power plant in Pichit province, central Thailand, with approximately 22 MW gross generating capacity, 20MW net. Electricity from the project power plant is sold to the grids authority through a 25-year power purchase agreement (PPA)/17/ with the Electricity Generating Authority of Thailand (EGAT); the PPA clearly demonstrates the actual gross generating capacity of the project activity as 22.5 MW. Therefore, the project activity was actually implemented and commissioned as gross generating capacity of 22.5 MW and has never been implemented in accordance with the description in the registered PDD (i.e. gross generating capacity of 22 MW) and subsequently issuance of CERs for first monitoring period (21/12/2005 – 30/06/2007)/4/ was issued on 04/06/2008 which was prior to the initial adoption of "Procedures for Notifying and Requesting Approval of Changes from the Project Activity as Described in the Registered PDD as Annex 66 of EB 48 dated 17/07/2009.

CAR #01 was raised for requesting the clarification by the Project Participants with documentation substantiated to clarify the reason for changes and the project activity has never been implemented in accordance with description in the registered PDD or after the project activity has been implemented. This is the conformance with paragraph 7 and 10b of EB 48 Annex 66. In response, the Project Participants has clarified that the capacity of 22.5 MW was as per the initial design by providing the specification of steam turbine/25/. The steam turbine with output at 22.5 MW was installed during the construction in September 2004 started to COD on 21/12/2005, which was before the registration of the project activity in 2007. There are no any changes or modification of the electricity generating capacity since the first installation. The registered PDD has erroneously mentioned the gross generating capacity as "*approximately 22 MW*" instead of 22.5 MW in specific. The name plate of steam turbine and generator show the installation date/16/ and the performance test report, which was done by Electrowatt-Ekono (Project No. 300315, Report No. PCT-460-019 Rev.A)/23/ were verified. Moreover, the Project Participants have provided the reason for this changes that they were not realized that the 0.5 MW differentiate of the installed capacity would impact the overall operation/ability in emission reduction. Due to 20 MW is the maximum of electricity can be sent to grid, which stated in clause 6.2 of the PPA/17/. Therefore, the assessment team confirm that this permanent change has occurred before the project activities implementation (i.e. project activity is implemented follow the technological design whereas information contain in the registered PDD is inconsistent). Hence the correction in typographical error of install capacity of steam turbine (22.5 MW) to the project information of registered PDD is an accurate reflection of actual project information and not affects the project design of the project activity. This complies with the requirement of the Project standard and paragraph 257-258 of the VVS version 02. **So CAR #01 was closed**.

Validation of the corrections from the registered PDD

SGS's evaluation of the activity for the project revealed the inconsistency in the project design of the registered PDD, which were found during the site visit and document review/16/,/25/. Considering the

assessment presented in section 4.1 above, SGS was able to confirm that changing in the gross electricity generating capacity from "approximately 22MW" as mentioned in the registered PDD to "22.5MW" as per the actual installation capacity as shown in the generator turbine name plate[/16/], would not impact the additionality of project activity negatively, would not change the scale of CDM project activity and would not change the applicability of ACM0006 version 4. The discussion has been expressed in the below section.

Additionality of the project activity

Since the investment analysis was not selected in the additionality demonstration of the project activity, only the barrier analysis was used. Technological barriers and investment barriers are analyzed. This is in accordance with Tool for the demonstration and assessment of additionality (EB 65 Annex 21, Version 06) as per mentioned in the registered PDD and discussed in the validation report. The changes to the project activity is the increasing in the gross electricity generating capacity from approximately 22MW to be 22.5MW. Thus, it has been increased 0.5 MW comparing to the registered PDD.

Due to 0.5 MW increase in an installed capacity, **CAR #01 was also raised** to require the Project Participants to explain the reasons why the barriers are still valid as per EB 48 Annex 67 paragraph 9. The explanations are as followings:

1. **Technological barriers**

   It has been demonstrated in the registered PDD that Thailand has no previous experience with the suspension-fire technology which is the employed technology in this project, and there is a lack of engineers and operating staff with experience in the technology. This represents barriers to the project implementation. Thus, the increasing of 0.5 MW installed capacity of electricity generation does not mitigate the risk of technological barriers as it has no any affected to the previous experience of the employed technology and neither skill of engineers nor operating staff in this technology. The project is still the first case of applying suspension-fired technology to rice husk in Thailand.

2. **Investment barriers**

   According to the registered PDD, the project has received the incentives provided by EPPO subsidies and the SPP program which guarantees purchase of most of the electricity generated. However, the environmentally friendly electricity generation project remains difficult to be developed in Thailand. In particular, the project has faced a major investment barrier has been perceived high risk of the project. The reason is the difference of fuel supply arrangement from any of rice husk power generation plants in Thailand. Other projects have a large rice mill as a core project sponsor and rely on it for the supply of all or nearly all of rice husk to be used at their plants. This significantly increases the risk in the eyes of investors and risk in project financing.

Refer to the investment barriers as demonstrated above; the assessment team found that 0.5 MW installed capacity added of electricity generation has not affected to barrier due to investment barriers as demonstrated in the registered PDD as there is no linkage between the additional installed capacity and its barrier. This confirms that this change has not affected to project additionality and the barriers are still valid under the new circumstance where the 0.5MW installed capacity of electricity generation has been increased. Therefore, **CAR #01 in additionality was closed**.

Scale of CDM project activity

As per the original registered PDD, the project activity is a large scale. With 22.5 MW gross generation capacities, 20 MW net will be sold through EGAT, which guarantees the purchasing at minimum 80% of contracted capacity and 10% is the expectation of internally plant consumption. Therefore, **CL #05 was raised** to substantiate with documentary of 10% internal consumption and provide the specification of the main equipments. In response, the calculation of electrical station service transformer sizing by EPC contractor[/24/] show that the totally operation load is 2,263.91 kW, which is 10% of electricity generated. Moreover, the specification of the main equipments have been provided and mentioned into table 1, section A.4.3.1 of the PDD. Therefore, **CL #05 was closed**.

Due to 0.5 MW increasing of the installed capacity in the revised PDD, it does not affect to the scale changing. The project activity still remains as large scale.

Applicability and application of the applied approved baseline methodology

Even though there is an increase in the installed capacity of biogas generator, the project activity is still in accordance with the applicability criteria of the applied methodology ACM0006 version 4. The applicability conditions are discussed as below;

Technology/measure	Justification by the PP	DOE's opinion
1. This methodology is applicable to grid-connected and biomass residue fired electricity generation project activity	The Project will use rice husk, an abundant agricultural waste, to fuel its power plant. The power plant will be installed at a site where no power generation currently occurs (i.e. a greenfield power project). The power will be exported to EGAT's grid.	This is applicable to the project activity. The applicability has been validated against documented evidence (i.e. PPA)[17/] and by conducting the site visit.
2. No other biomass types other than biomass residues, defined as a by-product, residue or waste stream from agriculture, forestry and related industries, are used in the project plant and these biomass residues are the predominant fuel used in the project plant (some fossil fuels may be co-fired).	The Project will not involve the use of biomass that is not a biomass residue. Some small amounts of fossil fuel will be used during start-up; however, the fuel will remain predominantly biomass residue.	This is applicable. This has been validated by conducting the site visit. There is only rice husk found on site.
3. For projects that use biomass residues from a production process, the implementation of the project shall not result in an increase of the processing capacity of raw input or in other substantial changes in this process.	The rice husk will be sourced from various rice mills. The rice husk procurement plan for the Project is based on current production levels and availability at these rice mills, and does not depend on an increase in processing capacity. Therefore, there shall be no increase of processing capacity of raw input or other substantial changes in the rice milling process on the account of the Project.	The maximum of the production capacity is at 22.5 MW gross generations with 20 MW net. This will be sold through EGAT. This applicability has been validated against the PPA and conducting the site visit.
4. The biomass residues used by the project facility should not be stored for more than one year.	The rice husk will not be stored for more than one year. The storage facility for the Project can only hold at most 3 months' worth of rice husk supply.	This applicability has been validated against the documentation evidence (i.e. rice husk stock pile report)[/21/] and conducting the site visit.
5. No significant energy quantities, except from transportation of the biomass, are required to prepare the biomass residues for fuel combustion.	No significant energy quantities are required to prepare the rice husk for fuel combustion. Unlike some other biomass fuels with higher moisture content, rice husk is a relatively dry fuel that does not require pre-treatment such as dewatering.	This applicability has been validated by conducting the site visit.

B. PROJECT PARTICIPANTS

In the registered PDD, version 02, the project participant in the section A. 3, methane

There were 3 Project Participants as below;

Registered PDD		
Party involved	**Private and/or public entity(ies) project participants**	**Indicate if the Party involved wishes to be considered as project participant (Yes/No)**
Thailand	A.T. Biopower Co., Ltd	No
Japan	Mitsubishi UFJ Securities Co., Ltd.	No
	Chubu Electricity Power Co. Inc.	No

Then Mitsubishi UFJ Securities Co., Ltd was changed the name to Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. The MOC Annex 2 in change authorized signatory, name or contact detail was web-hosted on 27/01/2011. Chubu Electricity Power Co., Ltd withdraws from the project activity. The voluntary withdrawal letter was signed and valid as of 12/04/2011. After that, Gazprom Marketing & Trading Singapore Pte. Ltd is added to the list as the Project Participant Party. All project participants and focal points have signed the latest version of the MoC, which was web-hosted on the UNFCCC website since 12/04/2011 (http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view). The revision of the Project Participants in the revised PDD as shown below;

Revised PDD		
Party involved	**Private and/or public entity(ies) project participants**	**Indicate if the Party involved wishes to be considered as project participant (Yes/No)**
Thailand	A.T. Biopower Co., Ltd	No
Japan	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd	No
United Kingdom of Great Britain and Northern Ireland	Gazprom Marketing & Trading Singapore Pte. Ltd	No

CL #06 was raised for requesting the Project Participants to revise the PDD to reflect the current Party and entities Project Participants in section A.3 to comply with MoC. In response, the Project Participants have been revised in section A.3 and contact detail in Annex 1 of the PDD to comply with the latest MoC as shown in UNFCCC website (http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view). **Hence, CL #06 was closed**.

Validation of the corrections from the registered PDD

According to Gazprom Marketing & Trading Singapore Pte. Ltd is added as the project participant valid as of 12/04/2011 (http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view); the LoA of the United Kingdom of Great Britain and Northern Ireland was submitted[13]. The assessment team has been checked and found satisfactory to confirm that LoA is in compliance with the CDM guidelines. The detail is discussed as below;

Requirement to be validated	LOA from DNA of UK[13]
(a) The Party is a Party to the Kyoto Protocol;	The Party locates in United Kingdom of Great Britain and Northern Ireland (UK). UK ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 08/12/1993 and Kyoto Protocol on 31/05/2002 (Website: http://maindb.unfccc.int/public/country.pl?country=GB).
(b) Participation is voluntary;	The letter Ref. GazpromPte/01/2011 indicated that The Secretary of State for Energy for Energy and Climate Change acting as the UK's DNA, who is responsible for implementation of the Clean Development Mechanism under Gazprom Marketing & Trading Singapore Pte. Ltd in the proposed CDM project activity.
(c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country;	Mentioned in the letter Ref. GazpromPte/01/2011, The Secretary of State for Energy for Energy and Climate Change confirms that the project activity assist in achieving sustainable development.
(d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Referred to the abovementioned letter Ref. GazpromPte/01/2011, the project title "A.T. Biopower Rice Husk Power Power Project in Pichit, Thailand" is precise and consistent with title of the proposed CDM project activity title in the PDD.
Indicate whether a letter of approval has been received, with clearly referencing the letter itself and any supporting documentation;	The letter of approval (LOA) with the reference number Ref. GazpromPte/01/2011was issued on 28/02/2011 to certify that the UK's DNA approve implementation of the project activity.
Indicate whether the DOE received this letter from the project participants or directly from the DNA;	The LOA has been obtained from the PP.
Indicate the means of validation employed to assess the authenticity;	The LOA was issued by the Department of Energy & Climate Change who is DNA of UK. The authenticity of the DNA has been checked against a list of DNAs which are available on the UNFCCC website and found to be satisfactory

C. FOSSIL FUEL COMBUSTED AT THE PROJECT SITE FOR OTHER PURPOSE

According to the assessment team observed during site visit and documentation review (i.e. plant record and fuel meter calibration certification[20]) found that the residual oil was not used and will not be used in the future.

CAR #02 was raised to clarify that why the NCV of the residual oil (40.4. x 10^{-3} TJ/t) has still been in project emission calculation whereas the residual oil is not consumed. In response, the PDD and calculation spreadsheet were revised by applying the NCV of diesel (43. x 10^{-3} TJ/t) to reflect the real implementation. In result, there is no impact on the in the first monitoring period as there was no consumption of residual oil during MP01 and the residual oil was not used in the calculation of ERs. Moreover, the Project Participants has explained that the residual oil cannot be used in boiler startup due to the provision stipulated in the PPA signed between A.T. biopower and EGAT. It states that the company shall use rice husk as the main fuel and shall be allowed to use diesel oil as supplementary fuel. Therefore, the residual oil can be removed from the

monitoring parameter. The qualification of fossil fuel for unit conversion has been changed from residual oil to diesel. Therefore, **CAR #02 about the removal of NVC residual oil was closed**.

In addition, the fossil fuel consumption in startup operations per time has been changed from 500-600 liters of fuel oil in the registered PDD to 10,000 liters of diesel. This has been validated from self declaration letter (No. ATB-PCH-2012-09-043)/19/ to confirm that approximately 10,000 liters use for each time of startup boiler and will be started up 10 times per year. This causes the increasing of CO_2 emissions from on-site consumption of fossil fuels from 8 tCO_2e in the registered PDD to 268.89 tCO_2e per year. The calculation is shown below;

Due to the fossil fuel was changed to use the diesel oil specification as described above. The carbon emission factor, density and NCV are changed to 74,100 kg CO2/TJ, 842.9 kg/m3 and 43.0 TJ/Gg respectively. All the values have been checked against the IPCC value and Table A3.8 Page 181 of the Energy Statistics Manual of OECD/IEA. They are found apply correctly.

Then, 100,000 liters or 84.39 t are the diesel consumption per year for boiler start up.

Therefore,

Fuel consumption in energy equivalent (TJ/yr)	=	Diesel oil consumption (t/yr)	x	Net calorific value of diesel oil (TJ/t)	x	Emission factor (tCO_2/TJ)
	=	84.29	x	$43. \times 10^{-3}$	x	$74{,}100 \times 10^{-3}$
	=	268.89	tCO_2/yr			

As the changed of CO_2 emissions from on-site consumption of fossil fuels affects to the increasing of project activity emissions estimation from 2,974 tCO_2e in the registered PDD to 3,235 tCO_2e per annual. Therefore, an estimation of emission reduction has decreased from 70,772 tCO_2e to 70, 508 tCO_2e per year. These have been checked against the revised PDD and emission reduction calculation spreadsheet/22/ which found consistent and acceptable.

D. DESCRIBTION OF THE MONITORING PARAMETERS

1. ***AVD***

   The description of this parameter in the registered PDD was an average return trip distance between rice husk source and ATB plant. This is in-comply with the description as mention in the methodology.

   This leads to **CL #07 in in-compliance description**. Then it is revised to an average return trip distance between biomass fuel supply sites or the origin of the biomass and ATB plant. Therefore, **CL #07 related to description was closed**.

2. ***$FF_{project\ site}$***

   In the registered PDD, the description of this parameter was fossil fuel consumption for on-site transportation of rice husk, which is in-complied with the applied methodology.

   Then **CL #07 in in-compliance description was raised**. In response, this parameter is revised to the quantity of fossil fuel type *i* combusted at the project site for other purposes that are attributable to the project activity during the year *y*. Hence, **CL #07 related to description of $FF_{project\ site}$ was closed**.

3. ***$EG_{project\ plant}$***

Referring to the registered PDD, the net quantity of electricity generated from the ATB plant is the amount of electricity, which generated from ATB plant and send to grid. Therefore, the inclusion of comment to the monitoring plan that This parameter is electricity export to the grid. This makes the parameter is more transparent and relevant with the applied methodology. However, the baseline emission associated with grid electricity generation in the registered PDD was 67,781 tCO_2 per year. This is inconsistency value between the calculation spreadsheet and the registered PDD.

Then **CL #05 related to data inconsistency was raised**. In response, the Project Participant clarify that the information in the calculation spreadsheet was not round downed, so the data was revised in the calculation spreadsheet to 67,760 tCO_2/yr. The same value was also applied to the revised PDD. Then **CL #05 related to the inconsistency data was closed**.

4. ***Leakage assessment***

According to three option provided in the baseline methodology, leakage assessment L_2 is selected. Then 2 parameters are requested to monitor. They are quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region and quantity of available biomass residues of type k in the region. While, in the registered PDD, their descriptions were the amount of rice husk consumed in all grid-connected power plants in the region/country and amount of rice husk that is available in surplus in the region/ country.

CL #07, which related to the description, was raised by requesting the Project Participant to revise. Then these descriptions are revised to quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region. Another description is quantity of available biomass residues of type k in the region. Therefore, **CL #07 in leakage parameter was closed**.

E. EDITORIAL CORRECTION IN REGISTERED PDD

In the registered PDD, the Project Participant used word rice mill and rice miller to describe source of rice husk. Then these words are changed to biomass fuel supply sites, which is the same wording in the methodology. This found acceptable for correction.

Under section B.8 of the revised PDD, the Project Participant mentions the date and information of the revised PDD completion. The permanent change from the registered monitoring plan or applied methodology was completed on 28/11/2012.

In conclusion, the corrections to project information and description of parameter fixed at validation, as described in the registered PDD which clarified above are comply with the requirement of the project standard. Furthermore, these correction are not require prior approval by the board as per the requirement of the project standard (Appendix1, section I EB65 Annex5) because these correction is not affect the design of project activity.

And the assessment team also confirms that

a) The corrected information is an accurate reflection of actual project information and/or

b) The corrected parameters are in accordance with the applied methodology and/or selected monitoring plan.

4.1.2 *Permanent changes from the registered monitoring plan or applied methodology*

Refer to the monitoring plan as mentioned in the registered PDD available at UNFCCC website http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view and the Validation Report by Det Norske Veritas Certification Limited (DNV Certification Ltd.), dated 24th March 2007/3/ available on UNFCCC webpage (http://cdm.unfccc.int/UserManagement/FileStorage/OUR7L1SX25WD2DXB1BHNCAGCR7PPW1). The modifications are of the registered monitoring plan are as below.

Type of Revision

The revision of monitoring plan is a result of recommendation by the PP/DOE as mentioned in section B.7 and Annex 4 of the registered PDD. The PP has made the following changes in the registered monitoring plan to make it consistent with the methodology ACM0006 version 4 and more transparency. Details are explained in below paragraph.

The proposed revision of the monitoring plan ensures that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revisions (details below).

- By applying this proposed revision of the monitoring plan, the moisture content of biomass residue, and on-site electricity import attributable to the project activity ($EC_{PJ,y}$) are added as monitoring parameters.
- The NCV of rice husk and diesel have been identified separately in the revision of the PDD.
- The net calorific value (NCV) of rice husk is revised to be measured at least every six months, taking at least three samples for each measurement.
- The NCV of diesel oil is revised to either conduct measurement or use accurate and reliable local or national data.
- The NCV of residual oil is removed and no more monitoring required as it has never been and will not be used in the project activity. This has been confirmed during the site visit and documentation review (i.e. plant record and fuel meter calibration certification). The assessment found that the storage oil tank is diesel, plant record show only diesel is used and calibration certification No. TES-07/001 identified that meter No. 05010024/20/ uses for diesel.
- The Quantity of rice husk combusted in the ATB plant (BF) is revised the calibration frequency of the weight meter to once in two years and the energy balance for cross checking is revised to conduct annually.
- The quantity of fossil fuel combusted at the project site for other purposes that are attributable to the project activity ($FF_{project\ plant}$) is revised to calibrate the fuel meter to once in two years.
- The on-site fossil fuel consumption of diesel for start up/auxiliary use ($FF_{project\ site}$) is revised the crosschecking methodology to comply with applied methodology and data value applied for the emission reduction calculation.
- The average return trip distance between biomass fuel supply sites or the origin of the biomass and ATB trip (AVD) is revised to be recorded for each truck that delivers rice husk to the site and check against the maps from rice husk sources to the power plant site.
- The on-site fossil fuel consumption of diesel for start up/auxiliary use is revised the documentation evidence for cross checking from fuel purchase invoices in the registered PDD to an energy balance to comply with applied methodology.
- Methane emission factor for combustion of rice husk at ATB plant (EF_{CH4}), average CO_2 emission factor for transportation of rice husk ($EF_{km,co2}$), CO_2 emission factor of diesel ($EF_{CO2,diesel}$) and 2 leakages assessment monitoring parameters are revised the source of data to comply with methodology.

All revision of the registered monitoring plan is in accordance with the approved methodology ACM0006 version 4. This revision improves the accuracy of information provided and consistency in the registered PDD and the monitoring plan.

The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity (details below).

In the monitoring part, the quantity of rice husk combusted in the ATB plant (BF), the moisture content of the biomass, CH4 emission factor for the combustion of biomass residues in the project plant (EF_{CH4}), the average return trip between biomass fuel supply sites or the origin of the biomass and ATB plant (AVD), Average CO2 emission factor for the trucks ($EF_{km,CO2}$), CO_2 emission factor of the diesel ($EF_{CO2,diesel}$), On-site fossil fuel consumption of diesel for start-up/auxiliary use ($FF_{project\ plsnt}$), fossil fuel consumption for on-site transportation of rice husk ($FF_{project\ site}$), Net quantity of electricity generated from the project plant ($EG_{project\ plant}$),the net calorific value of rice husk and diesel (NCV), methane emission factor for uncontrolled burning of the biomass residue ($EF_{burning,\ CH4,k,y}$), on-site electricity consumption attributable to the project activity ($EC_{PJ,yy}$), and leakage monitoring are revised in the monitoring plan to comply with the methodology ACM0006 version 04[75].

To present this information more transparently, inline paragraph 257 to 259 of the VVS version 02, the PP has updated the applicability of the monitoring parameter (section B.7.1) in the revised PDD to reflect the real implementation.

A. QUANTITY OF RICE HUSK COMBUSTED IN THE ATB PLANT (BF)

In the registered PDD, the quantity of rice husk combusted in the ATB plant will be measured continuously by using the weight meter to conduct the quantity of rice husk that is delivered to the project site. The meter will undergo maintenance subject to appropriate industry standard. While an energy balance for cross checking will be carried out for each verification period.

CL #07 was raised to clarify how the biomass can be measured in continuously and revise the cross checking methodology to comply with the requirement in methodology. Moreover, the equation to calculate the quantity of rice husk combusted on dry basis is wrong. The energy balance is revised to be conduct annually as per the methodology requirement. The measurement method is more specify that the weight meter will measure in each time truck arrive. For the weight meter, it shall be calibrated by Central Bureau of Weight and Measures, Ministry of Commerce. As per national regulation, the weight meterwhich capacity is more than 20 metric tons, will be calibrated once in two years[18]. As the maximum capacity of the project activity weight mater is 60 metric tons[18], so the calibration frequency is revised to comply with the regulation.

This parameter does not require direct measurement, so the quantity of rice husk on dry basis will be calculated based on the moisture content in the rice husk, the earlier equation was wrong. It has been revised to the following equation;

$$\text{BF on dry basis} = (\text{BF wet basis}) \times (1 - \text{moisture content})$$

Therefore, **CL #07 related to quantity of rice husk combusted in the ATB plant was closed**.

B. MOISTURE CONTENT OF THE BIOMASS RESIDUES

In the registered PDD, the moisture content was not included as a monitoring parameter. However the project owner has monitored this parameter in line with the applied monitoring methodology. The moisture content of rice husk is measured and recorded each truck every time rice husk is delivered at the weight scale station by operation staff (Fuel Procurement Staff). The record is kept electronically and the mean value is calculated on monthly basis. This has been observed and cross checked with the rice husk purchased receipt during site visit.

Therefore, **CAR #03 was raised** to include moisture content of the biomass residual as the monitoring parameter and measurement method to comply with applied methodology. This missing parameter has been added in the revision of monitoring plan. The moisture content of rice husk will be measured and recorded for each truck that delivers rice husk to site; then the mean value is calculated on monthly basis. In case of dry biomass, monitoring of this parameter is not necessary. The same is found in accordance with the approved

methodology ACM0006 Version 04. From the proposed revision of the monitoring plan, the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of revision. Hence, **CAR #03 related to moisture content measurement was closed**.

C. METHANE EMISSION FACTOR FOR COMBUSTION OF RICE HUSK AT ATB PLANT (EF_{CH4})

According to the registered PDD, the source of data will come from the latest IPCC guidelines at the time of verification, so **CL #07 was also raised** to request the source of this parameter to comply with applied methodology. The methodology requires source of data should come from on-site measurement or default values as provided in table 3 of the applied methodology. In response, the Project Participants selected default value as provided in table 3 of the applied methodology. The data is other solid biomass residues, 30 $kgCH_4$/ TJ and combine with the conservative factor at 1.37. Therefore, 0.0411 tCH_4/ TJ is the applicable value. **CL #07 related to EF_{CH4} was closed**.

D. AVERAGE RETURN TRIP DISTANCE BETWEEN BIOMASS FUEL SUPPLY SITES OR THE ORIGIN OF THE BIOMASS (AVD)

In the registered PDD, this parameter is the average return trip distance between rice miller and ATB plant. It will be measured continuously (each time a truck arrives) by a meter.

Therefore, **CL #07 was also raised** for requesting the revision to comply with the applied methodology. The proposed revised monitoring plan has no effect on the plant implementation which results in accuracy or completeness of the previous verification. The proposed revised monitoring plan is reflects the plant operation observed during the site visit. The distance will be recorded for each time that delivers rice husk to the project site. The transport measurement will be taken when the supplier agree to provide rice husk to site. For more accurate data, the distance will be cross checked against with maps from the rice husk sources to site. This is complied with the applied methodology. Therefore, **CL #07 related to AVD monitoring was closed**.

This revision improves the accuracy of information provided and consistency in registered PDD and the monitoring plan is in accordance with the approved methodology applicable to the project activity ACM0006 Version04. Although the estimation of emission reduction is decreased, which causes by the correction of fossil fuel consumption for start up in boiler and qualification of fuel changes from residual oil to diesel as described in section 4.2.3., but the rest of the monitoring plan remains the same as mentioned in the revised monitoring plan.

E. AVERAGE CO_2 EMISSION FACTOR FOR TRANSPORTATION OF RICE HUSK ($EF_{km,CO2}$)

Source of this parameter in the registered PDD was taken from the latest IPCC guidelines at the time of verification. This is in-compliance with methodology, so **CL #07 related to source of $EF_{km,CO2}$ and cross checking were raised**. Then, the Project Participants revised source of data to come from the emission factor applicable for truck types used from the literature in a conservative manner (i.e. the higher end within a plausible range). Then the consistency of information will be cross checked with the emission factor referred to in the literature. The source of data and consistency checking are found in compliance with methodology. Hence, **CL #07 related to EF_{km} was closed**.

F. CO_2 EMISSION FACTOR OF THE DIESEL ($EF_{CO2,diesel}$)

In the registered PDD, source of this parameter was in-compliance with the methodology. It was taken from 2006 IPCC Guidelines for National Greenhouse Gas Inventory, Volume 2 Table 2.2, so **CL #07 related to source of $EF_{CO2,diesel}$ was raised**. In response, the Project Participants select to use an accurate and reliable local or national data source. Where such data is not available, use IPCC default emission factors (country-

specific, if available) if they are deemed to reasonably represent local circumstances. Choose the value in a conservative manner and justify the choice. The source is found consistent with methodology. Therefore, **CL #07 related to source of $EF_{CO2,diesel}$ was closed**.

G. QUANTITY OF FOSSIL FUEL TYPE i COMBUSTED AT THE PROJECT SITE FOR OTHER PURPOSE THAT ARE ATTRIBUTABLE TO THE PROJECT ACTIVITY DURING THE YEAR y ($FF_{project\ plant,y}$)

Regarding to the register PDD, the on-site of fossil fuel consumption of diesel for start-up/auxiliary used will be cross checked the consistency of data against fuel purchase invoices. This checking is inconsistent with the applied methodology. Then, this parameter is revised to comply with the requirement of methodology ACM 0006 version 04 by cross checking the measurement with an annual energy balance that is based on purchased quantities and stock changes.

As the residual oil does not be used and will not be used in the future, so it was removed from the monitoring parameter and replaced with diesel. Then the qualification of diesel is applied for conversion from volume to weight. In addition, the PP has clarified the amount of fossil fuel used in the boiler start up as described in section 4.2.3. Therefore, the data applied for calculation has changed from 2.67 tonnes/year to 84.29 tonnes/year. This makes the emission reduction calculation correct.

In addition, the source of data to be used was unclear as it has been mentioned to ATB and the monitoring equipment was not mentioned. After that, the description of source of data has been revised to the site measurement by using volume meter. This is found satisfactory and consistent with the applied methodology.

H. QUANTITY OF FOSSIL FUEL COMBUSTED AT THE PROJECT SITE FOR OTHER PURPOSES THAT ARE ATTRIBUTABLE TO THE PROJECT ACTIVITY ($FF_{project\ site,i,y}$)

According to the registered PDD, the amount of fossil fuel (i.e. diesel) consumption at the project site is specified to be used for on-site transportation of rice husk. It will be monitored by fuel pump meter, which will undergo calibration and maintenance regularly. The consistency of the data will be checked against fuel purchase invoice. By the national regulation, fuel pump shall be calibrated by the Central Bureau of Weight and Measures, Ministry of Commerce. Therefore, the meter is revised to be calibrated once in two years to comply with the national standard[18]. Then the data will be cross checked with fuel purchase invoice. This is found consistent with the applied methodology ACM0006 version 04.

In addition, the source of data to be used was unclear as it has been mentioned to ATB. The description of source of data has been revised to the site measurement. This is found satisfactory and consistent with the applied methodology.

I. NET QUANTITY OF ELECTRICITY GENERATED IN THE PROJECT PLANT DURING THE YEAR Y ($EG_{Project\ plant,y}$)

According to the registered PDD, the consistency of information will be checked through the actual sale records between ATB and EGAT. This is incomplete as the applied methodology requesting, so **CL #07 was also raised** by requesting this parameter to be cross checked in accordance with the methodology. In response, it was revised to check the consistency of data with receipts from electricity sales and quantity of fuels fired (e.g. check whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency that is comparable to previous years). This is found consistent with applied methodology, so **CL #07 related to $EG_{Project\ plant,y}$ was closed**.

J. NET CALORIFIC VALUE OF RICE HUSK AND DIESEL OIL (NCV)

In the registered PDD, the net calorific value of rice husk, diesel and residual oil is measured on a yearly basis according to the national or international approved standards and procedures through a qualified laboratory. However, the applied methodology ACM0006 Version 04 requires the monitoring frequency of NCV measurement of rice husk to be at least every six months, taking at least three samples for each measurement. While NCV of diesel source requires either conduct measurement or use accurate and reliable local or national data where available. Due to, the non compliance of the monitoring parameter leads to **the raising in CAR #04** to revise the monitoring plan of NCV rice husk and diesel to comply with applied methodology. The monitoring frequency of rice husk has been changed to be at least every six months, taking at least three samples for each measurement. The measurement method of NCV diesel has been revised to use the accurate and reliable local or national data. This is in compliance with the approved methodology.

The proposed revised monitoring plan is reflects the realistic plant operation observed during site visit in which the samples of rice husk has been taken at least every six months with at least 3 samples. The monitoring implementation complies with the applied methodology ACM0006 Version 04. NCV of rice husk was carried out by external government laboratories in Thailand (Department of Science Service and the Inspection Unit for Community Product Standard Scientific Center, Nakhon Sawan Rajahat University). The samples were taken at least 3 samples for testing and at least every 6 months comply with the ASTM standard. The certificates were available during site visit and found satisfactory. Therefore, **CAR #04 was closed**. The NCV of rice husk and diesel do not have any impact to MP1 because the revision was made to be consistent with the real implementation and comply with methodology ACM0006 Version 04. The verification report of MP1 shows that NCV of rice husk was carried out once in six months by taking three samples for each measurement. While the NCV of diesel was taken from the supplier's measurement with there is no residue oil. In addition, only qualification of diesel is used in the project emission calculation of MP1.

CAR #02 was also raised to determine the measurement method to comply with the applied methodology. In response, the revised PDD has mentioned that the NCV of diesel oil will conducted either by measurement or applying accurate and reliable local or national data where available. Hence, **CAR #02 related to monitoring plan was closed**.

In addition, the source of rice husk data to be used was unclear as it has been mentioned to ATB (laboratory data). The description of source of data has been revised as measurements shall be carried out through a qualified laboratory and according to relevant international standards. This is found satisfactory and consistent with the applied methodology ACM0006 Version 04.

K. ON-SITE ELECTRICITY IMPORTED ATTRIBUTABLE TO THE PROJECT ACTIVITY ($EC_{PJ,y}$)

In the registered PDD, the on-site electricity consumption attributable to the project activity was missing from the monitoring parameter. Therefore, **CAR #03 was also raised** to include on-site electricity importable to the project activity as the monitoring parameter under section B.7 with measurement method to comply with applied methodology. This missing parameter has been added in the revision of monitoring plan. The on-site electricity consumption attributable to the project activity is continuously monitored using electricity meter from PEA summarized record monthly. The consistency of the data will be cross checked against data from electricity purchase receipts from PEA.

Also, this parameter is affect to the project emission due to on-site electricity imported to the project activity as per applied methodology. Hence the revision is made into section B.3 for the project boundary and section B.6 of the PDD to clarify the formulae to be use. So, the calculation of project emission is revised to be as follows.

$$PE_y = PE_{Ty} + PE_{FFy} + PE_{EC,y} + (GWP_{CH4} * PE_{biomass.CH4.y})$$

Due to, the CO2 emissions from on-site electricity consumption ($PE_{EC,y}$) is calculated by multiplying the electricity consumption ($EC_{PJ,y}$) by an appropriate grid emission factor (EF_{grid}) which is calculated from the latest approved version of ACM0002 . According to the registered PDD, EF_{grid} is updated only once for the

crediting period. This parameter is discussed in section B.6.2 of the revised PDD. Hence, $PE_{EC,y}$ is consistent with the approved methodology ACM0006 Version 04.

$$PE_{EC,y} = EC_{PJ,y} \times EF_{grid,y}$$

Where:

$PE_{EC,y}$ = CO2 emission from on-site electricity consumption attributable to the project activity (tCO2/yr)

$EC_{PJ,y}$ = On-site electricity consumption attributable to the project activity during the year y (MWh)

$EF_{grid,y}$ = CO2 emission factor for grid electricity during the year y (tCO2/MWh)

The proposed revision of monitoring plan is in accordance with the applied monitoring methodology (ACM0006 version 4). The assessment team can confirm that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of revision. Hence, **CAR #03 related to on-site electricity importable to the project activity was also closed**.

Although, the parameter $EC_{PJ,y}$ was not included in the registered monitoring plan and the first monitoring period (21/12/2005 – 30/06/2007). The verification of MP1 was concluded based on the compliance of registered monitoring plan itself. Although the electricity imported from the grid for on-site electricity consumption was duly measured through a meter of PEA which has been calibrated and sealed by PEA. The calibration certificates valid during the first monitoring period were checked and found satisfactory.

Plant record for on-site electricity consumption attributable to the project activity during first monitoring period (21/12/2005-30/06/2007)[4] is presented as below:

Month	on-site electricity consumtion ($EC_{PJ,y}$)	on-site electricity consumtion ($EC_{PJ,y}$)
	kWh	MWh
21/12/2005 - 31/12/2005	117,600.00	117.60
Jan-06	128,800.00	128.80
Feb-06	50,000.00	50.00
Mar-06	113,600.00	113.60
Apr-06	28,000.00	28.00
May-06	56,000.00	56.00
Jun-06	61,200.00	61.20
Jul-06	38,000.00	38.00
Aug-06	8,000.00	8.00
Sep-06	52,400.00	52.40
Oct-06	35,200.00	35.20
Nov-06	3,600.00	3.60
Dec-06	124,000.00	124.00
Jan-07	108,000.00	108.00
Feb-07	2,400.00	2.40
Mar-07	1,600.00	1.60
Apr-07	52,400.00	52.40
May-07	52,800.00	52.80
Jun-07	58,400.00	58.40
Total	**1,092,000.00**	**1,092.00**

$EC_{PJ,y}$ in the first monitoring period (12/12/2005 - 30/06/2007) is verified as 1,092 MWh

According to the registered PDD, the grid emission factor (EF_{grid}) is 0.51 tCO2e/MWh and it will be updated once upon renewal of a crediting period.

Therefore:

$PE_{EC,y}$ = $EC_{PJ,y}$ × $EF_{grid,y}$

= (1,092 MWh) × (0.51 tCO2/MWh)

= 556.92 tCO2/yr

As a matter of fact, this has led to over issuance of 557 tCO2e (figure round up) in the past which contributes around 0.5% of electricity exported. This is miniscule but the PP decided that the CERs generated in the

second monitoring period (01/07/2007 - 31/12/2007) will be deducted by these amounts of emission reduction and its details will be presented in the final monitoring report for second monitoring period.

L. QUANTITY OF BIOMASS RESIDUES OF TYPE k THAT ARE UTILIZED IN THE DEFINED GEOGRAPHICAL REGION

The source of this parameter was specified in the registered PDD that will come from EGAT and EPPO. After that, the revised PDD, the source of data is revised to be taken from the surveys or statistics.

M. QUANTITY OF AVAILABLE BIOMASS RESIDUES OF TYPE k IN THE REGION

The registered PDD mentioned that source of this data will be taken from Agricultural Statistics of Thailand 2004. **CL #07 was also raised** by requesting the Project Participants to clarify how this source can be reviewed annually as mention in the registered PDD. After that, the Project Participants designed to revise source of data will come from surveys or statistics as methodology mentioned. **CL #07 related to surplus of rice husk was closed**.

In conclusion, the proposed changes from the registered monitoring plan and/or monitoring methodology described above are checked and found in compliance with the applied methodology (i.e. ACM0006 version 4) and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan. However, these proposed changes are not applicable as per requirement of appendix1 of project standard (EB65 Annex4 section III) therefore the prior approval from the board is required. These proposed revisions of monitoring plan will be applicable to the monitoring plan from the start of monitoring period 2 (i.e. 01/07/2007) until the end of crediting period.

Based on the revision of monitoring plan described above, there is an impact on the emission reduction of the previous verification (The 1st monitoring period from 21/12/2005 – 30/06/2007) from the missing of electricity consumption imported from grid. The over issuance of emission reduction in the first monitoring period at 557 tCO_2 will be deducted in the emission reduction of second monitoring period. This is found reasonable and acceptable.

4.2 Findings of Previous Verification Reports

No FARs was observed from the first verification report for the monitoring period. (21/12/2005 to 30/06/2007)[4], The same has been checked against verification and certification report, dated 1st May 2008, available at UNFCCC website; http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/iProcess/SGS-UKL1186476022.0/view This is found satisfaction.

5. List of Persons Interviewed

Date	Name	Company	Position	Short Description of Subject Discussed
17-18/03/2012	Mr. Natee Sithiprasasana	A.T. Biopower Co., Ltd.	Deputy Chief Executive Office	- Information regarding to whether the change (actual installation of the gross electricity generating capacity from "approximately 22MW" to "22.5MW) would have been known prior to registration of the project activity, - Decision to install 22.5MW of gross electricity generating capacity, Deduction of the CERs in Monitoring Period 2 (MP2) due to project emission of electricity consumption had not been accounted in Monitoring Period 1 (MP1)
17-18/03/2012	Mr.Suchart Potear	A.T. Biopower Co., Ltd.	Power Plant Manager	Implementation of power plant and monitoring devices
17-18/03/2012	Mr.Rachain Pathan	A.T. Biopower Co., Ltd.	Performance Engineer	Implementation of power plant and monitoring devices
17-18/03/2012	Mr.Sittisak Sugsaisakorn	-	Consultant	Monitoring parameters (moisture content, on-site electricity consumption, NCV of rice husk and diesel oil and utilization of residual oil in the project activity
17-18/03/2012	Ms.Kelly Xia	Gazprom Marketing & Trading Singapore Pte. Ltd	Project Manager	Project Participant change and responsibility of each entities involved

6. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Revised PDD version 05.1 dated 28/11/2012

PDD Version	Date of Revision	Main changes reason for Revision
03	28/11/2011	1. Changing in the gross electricity generating capacity from "approximately 22MW" to "22.5MW" 2. Adding missing monitoring parameters to be consistent with the applied methodology ACM0006 version 4 a. Moisture content of the biomass residues b. On-site electricity consumption attributable to the project activity during the year y ($EC_{PJ,y}$) c. CH_4 emission factor for uncontrolled burning of the biomass residue ($EF_{burning,CH4,k,y}$) d. CO_2 emission factor of diesel ($EF_{CO2,diesel}$) 3. Revising the details of monitoring parameters to be compliance with the applied methodology ACM0006 version 4 a. Net calorific value of rice husk, and diesel oil (NCV) 4. Removal of monitoring parameter (i.e. residual oil) as it has never been and will not be used in the project activity 5. Remove parameter EF_{OM}, EF_{BM}, Fpp, $COEF_{fuel}$, GEN_{pp}, plant name (OM), plant name (BM), EF_{CH4} and $COEF_{CO2}$ 6. Included parameters $COEF_{fuel}$, F_{pp}, GEN_{pp}, Plant name (OM), $COEF_{CO2}$, into section B.6.2 7. Mention "once upon renewal of a crediting period" in parameters EF_{grid}, EF_{OM} and EF_{BM}
04	21/05/2012	1. Changing in Party and entities project participants 2. Removing the detail of the Project Participants as described in section A.3 3. List the main equipments installed in the project activity at table No. 1 4. Removal the NCV of residual oil from the revised PDD. 5. Revision the description of measurement methods and procedures of the monitoring parameters to consistent with the applied methodology ACM0006 version 04.

PDD Version	Date of Revision	Main changes reason for Revision
05.1	28/11/2012	1. Adding "Permanent change from the registered monitoring plan or applied methodology and Change to the project design of a registered project activity" in section A.1 2. Mention the specification of main equipments in table No. 1 3. Changing the project participants in Annex 1 4. Recalculate an estimation of emission reduction under section A.4.4 5. Changing word "rice miller" to "biomass fuel supply sites" in the PDD 6. Complete section B.3 7. Recalculation section B.6.3.2, 6.3.3 and 6.3.4 by applying diesel oil specification 8. Recalculation the summary of the ex-ante estimation of emission reduction in section B.6.4 9. Revise the details of monitoring parameters to be compliance with the applied methodology ACM0006 version 4 a. The description of measurement methods and procedure to be apply of parameter BF b. The description, measurement methods and procedure to be apply, and QA/QC procedure of AVD c. The source of data and QA/QC procedure of $FF_{project\ site}$ and $FF_{project\ plant}$ d. The description and specification of $EG_{project\ plant}$ 10. Revised monitor parameters in Annex 4 to consistent with section B.7.1 11. Provide equation for quantity of rice husk combusted calculation. 12. Revise the calibration period of weight and volume meter to once per 2 years 13. Update date of complete the PDD in the section B.8 14. Include the project emission due to CO_2 emission from electricity import attributable to the project activity 15. Revised the value of emission due to displacement of electricity in section B.6.3.4

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/2/ Registered PDD version 02 dated 25th January 2007; http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view
/3/ Validation Report, 24th March 2007; http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/view
/4/ First Verification report, 1st May 2008; http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/iProcess/SGS-UKL1186476022.0/view
/5/ Methodology number ACM0006 ver. 4 - Consolidated methodology for grid-connected electricity generation from biomass residues
/6/ Validation and Verification Standard Version 02.0
/7/ Clean Development Mechanism Project standard Version 01.0
/8/ Clean Development Mechanism Project Cycle Procedure Version 02.0
/9/ EB 48 Annex 66
/10/ EB 48 Annex 67
/11/ EB 49 Annex 28
/12/ EB 59 meeting report
/13/ Letter of Approval from United Kingdom of Great Britain and Northern Ireland to "A.T. Biopower

Rice Husk Power Project in Pichit, Thailand" The Secretary of State for Energy for Energy and Climate Change, reference No. GazpromPte/01/2011, issued on 28/02/2011.

/14/ ATB Rice Husk Specification and Test Report for Moisture Content
(1) Moisture Content - Testing laboratory by Science Center of Nakhonsawan University, dated 24th – 26th September 2007 (10 samples)
(2) NCV on dry weight basis - Internal testing laboratory by ATB, dated 4th August2007 (3 samples)

/15/ ATB Electricity Receipt of October 140708

/16/ Technical specification of rice husk electricity generating capacity (22.5MW) and its nameplate

/17/ Purchase Power Agreement, Reference no. 44/7 – 5H – 0905, dated 04/04/2004

/18/ Regulation for calibration of weight and fuel meters by the Central Bureau of Weight and Measures, Ministry of Commerce

/19/ Self declaration to confirm the amount of fossil fuel consumption in start up operation, date 28/09/2012, Reference No. ATB-PCH-2012-09-043, signed by A.T. Biopower Co., Ltd. power plant manager

/20/ Fossil fuel meter certification of calibration, date 26/09/2007, Reference No. TES-07/001, signed by customer service manager of Tatsuno Engineering & Service Co., Ltd

/21/ Rice Husk stock pile report, issue on 04/01/2008 by Minthai Limited

/22/ Calculation Spreadsheet

/23/ Performance test report, which was done by Electrowatt-Ekono, Project No. 300315, Report No. PCT-460-019 Rev.A

/24/ Calculation of electrical station service transformer sizing by EPC contractor

/25/ Specification of steam turbine, manufacture model C9-R17-ERX, rated output (at generator terminal 22.5 MW)

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A.1 Annex 1 Validation Checklist

Validation of the Revised PDD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs

A. General Description of Project Activity				
A.1. Project Title				
A.1.1. Is there an indication of a revision number and the date of the revision?	VVS para 62 PDD (VVM)section A.1 PDD (VVS) page 1	DR	Yes, there is an indication of a revision number and the date of the revision shown under section A.1 of the PDD.	OK
A.2. Description of the changes of the Project Activity				
A.2.1. Does the description of the CDM project activity as contained in the revised PDD sufficiently cover all relevant elements accurately? Does it give a clear description of the changes as compared to the description in the registered PDD?	VVS para 63 PDD (VVM) section A.2 see also A.4, A.4.3 and B.3 PDD (VVS) section A1 see also A2.4, A3 and B.3	DR	The main changes reasons contribute to the revised PDD are summary as mentioned. 1. Changing in the gross electricity generating capacity from "approximately 22MW" to "22.5MW" 2. Changing in the project participants name list 3. Changing in estimation of project activity emission 4. Adding missing monitoring parameters to be consistent with the applied methodology ACM0006 version 4 a. Moisture content of the biomass residues b. On-site electricity consumption attributable to the project activity during the year y ($EC_{PJ,y}$) 5. Revising the details of monitoring parameters to be compliance with the applied methodology ACM0006 version 4 a. Net calorific value of rice husk, and diesel oil (NCV) b. Quantity of rice husk combusted in the ATB plant (BF) c. Average return trip distance between biomass fuel supply sites or the origin	OK

			of the biomass and ATB plant (AVD) 6. Removal of monitoring parameter (i.e. residual oil) as it has never been and will not be used in the project activity 7. Revise the type of used fuel oil from residual oil to diesel oil. Then the specification of fuel for calculation has been changed to diesel oil The changes as above mentioned have raised no concern to the additionality, scale of the project and applicability. Thus, the project is required to submission the Notification of Changes from Project Activity Processing as described in the registered PDD to the EB. Details are clearly discussed in the Section A.2.2-A.2.7, A.3 and propose a Notification of Changes from Project Activity as described in the registered PDD.	

A.2.2. Is all information provided consistent and in compliance with the actual situation or planning?	VVS para 77 PDD (VVM) section A.2 see also A.4, A.4.3 and B.3 PDD (VVS) section A1 see also A2.4, A3 and B.3	DR	Yes, all information provided consistent and in compliance with the actual situation. The gross electricity generating capacity 22.5MW has been checked with the technical specification of rice husk electricity generating capacity and its nameplate and found consistent. As the residual oil has not been used and will not be used in the future. This has been observed during the site visit and documentations review (i.e. plant record and fossil fuel calibration certification). Then the residual oil has been removed from the monitoring plan and the ex-ante calculation emission reduction. The qualification of the diesel has been replaced in CO_2 emission from on-site consumption of fossil fuels calculation.	OK
A.2.3. Are the changes permanent changes from the registered project activity under one of the following situations?	Para 7 of Annex 66 to EB 48 meeting	DR	As per EB48 Annex66 para 7 (a) The project has never been implemented in accordance with description in the registered PDD; or (b) Permanent changes occur after the project activity has been implemented in accordance with the description in the PDD and issuance of CERs has taken place. The assessment team has checked and confirmed that the change is falls in Option (a) The project has never been implemented in accordance with description in the registered PDD. Also follow the VVS track; this is categorized as Correction because no any change made to the project design only typographical error in the registered PDD. **Details:** Issuance request state: Issued	OK

			CERs requested: 100678 Serial Range: Block start: TH-5-1-1-1-0-1026 Block end: TH-5-100678-1-1-0-1026. **Ref:** http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2/iProcess/SGS-UKL1186476022.0/view	

A.2.4. When did the changes occur?	Para 10(b) of Annex 66 to EB 48 meeting	DR	The changes had been known prior to registration of the project activity	OK
A.2.5. What are the reasons for these changes taking place?	Para 10(b) of Annex 66 to EB 48 meeting	DR	It was not realized by PP that installation of the gross electricity generating capacity "22.5MW" is inconsistent with "approximately 22MW" as mentioned in the registered PDD. From the PPA with a 25-year firm agreement, the contracted capacity of electricity purchasing (PPA with reference no. 44/7 – 5H – 0905, dated 04/04/2004) is limited to 20MW. This can be assured that this CDM project will not export electricity higher than 20MW as consistent of description in the registered PDD respectively. The assessment team has checked this document and found satisfactory.	OK
A.2.6. Would the changes have been known prior to registration of the project activity?	Para 10(b) of Annex 66 to EB 48 meeting	DR	20 MW net generating capacity" which is same with the registered PDD. However, the PP has also submitted the performance test report dated 10th April 2006 which was before the project registration dated (18th June 2007). The performance test report showed that the maximum test conditions were done and achieving stable operation at 20 MW.	OK
A.2.7. How would the changes impact the overall operation/ability of the project activity to deliver emission reductions as stated in the registered PDD?	Para 10(b) of Annex 66 to EB 48 meeting	DR	As the change in the revised PDD is caused by the capacity installation of the generator from approximately 22 MW in the original register PDD to 22.5 MW. However, the purchase agreements (PPAs) between the PP and EGAT have been signed for 25 years with a contracted capacity of 20 MW. However, the estimation of emission reduction is decreased due to the increasing of project emission estimation. This causes from the changes of fossil fuel consumption in boiler start up and qualification of fossil fuel type. They affect to the increasing of CO_2 emission from on-site consumption of fossil fuels.	OK

A.3. Technical Description of the Project Activity				
A.3.1. Is the table required for the indication of projected emission reductions correctly applied and do the changes to the PDD result in a change in the total emission reductions?	VVS para 77 PDD (VVM) section A.4 PDD (VVS), A3	DR	The table for projected emission reduction indication is applied correctly. The changes in the PDD affect to the total emission reduction in the registered PDD. The changes of fossil fuel consumption in boiler start up and qualification of fossil fuel type affect to the increasing of CO_2 emission from on-site consumption of fossil fuels, which is the project emission. Then the total emission reduction is decreased.	OK
A.4. Scale of project activity				
A.4.1. Is the project activity a small scale or large scale project activity according to the original registered PDD?	PDD (VVM) section A.2, A.4.4, B.1 and B.2 PDD (VVS) section A.1, B.6, B.1 and B.2	DR	By following the original register PDD, the project activity is large scale, which 20 MW of net electricity can be generated and 70,511 tonnes of CO_{2e} can be reduced.	OK
A.4.2. Is the current project activity a small scale or large scale project activity according to the revised PDD?	PDD (VVM) section A.2, A.4.4, B.1 and B.2 PDD (VVS) section A.1, B.6, B.1 and B.2	DR	The project activity according to the revised PDD is still the large scale. The net electricity can be generated and sold to EGAT though a power purchase agreement (PPA) at 20 MW. Moreover, the approved methodology ACM0006 version 04 is applied to the project activity.	OK
A.4.3. Is there any simplified modalities applicable to small-scale project activities, including the applicability and the application of relevant small-scale baseline methodologies that is no longer applicable?	VVS paragraph 149	DR	No, the project activity is still the large scale. The changes in the PDD do not effect to the scale of the project activity. The applicability and the application of relevant large scale baseline methodology are still valid in the revised PDD.	OK
B. Baseline Methodology				
B.1. Choice and Applicability				
B.1.1. Is there any changes related to	VVS paragraph	DR	No, there are no any changes related to the project	OK

the applicability?	70/72/73/76		applicability. The project activity still generates electricity connected to grid by using biomass residue as a resource.	
B.1.2. Is the selected approved methodology applicable to the project activity in the revised PDD?	PDD (VVM) section B (B.1-B.2) PDD (VVS) section B (B.1-B.2)	DR	The revised PDD selects an approved methodology ACM0006 version 04, which is the same methodology and version with the original register PDD.	OK
B.1.3. If the project activity was originally a small scale project activity applying small scale methodology, do the changes have such impact that the methodology is not applicable to the current project activity?	PDD (VVM) section B (B.1-B.2) PDD (VVS) section B (B.1-B.2)	DR	The original register PDD is the large scale.	OK
B.2. Project Boundary				
B.2.1. As a result of the implementation of the CDM project activity are there any sources added to the project boundary which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology?	VVS paragraph 87	DR	According to the comparison between the original registered PDD and the revised PDD, no other sources added to the project boundary. A biomass fuel, especially rice husk is the main source of the power plant.	OK
B.3. .Additionality : *Within this category are the changes which may impact the validity of investment analysis or barrier analysis established at the time of project registration, thus affecting the additionality of the project activity. Simply state "No change has been made in this regard" if no changes has been made in relate to the questions.*				
B.3.1. Does the PDD clearly demonstrate the additionality using the approach as specified	VVS para 72D/102 PDD (VVM) Section	*DR*	No, there are no any changes related to the project applicability. The project activity still generates electricity connected to grid by using biomass residue	OK

in the methodology and by following all the required steps?	B.1/B.4/B.5 PDD (VVS) B.1 B.1/B.4/B.5		as a resource.	
B.3.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	PDD (VVM) Section B.1/B.4/B.5 PDD (VVS) B.1 B.1/B.4/B.5	DR	The revised PDD selects an approved methodology ACM0006 version 04, which is the same methodology and version with the original register PDD.	OK
B.3.3. Has all information been backed up with references, sources and certification? Is the data presented credible and reliable with complete transparency to all available data and documentation?	VVS para 98/100 PDD (VVM) Section B PDD (VVS) Section B	DR	All the information has been back up systematically. These have been provided with accessed references by the PP. PP provided the construction work for Pichit plant started document to confirm the project starting date. Moreover, sources of the rice husk used and the surplus had been described and provided clearly	OK
B.3.4. Are all credible and plausible alternatives correctly identified? Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	VVS paragraph 90	DR	All credible and plausible alternatives are correctly identified. There are 5 credible and plausible alternatives, which technologies and practices included. However, only 3 are the alternatives to the project activity consistent with current laws and regulation. 1. Project will not be undertaken as a CDM project 2. Project will install a power plant and using the same type of biomass but provide a lower electrical efficiency. 3. The generation of power in existing and/or new grid power plants. No change has been made in the part of credible and plausible alternatives.	OK

B.3.5. If an investment analysis has been used, has it been demonstrated that the proposed project activity is not the most economically or financially attractive alternative, or is not economically or financially feasible, without the revenue from the sale of CERs	VVS para 114/115/116/117/119 PDD (VVM) Section B.5 PDD (VVS) B.5	DR	The project activity applies the technological and investment barrier analysis. This is not applicable.	OK
B.3.6. Is the investment analysis carried out in accordance with specific guidance from EB?	EB 51 Annex 58 EB 48 Annex 11	DR	This is not applicable. The project activity applies the technological and investment barrier analysis.	OK
B.3.7. Is the investment analysis based on all original input data?	EB 48 Annex 67 Para 8	DR	The project activity applies the technological and investment barrier analysis.	OK
B.3.8. Is the investment analysis complete and accurate? (Important)	PDD (VVM) Section B.5 PDD (VVS) Section B.5 EB 51 Annex 58 EB 54 Para 53 EB 53 Annex 32	DR	The project activity applies the technological and investment barrier analysis.	OK
B.3.9. Does the investment analysis rely on the values from Feasibility Study Reports (FSR) that approved by national authorities for proposed CDM project activity?	PDD (VVM) Section B.5 PDD (VVS) Section B.5	DR	The project activity applies the technological and investment barrier analysis.	OK
B.3.10. If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the tool /methodology and it represents standard returns in the market (not linked to the subjective profitability expectation or risk	PDD (VVM) Section B.5 PDD (VVS) Section B.5 EB 51 Annex 58	DR	The project activity applies the technological and investment barrier analysis. The benchmark is not required.	OK

profile of a particular project developer).	EB 51 Annex 59			
B.3.11. Are the barriers still valid under new circumstances?	EB 48 Annex 67 Para 9	DR	Yes, the barriers are still valid under the revised PDD. The project activity faces the investment and technological barriers.	OK
B.3.12. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	PDD (VVM) Section B.5 PDD (VVS) Section B.5	DR	The project activity faces 2 kinds of barriers. They are technological and investment barriers. In term of technology, this project applies the first suspension-fire technology to rice husk in Thailand. Therefore, technology can be unforeseen problems. No one in Thailand have previous experience with this kind of technology, project entails a comprehensive program to train local employee for operation and maintenance. A major investment barrier is the source of the power plant. Project sources its rice husk from a great number of smaller mills. While, other have a large rice mill as a core project sponsor and the rice husk will be used at their plants. This is not affected from the changed or monitoring plan revised. The increasing of 0.5 MW installed capacity of electricity generation and fossil fuel consumption for start up in boiler do not mitigate the risk of technological barriers as it has no any affected to the previous experience of the employed technology and neither skill of engineers nor operating staff in this technology. Moreover, there is no linkage between the additional installed capacity and its barrier.	OK
B.3.13. Is the discussion on additionality consistent with the identification of all plausible and credible baseline scenarios?	PDD (VVM) Section B.5 PDD (VVS) Section B.5	DR	The additionality identifies of all plausible and credible. 1. The proposed project activity not undertaken as a CDM project activity. 2. The proposed project activity with lower electrical energy efficiency. This information in the registered PDD is still consistent with the revised PDD.	OK
B.3.14. Has the barriers correctly	VVS paragraph 124-	*DR*	Yes, the barriers has identified correctly. Technology	OK

identified and they prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives.	127		and investment barriers prevent the implementation of the project activity but not the implementation of the possible alternatives. They are the generation of power in existing and/or new grid-connected power plants and the uncontrolled disposal of rice husk. All the barriers have been validated and confirmed as shown in the validation report.	
B.3.15. If a barrier analysis has been used have the 'guidelines for objective demonstration and assessment of barriers' been followed? Have all applicable steps been considered and substantiated with objective evidence?	EB 50 Annex 13	DR	In the registered PDD, the barrier analysis has been followed all applicable steps. This is still applicable and consistent with the registered PDD.	OK
B.3.16. Do the identified baseline scenarios include technologies and practices that include outputs or services comparable with the proposed CDM project activity? Do they also abide by the same applicable laws and legislations?	PDD (VVM) Section A.4.3/B.5 PDD (VVS) section A.3 and B.5	DR	Additionally confirm all relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. As there is no Thailand's legal and regulatory requirements dictating. The baseline of the project activity is the biomass is dumped or left to decay or burned in an uncontrolled manner without utilizing for energy purposes.	OK
B.3.17. Is the proposed project type be justified as first-of-its kind?	PDD (VVM) Section B.5 PDD (VVS) section B.5	DR	The proposed project activity is not justified as first-of-its-kinds. Nine power plants in Thailand use rice husk as fuel. 4 of them are single-fuel plants and other 5 are multi-fuel plants.	OK
B.3.18. Is the project activity not common practice?	VVS para 128 PDD (VVM) Section B.5 PDD (VVS) section B.5	DR	The project activity is not a common practice, which is confirmed in the validation report by another DOE. The project participants had provided an analysis of the power plants in Thailand, which rice husk is used as fuel. It was demonstrated that the proposed project is different to other power plants, which are power plants owned and have a single supply of rice husk. On the other hand, sources of the proposed project comes	OK

			from many small suppliers and do not have a major suppliers.	

B.3.19. What are the key distinctions between the project activity and any similar projects that are widely used as common practice?	VVS para 128 PDD (VVM) Section B.5 PDD (VVS) section B.5	DR	The project activity is different from other projects, which all power plants are own by or attached to rice mills or other food processing plants. While, the project participants find rice husk from many small suppliers. Some power plants, which sources are similar to the project activity, but size of the power plants are much smaller plant (6MW) and also they are non-firm power producers.	OK
B.3.20. Is the proposed project activity still additional?	PDD (VVM) Section B.5 PDD (VVS) section B.5	DR	The proposed project activity is still additional. The permanence changes of the PDD cause from 0.5 MW increasing in an installation capacity of electricity generation. Therefore, it does not mitigate the risk of technological and investment barriers. This project activity applies tool for the demonstration and assessment of additionality version 2. At step 3 has been mentioned clearly that if one of sub-steps 3a and 3b is not satisfied, the project activity is not additional. From the validation report, which had been done by Det Norske Veritas (DNV), states that the investment and technological barriers will not affect the alternatives to the project.	OK
B.4. Algorithms and/or formulae used to determine emission reductions *(only discuss the changes to the algorithms and formulae, whether the changed new ones are in compliance with the approved methodology. In cases where the proposed revision refers to a later version of the applied methodology, it should be ensured that the application does not compromise the conservativeness in the monitoring and verification process and of the emission reduction calculations.)*				
B.4.1. Has the approved methodology been applied correctly for determining **baseline emissions**?	VVS para 99/100 PDD (VVM) Section B (B.6.1 -B.71) PDD (VVS) Section B (B.6.1 -B.71)	DR	The approved methodology ACM0006 has been applied to the baseline emission of project activity correctly. Baseline emissions come from CO_2 emission for grid electricity generation and CH_4 emission for uncontrolled disposal (burning) for rice husk.	OK
B.4.2. Has the approved methodology been applied	VVS para 99/100	DR	The approved methodology ACM0006 has been applied to the project emissions correctly.	OK

correctly for determining **project emissions**?	PDD (VVM) Section B (B.6.2-B.71) PDD VVS (B.6 – B.7)		As the on-site electricity import attributable to the project activity is missed parameter in the registered PDD, so this parameter is added into the revision of the monitoring plan. An approach based on distance and vehicle type or on fuel consumption. The emissions come from CO_2 emissions from on-site consumption of fossil fuels and CH_4 emissions from combustion of biomass residues. Duo to the residual oil was changed to diesel, then the qualification of diesel was used in CO_2 emission from on-site consumption of fossil fuel. Therefore, the changing in the estimation of project activity emission occurs from the recalculate of CO_2 emission from on-site consumption of fossil fuel and electricity consumption.	
B.4.3. Has the approved methodology been applied correctly for determining **leakage**?	VVS para 99/100 PDD (VVM) Section B (B.6.2-B.71) PDD VVS (B.6 – B.7)	DR	An approved methodology ACM0006 has been applied correctly for leakage determination. An increasing of fossil fuel oil consumption by the project activity has to be demonstrated. Moreover, the usual distances for biomass transport, which cover radius around project activity at least 20 km but no more than 200 km, should be taken into account.	OK
B.4.4. Where applicable, has the approved methodology been applied correctly for the **direct calculation of emission reductions?**	VVS para 99/100 PDD (VVM) Section B (B.6.2-B.71) PDD VVS (B.6 – B.7)	DR	An equation of direct emission reductions calculation has been mentioned in section B.6.1.4 of the PDD. Emission reduction comes from baseline emission of the project activity minus with project emission.	OK
B.4.5. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVS para 99/100 PDD (VVM) Section B (B.6.2-B.71) PDD VVS (B.6 – B.7)	DR	All operational characteristics and baseline have been indicated in section B.6.1. The different scenarios or cases has been explained and justified. The baseline scenario fits under scenario 2. By following the applied methodology ACM0006. All the default values have been described clearly in	OK

			section B.6.2 of the PDD. The project chooses the simple OM calculation methodology by following an applied methodology ACM0002. Emission factors of the grid, operation margin and build margin have been explained clearly in section B.6.2 of the PDD as fixed ex-ante and will be review once upon the renewal of a crediting period.	

B.4.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	PDD Sections B.5-C	DR	By following methodology ACM0006, the conservativeness factor is 1.37 for maximum uncertainty range of over 100. This value is mentioned in table 3 at section Annex 3 of the PDD.	*OK*
B.5. Ex-ante Data and Parameters Used *(only discuss the changes to the ex-ante data and parameters, whether the changed new ones are in compliance with the approved methodology. In cases where the proposed revision refers to a later version of the applied methodology, it should be ensured that the application does not compromise the conservativeness in the monitoring and verification process and of the emission reduction calculations.)*				
B.5.1. Are the data provided in compliance with the methodology?	VVS para 99 PDD Section B.6.3B.6.4	DR	All the ex-ante data are provided in section B.6.3 of the PDD in compliance with the methodology. All data had been shown with the supporting documents.	OK
B.5.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	VVS para 99 PDD (VVM) Section B.6.3 PDD (VVS) Section B.6.3/B.6.4/B.6.4	DR	The choices of data and parameters used in the equations have been shown transparently with the supporting documents. The evidences come from monitoring and publicly available sources. However, the emission from the fossil fuel was used the specification of residual oil as mention in the registered PDD. Then the residual oil is removed from the revised PDD as it has not been used and will not be used in the future. Therefore, the fossil fuel emission was changed to use the diesel oil specification in calculation. The carbon emission factor, density and NCV are changed to 74,100 kgCO2/TJ, 843.9 kg/m3 and 43.0 TJ/Gg respectively. All the values have been checked against the IPCC value and Annex 3 of Energy Statistic Manual OECD. They are found apply correctly.	OK
B.5.3. Is the vintage of the baseline data correct?	PDD (VVM) Section B.6.3 PDD (VVS) Section B.6.3/B.6.4/B.6.4	DR	The vintage of the baseline data is corrected. The most recent data has been used to verify.	OK
B.5.4. Is all the data appropriate and correctly applied to the CDM project activity?	PDD (VVM) Section B.6.3 PDD (VVS) Section B.6.3/B.6.4/B.6.4	DR	As all the data is appropriated and correctly applied to the project activity. All the data sources have been verified and found correctly. Therefore, the output is conservative estimate of emission reduction..	OK

B.5.5. Are data and parameters that are not being monitored and remained fixed throughout the crediting period appropriately assessed, correct, and will they result in conservative estimates?	VVS para 99 PDD (VVM) Section B.6.3 PDD (VVS) Section B.6.3/B.6.4/B.6.4	DR	Yeas, the data and parameters that remained fixed throughout the crediting period assesses appropriately and correctly. All the default values are mentioned in section B.6.2 of he PDD. There are global warming potential and grid emission factor calculation. Sources of data come from IPCC default value and EGAT's grid generation and fuel consumption between year 2001 to 2003.	OK
B.6. Calculation of Emissions Reductions *(only discuss the changes to the calculation of Emission reductions, whether the changed new ones are in compliance with the approved methodology. In cases where the proposed revision refers to a later version of the applied methodology, it should be ensured that the application does not compromise the conservativeness in the monitoring and verification process and of the emission reduction calculations.)*				
B.6.1. Has the approved methodology been applied correctly for determining **emission reductions**?	PDD (VVM) Section A.4.4/B.6 PDD (VVS) Section B.6	DR	Yes, the approved methodology has been applied to determine the emission reduction correctly. The equation of the emission reduction is the baseline emission of the project activity minus with the project emission. The baseline emission of activity comes from displacement of grid electricity and uncontrolled disposal of rice husk. For project emission, off-site transportation, on-site consumption of fossil fuels and on-site combustion of biomass are the calculation sources.	OK
B.6.2. Are the emission reduction calculations documented in a complete and transparent manner?	PDD (VVM) Section B.6 PDD (VVS) Section and B.6	DR	Yes, the emission reduction calculations are documented in a complete and transparent manner. Sources of data come from publicly available and monitoring period.	OK
B.6.3. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	PDD (VVM) Section B.6 PDD (VVS) Section and B.6	DR	Yes, the project is based on the same procedures as used for later monitoring. They will be monitored by using meter equipments and laboratory methodologies.	OK
B.6.4. Is the calculation of the emission reduction correct?	PDD (VVM) Section	DR	Yes, the emission reduction calculation is correct. The information in the revised PDD is the same with the	OK

	B.6 PDD (VVS) Section and B.6		original registered PDD. The used equations are consistent with the methodology ACM0006 version 04.	
B.6.5. Is the form/table required for the indication of projected emission reductions correctly applied?	PDD (VVM) Section A.4.4/B.6 PDD (VVS) Section B.6	DR	Yes, the form/table required for the indication of the project emission reductions is correctly applied. It is in section B.6.4 of the PDD.	OK
B.7. Baseline Details				
B.7.1. Is there any indication of a date when determining the baseline?	PDD (VVM) Section B.8/Annex 3 PDD (VVS) Section F and Annex 4	DR	Yes, date to determine the baseline study and monitoring methodology is indicated. It is completion on 25/01/2007.	OK
B.7.2. Is this consistent with the time line of the PDD history?	Also see revision history of the PDD	DR	Yes, a completion date is consistent with the timeline of the PDD history. Date in the revised PDD is also the same date with the original registered PDD.	OK
B.7.3. Is all data required provided in a complete manner by annex 3 (VVM) annex 4 (VVS) of the PDD?	PDD (VVM) Annex 3 PDD (VVS) Annex 4	DR	All the baseline information has been provided with a complete manner in section Annex 3 of the PDD. All the data has been provided with the reference sources.	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
B.8. General Requirements *(Note that the sections B.8.1B.8.4 may be completed after the other sections are completed) (RMP)*				
B.8.1. Is the revision in the monitoring plan based on a decision by the CDM EB	*EB49, Annex 29*	*DR*	Yes, the revision in the monitoring plan is based on a decision by the CDM EB 49 Annex 23. The proposed revision includes not only the requested by the CDM EB, but also the additional revisions proposed by the DOE.	OK
B.8.2. Is the revision based on a decision by CDM EB but also additional revisions are proposed by the PP/DOE	EB49, Annex 29	DR	Yes, the revision is the proposed revision includes not only the request by the CDM EB but also the additional revisions proposed by the PP/DOE. According to the appendix 1 of the Clean Development Mechanism Project Standard, the proposed revision of the monitoring plan does not meet paragraph 4 and 5, so it is required prior approval by the board.	OK
B.8.3. Is the need for revision in monitoring plan spotted during the first monitoring period?	EB49, Annex 29 Project page on UNFCCC website	DR	No, the need for revision in monitoring plan cannot be spotted during the first monitoring period.	OK
B.8.4. Is the revised monitoring plan complete and does the revised monitoring plan follow the registered PDD template?	*Registered PDD*	*DR*	Yes, the revised monitoring plan is complete and does the revised monitoring plan follow the registered PDD template. The revised monitoring plan is covered in section B.7.1 of the PDD form version 0.3.1	OK
B.8.5. Has the revised monitoring plan submitted in track change mode for each of the revision point (issue)?	*Revised monitoring plan*	*DR*	Yes, the revised monitoring plan has submitted in track change mode for each of the revision point in word file.	OK
B.8.6. is there an objective evidence for each of the	*Revised MP*	DR	Yes, the objective evidences are submitted for each of the proposed	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
proposed revision point (issue)?			pint. They are the technical specification of the A.T. Biopower Co.,Ltd., electricity bills, data of moisture content analysis and the diesel oil test report.	
B.8.7. Does the revised monitoring plan also include the Annex 4?	Registered PDD	*DR*	Yes, the revised monitoring plan also include in the Annex 4 of the revised PDD. The revised monitoring plan has been described in both section B.7.1 and Annex 4 of the PDD	OK
B.8.8. Does the revised monitoring plan lead/associate to any kind of change in the project registered design?	Registered PDD & EB48 Annex 66-67	*DR*	No, the revised monitoring plan does not lead/associate to any kind of change in the original registered PDD. The permanence change in the PDD cause from 0.5 MW increasing of the installed capacity. However this can be confirmed during the site visit. The site visit can confirm that there is no changed cause from the revised monitoring plan.	OK
B.9. Data and Parameters Monitored				
B.9.1. What has been changed in the revised monitoring plan, compared to the registered one ore previously approved one?	Registered PDD Previously approved RMP	DR	In the revised PDD, the monitoring plan has been revised by the following parameters; *1.* The moisture content of biomass residue is added *2.* On-site electricity consumption attributable to the project activity is added *3.* Net Calorific Value (NCV) of rice husk is revised the measurement frequency *4.* Net Calorific Value (NCV) of diesel oil is revised the measurement frequency *5.* Net Calorific Value (NCV) of residue oil is removed *6.* CO_2 emissions due to electricity consumption at the project site will	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
			be accounted 7. Quantity of rice husk that arrive the project site is revised the calibration frequency and the frequency of doing energy balance for cross checking 8. Calibration frequency of the fuel meter to measure the amount of diesel oil consumption for on-site transportation of rice husk	

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
B.9.2. Does the revised monitoring plan in the PDD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	Revised PDD (VVM) Section B.7 Revised PDD (VVS) Section B.2 and B.7 EB49, annex 2, para 9	DR	Yes, the revised monitoring plan in the PDD is complied and in accordance with the approved methodology ACM0006 version 04. By applying this proposed revision of monitoring plan, the moisture content of biomass residue, and on-site electricity consumption attributable to the project activity ($EC_{PJ,y}$) are added as monitoring parameters. The net calorific value (NCV) of rice husk and diesel oil are revised to be measured at least every six months, taking at least three samples for each measurement. The NCV of residual oil is removed and no more monitoring require as it has never been and will not be used in the project activity. The project emission "CO2 emissions due to electricity consumption at the project site ($PE_{EC,y}$)" will be accounted and its calculation is done by using on-site electricity consumption attributable to the project activity ($EC_{PJ,y}$)and multiply with grid emission factor (EF_{grid}).	OK
B.9.3. Are the changes in the revised monitoring plan inline to the applied methodology and tool?	*Applicable methdology including version*	DR	7 parameters are revised in the monitoring plan. 1. <u>Moisture content of the biomass residues</u> In the registered PDD, the moisture content was not including as the monitoring parameter however the project owner has monitored this parameter in line with the applied monitoring methodology 2. <u>On-site electricity consumption attributable to the project activity is added</u> In the registered PDD, the on-site electricity consumption attributable to the project activity was missing from the monitoring parameter. 3. <u>CO2 emissions due to electricity consumption at the project site</u> The proposed revision of monitoring plan is in accordance with the applied monitoring methodology (ACM0006 version 4. The assessment can confirm that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of revision.The CO2 emissions from on-site electricity consumption ($PE_{EC,y}$)	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
			are calculated by multiplying the electricity consumption ($EC_{PJ,y}$) by an appropriate grid emission factor (EF_{grid}) which calculate from the latest approved version of ACM0002 4. Net Calorific Value (NCV) of diesel oil and rice husk The applied methodology ACM0006 Version04 requires the monitoring frequency of NCV measurement to be at least every six months, taking at least three samples for each measurement. The incompliance of monitoring parameter opt to the revision of monitoring plan 5. Net Calorific Value (NCV) of residue oil This is removed due to it has not be used. 6. Quantity of the risk husk deliver to project site The calibration frequency of the weight meter is revised to conduct once in 2 years based on the national regulation. The energy balance will be conducted annually to comply with the methodology ACM.0006 version 04. 7. Quantity of fuel oil consumption for on-site transportation of rice husk The calibration frequency of the fuel meter is revised to conduct once in 2 years based on the national regulation notification.	

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
B.9.4. Whether a later version of the applied methodology including the tools referred by the later version of methodology which is not quoted in the original applied one is referred in the revised monitoring plan?	EB 49 Annex 28	DR	No, there are not other approved methodologies in the revised PDD. The applied methodology is still ACM.0006 version 04.	OK
B.9.5. Are the changes affecting the ER calculation (directly/indirectly)?	Revised MP	DR	Yes, the changes affect the ER calculation. The emission reduction in the revised PDD is 70,511 TCO_{2e} annually, which is reduction from 70,772 TCO_{2e} annually in the registered PDD. This causes from the changing qualification of fossil fuel in conversion of volume to weight and the amount of fossil fuel used in boiler start-up.	OK
B.9.6. Is it able to ensure that the level of accuracy and completeness in the monitoring and verification process will not be reduced as a result of the proposed revision.	EB49, annex 28, para 9	DR	Yes, it is able to ensure that the level of accuracy and completeness in the monitoring and verification process will not be reduced as a result of the proposed revision. The monitoring equipments and measurement methods are calibrated and conducted to comply with the methodology ACM.0006 version 04 and the national regulation. The NCV of the diesel oil and rice husk will be measured at least every 6 months by taking at least 3 samples for each measurement according to the national or international approved standard. Moisture content will be done for each truck that deliver rice husk to site. The analyzer will be calibrated at least once in 2 years. On site electricity consumption will be measured continuously with daily record. The meter will be calibrated annually by the PEA.	OK
B.9.7. Has there been an issuance with the original monitoring plan of the	Project page on UNFCCC website	DR	Yes, the MP1 was an issuance with the original monitoring plan of the register PDD.	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
registered PDD in the past? B.9.8. if so how did the identified gaps effect the ER calculations for the monitoring periods in the past?			Since the on-site electricity consumption from the grid was not considered in the MP1, so the project emission was less than the actual implementation. 15% of moisture content of the biomass residue came from the rice husk specification of the A.T. Biopower, so the revised monitoring plan is revised to measure by the moisture content analyzer. This male the baseline is realistic and conservative. The frequencies to conduct NCV of the rice husk and diesel oil are complied with the methodology ACM0006 version 04. This make the project emission is more conservative and correctness. Other parameters were monitored and calculated in accordance with the apply methodology. Therefore, only on-site electricity consumption from the grid has impact to the CER of MP1. The PP decided that the CERs generated in the second monitoring period (01/07/2007 - 31/12/2007) will be deducted by these amounts of emission reduction and its details will be presented in the final monitoring report for second monitoring period.	
B.10. Operational and Management Structure				
B.10.1. Is the authority and responsibility of project management clearly described?	PDD (VVM) Section B.7.2 /Annex 4 PDD (VVS) Section B.7 and Annex 5	DR	Yes, the authority and responsibility of the project management clearly described. The plant manager and operators will be responsible for execution of the monitoring plan.	OK
B.10.2. Is the authority and responsibility for	PDD (VVM) Section B.7.2	DR	Yes, the authority and responsibility for registration, monitoring, measurement and reporting clearly described. The plant manager and	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
registration, monitoring, measurement and reporting clearly described?	/Annex 4 PDD (VVS) Section B.7 and Annex 5		operators will collect and archive relevant data in a systematic and reliable way, evaluate them regularly, generate reports and ensure the availability of pertinent information for verification. ATB will outline the general guidance on performing the monitoring plan.	
B.11. Detail monitoring plan *(Below questions is to help you check if the RMP did not reduce the level of completeness and accuracy of monitoring and future verification)*				
B.11.1. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	VVS paragraph 131-133	DR	Yes, the monitoring plan describes completely all measures to be implemented for monitoring all parameters required. ATB will outline the general guidance on performing the monitoring plan by establishment of a transparent system for the data monitoring, collection, computation and recording.	OK
B.11.2. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	VVS paragraph 131-133 Revised MP	DR	Yes, the monitoring plan provides information on monitoring equipment and respective positioning in order to safeguard a proper installation. ATB will develop a protocol that provides routines procedures for electronic based data monitoring and record keeping processes. It will be fit for independent auditing.	OK
B.11.3. Is there any change proposed in the specifications of the monitoring equipment or their positioning or installation then the impact of the change due to revision should be assessed and it not	EB49, annex 2, para 9	DR	The specifications of the monitoring equipments or their positioning or installation are the same as mentions in the registered PDD and MP1.	OK

Checklist Question	Reference	MoV*	Comments	Conclusion/ CARs/CLs
result in reduced level of accuracy and completeness in the monitoring and verification process				
B.11.4. Are procedures identified for calibration of monitoring equipment?	VVS paragraph 131-133 Revised MP	DR	Yes, the procedures will be identified for calibration of monitoring equipment. ATB will develop an "Equipment Calibration Procedures" booklet, which delineates the frequency and detail of each equipment calibration and maintenance. All the equipments are calibrated to comply with the applied methodology and registered PDD notification.	OK
B.11.5. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	VVS paragraph 131-133 Revised MP	DR	Yes, the procedures are identified for day-to-day records handling. Plant manager and operators will be responsible for the execution of monitoring plan. ATB will develop a protocol that provides routines procedures for electronic based data monitoring and record keeping processes.	OK
B.11.6. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	VVS paragraph 131-133 Revised MP	DR	Yes, the procedures are identified for project performance reviews before data is submitted for verification internally. ATB will produce an internal verification of monitoring reports in a regular basis throughout the verification period.	OK

A.2 Annex 2 Overview of Findings

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	4	3	0

Date:	10/03/2011		Raised by:	Lead Assessor	
Type:	CAR	Number:	01	Reference:	EB48 Annex66 & 67

Lead Assessor Comment:

Change in the effective output capacity of power plant

The non conformity of the actual project activity and its operation with the registered PDD was found as the registered PDD stated that the project activity involves the construction and operation of a new rice husk power plant in Pichit province, central Thailand; with approximately 22 MW gross generating capacity, 20MW net. Whereas the actual installation of the power plant is 22.5MW.

Hence it is the change from the project activity as describes in the registered PDD. (Reference to EB48 Annex66 & 67)

The following points are to be substantiated and clarified:

1. Are the changes permanent from the registered project activity under one of the following situations? (para7 of EB48 Annex66)

(a) The project has never been implemented in accordance with description in the registered PDD; or

(b) The permanent changes occur after the project activity has been implemented in accordance with the description in the PDD and issuance of CERs has taken place.

2. Please provide the documentary evidences when these changes occurred and whether the changes would have been known prior to registration of the project activity, (para10b of EB48 Annex66)

3. Please provide the documentary evidences towards the reasons for these changes occurred (para10b of EB48 Annex66)

4. Please explain, with documentary evidences how the changes would impact the overall operation/ability of the project activity to deliver emission reductions as stated in the PDD

Project Participant Response:	**Date:** 15/03/2010

- We refer to the Registered Project Design Document (PDD) of A.T. Biopower Rice Husk Power Project in Pichit, Thailand (the Project). In section A .2.1 Purpose of the Project activity paragraph 2 states that "In involves the construction and operation of a new rice husk power plant in Pichit province, central Thailand, with approximately 22 MW gross generating capacity, 20 MW net. Electricity will be sold through a 25-year power purchase agreement (PPA) with the electricity Generating Authority of Thailand (EGAT)". However, the above-mentioned 'approximately 22 MW gross generating capacity' in the Registered PDD does not exactly describe the rated power of generator turbine installed at the Project, specifying at 22500 kW or 22.5 MW, which is design capacity. This 22.5 MW capacity of power plant was installed during construction in 2004, before the project was registered in 2007 and the project has never been installed 22MW gross generating capacity as per description in the registered PDD (para7 (a) of EB48 Annex66).
- The change of installed capacity occurred when this 22.5 MW capacity of power plant was installed during construction in September 2004 and performance test was done on April 10, 2006, which was before the registration of project activity in 2007. Please see the evidence of installation of 22.5 capacity of power plant as below:
    a. Name plate of Steam turbine and Generator 22500kW capacity, date Sep 2004
    b. Performance Test Report was done by Electrowatt-Ekono dated April 10, 2006 (Project No: 300315, Report No.: PCT-460-019 Rev. A)
- The reason for this change taking place is it was not realized that the difference of 0.5 MW installed capacity would impact the overall operation/ability of the project activity to deliver emission reductions as stated in the PDD. In addition, the PPA was made to sell the maximum electrical capacity of 20 megawatts as "Contracted Capacity". Hence there is no room to supply more than contracted capacity. Hence this should justify that the maximum electricity to be generated during crediting period is limited to 20 MW only.
- As mentioned above, it was not realised by PP that the difference of 0.5 MW installed capacity would impact the overall operation/ability of the project activity to deliver emission reductions as stated in the PDD. The clarifications are as mentioned.
    a. The PPA clause 6.2 states clearly that the contracted capacity of selling and purchasing of the electricity is 20 MW and this was also referred in the Registered PDD in section [A.2.3.1] about the electricity sales to EGAT with firm agreement with a contracted capacity 20 MW or maximum amount of electricity sales to EGAT 132,864 MWh/year. The assurance of this CDM project does not produce electricity higher than mentioned in both the Registered PDD and PPA can be seen in amount of electricity sold to EGAT in 2006-2007 as 123,527.02 MWh/year and 66,400 MWh/year respectively.
    b. Since the investment analysis was not selected to demonstrate the additionality of the project activity, only step 3 (Barrier Analysis) was selected using technological and investment barriers (Tool for the demonstration and assessment of additionality, version 02 of 28 November 2005).
        - **Technical barriers** that inhibit the rice husk power technology to be implemented in absence of the project have been assessed as Thailand has no no previous experience with the suspension-fire technology used in this project, and there is a lack of engineers and operating staff with experience in the technology.
        - **Investment barriers** as despite the incentives provided by EPPO subsidies and the small power producer program, which guarantees purchase of most of the electricity generated, it remains difficult to develop renewable electricity generation projects in Thailand. A major investment barrier has been the perceived high risk of the project in the eyes of investor because the difficulty of fuel supplies arrangement which is from a great number of smaller mills.

It is obviously found that the difference of 0.5 MW has not declined/increased both investment and technological barrier which were demonstrated as the additionality in the registered PDD as there is no linkage between the additional installed capacity and both technological and investment barrier. Furthermore, this change has neither impact on the scale of CDM project activity nor applicability /application of the Approved Baseline Methodology ACM0006 version 4.

Documentation Provided by Project Participant:	
1. Name plate of Steam turbine and Generator 22500kW capacity, date Sep 2004 2. Performance Test Report was done by Electrowatt-Ekono dated April 10, 2006 (Project No: 300315, Report No.: PCT-460-019 Rev. A)	
Information Verified by Lead Assessor:	
1. Confirmation from PP has been checked with Nameplate of the steam turbine and generator and the performance test report in year 2006 and found that the power plant has been commissioned since year 2006. Hence project has never been implemented in accordance with information of registered PDD. 2. Picture of Nameplate (dated in 2004) and the performance test report (dated in 2006) are checked and found that this change has been occurred before the registration of project activity (18/06/2007). 3. The clarification from PP is acceptable as the change was known to PP prior registration of project activity but PP did not realise the change of installed capacity will be conflicted to the information in PDD. Also the power purchase agreement (PPA) between PP and EGAT is limited to 20 MW only hence this issue is closed. 4. With the clarification from PP, there are no any impact to the overall operation and ability of project activity. a) The amount of electricity expert to grid is limited by the PPA which signed with EGAT at 20 MW. Also the amount of electricity calculated for the emission reduction is applicable for electricity supplied to grid only hence it is not affected to information in registered PDD. b) As the project activity demonstrate additionality with barrier analysis (i.e investment barrier and technological barrier which the different in the installed capacity at 0.5 MW cannot affect to the additionality of project activity hence this issue is closed.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 31/03/2011
As the clarification and supporting evidence provided by PP found acceptable hence this finding is closed. In addition, this is not the change to project design as per VVS track. This change categorised as “Correction” because there is no any change made in the project design. It is only the typographical error in the registered PDD in the install capacity of the project activity.	
Acceptance and Close out by Lead Assessor:	**Date:** 31/03/2011

Date:	10/03/2011		Raised by:	Lead Assessor		
Type:	CAR	Number:	02		Reference:	EB48 Annex66 & 67
Lead Assessor Comment:						
Type of fuel used in actual plan operation In the registered PDD section B.6.3.2., the project consumes fossil fuels on-site for two purposes. One is the use of fuel oil in the boiler as start-up / auxiliary fuel. The other is for on-site transportation of rice husk using diesel-fuelled dump trucks and bulldozers. However, the net calorific value of residual oil (40.4 x 10^{-3} TJ/t) is used to determined CO2 emissions from on-site consumption of fossil whereas there is no residual oil consumption as per the actual implementation of the project activity. Only diesel is use for both the purpose of on-site transportation of rice husk and as start-up/auxiliary fuel in the boiler. Please justify.						
Project Participant Response:			**Date:** 15/03/2011			
Although the registered PDD has mentioned 2 types of fossil fuel, diesel oil and residual oil, that project need to monitor for its NCV, there only diesel oil is used in project purposely for on-site transportation and stat up the boiler as it is described in section B.6.3.1 and B.6.3.2 noticeably only about diesel oil. The only major reason that this project has not used residue oil for starting up boiler since commission is because The **Electricity Purchase and Sales Agreement** between A.T.Biopower and with the electricity Generating Authority of Thailand (EGAT) in Clause 8.13 do mention about the 2 types fuel that allow to use in this project as rice husk as the main fuel and diesel oil as supplementary fuel : “Clause 8.13 The Company shall use rice husk as the main fuel and shall be allowed to Use diesel oil as supplementary fuel. However, the total amount of thermal energy produced by such supplementary fuel must not exceed 25% of the total amount of thermal energy used to produce electrical energy in any one year. The Company must calculate and report to EGAT in writing every month regarding the amount of the main and supplementary fuels used, the heat produced from each fuel as well as the thermal and electrical energy (if any).”						

Documentation Provided by Project Participant:	
The copy of Electricity Purchase and Sales Agreement	
Information Verified by Lead Assessor:	
The diesel consumption has been cross-checked against stock inventory and receipt. Copy of the electricity purchase and sale agreement has been checked and found consistent with information provided in the response hence it is confirmed that only diesel have to be used in the project activity (i.e for on-site transportation and consume as auxiliary fuel during start up and supplementary fuel in case plant upset). Hence the NCV of residual fuel oil as the parameter to be monitored in the project activity will be removed from the registered PDD as per procedure of "Revision of monitoring Plan".	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 31/03/2011
Clarification from PP is reasonable hence this issue is closed. NCV of fuel oil will be included in the validation opinion for request for revision in the monitoring plan.	
Acceptance and Close out by Lead Assessor:	**Date:** 31/03/2011
Lead Assessor Comment:	
22/03/2012: CAR#02 is reopened as below. Refer to ER spreadsheet submitted on 18/12/2011, NCV of fuel to calculate on-site fossil fuel emissions (PEff,y) is corrected from 40.4 to 43.0 TJ/Gg (see sheet "project" row 18). However the data source has not yet been revised and still show as "residual fuel oil". The information of residual oil still present in Annex 4 of the PDD. Please revise and check the consistency of information in the PDD and ER spreadsheet.	
Project Participant Response:	**Date:** 24/05/2012
The data source of NCV of diesel oil to calculate on-site fossil fuel emission ($PE_{ff,y}$) has been corrected. Also, the PDD has been revised and check the consistency of information in Annex 4 and other section related to this comment as well as in ER spreadsheet.	
Documentation Provided by Project Participant:	
Revised PDD and ER calculation sheet	
Information Verified by Lead Assessor:	
The description related to residual oil has been removed and revised to be only diesel oil with NCV at 43.0 TJ/Gg in the calculation spreadsheet and section B7.1 of the PDD.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 28/06/2012
CAR #02 is still opened because 1. the information of residual oil still appear in Annex 4 (i.e. in description of "2. Net calorific value of ricehusk" and "11. CO2 emission factor for diesel and residual oil")of the revised PDD. 2. There is no monitoring frequency of the data sources mentioned in parameter "$NCV_{diesel,y}$" following the methodology under section B.7.1 .Please justify	
Project Participant Response:	**Date:** 04/07/2012
1. The information of residual oil has been removed from Annex 4 in the description 2 "Net calorific value of rice husk and "11. CO2 emission factor for diesel oil" 2. The monitoring frequency of the data sources mentioned in parameter "$NCV_{diesel,y}$" has been added in section B.7.1 as it will be revised yearly at least, according to the source of data.	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
1. The NCV of residual oil has been removed from both monitoring parameter (section B.7.1) and Annex 4 of the PDD 2. The NCV of diesel will be either conducted the measurement or used accurate and reliable local or national data. Where such data is not available, the IPCC default value will be applied. This is complied in both section B.7.1 and Annex 4 of the PDD.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date**: 27/08/2012

CAR #02 is closed as the NCV of residual oil has been removed from the PDD as this parameter has never been used and will not be used in the future. While the NCV of diesel in both section B.7.1 and Annex 4 has been revised to complied with the methodology ACM0006 version 04.
Acceptance and Close out by Lead Assessor: **Date:** 27/08/2012

Date:	21/07/2008		Raised by:	Lead Assessor (Review again on 10/03/2011)	
Type:	CAR	Number:	03	Reference:	Table 1, Item 1

Lead Assessor Comment: **Date:** 21/07/2008

Deviation from the monitoring methodology

As per the monitoring methodology ACM0006 version 04, the following parameters should be included in the Registered PDD, while the same is missing in the registered PDD, please justify:

- Moisture content of the biomass residues.
- On-site electricity consumption attributable to the project activity during the year y($EC_{PJ,y}$)

CO2 emission factor for grid electricity during the year y(EF_{grid})

Project Participant Response: **Date:** 19/09/2008

Although these parameters are missing in the registered PDD, the project proponent did monitor these parameters according to ACM0006 version 04 as follows:

- The moisture content of rice husk is continuously measured and recorded every time truck arrived; then the mean value is calculated on daily and monthly basis.
- The net quantity of electricity consumption attributable to the project activity is measured by electricity meters and cross-checked with electricity purchase receipts from Electricity Generating Authority of Thailand (EGAT).
- EF_{grid} has been updated using the latest information in 2007, and the monitoring report will be revised accordingly. The update calculation of EF_{grid} has been provided with the supporting document.

Documentation Provided as Evidence by Project Participant:

1. Thailand_2007_Grid_Emission_Factor.xls
2. report-pdp2007-thai.pdf

Information Verified by Lead Assessor:

The above parameters are required to be monitored as per the applied methodology ACM0006version04 but are not included the registered PDD. The revision of MP is required to seek out for EB decision.
Anyway, the monitoring of these parameters are in accordance of the applied methodology.

Reasoning for not Acceptance or Acceptance and Close Out:

The monitoring report complied with the applied methodology. So, the raise CAR01 is closed.
But as per para 75 and 84 of EB 33; the registered PDD should be inline with the monitoring methodology.
Hence the revision in Monitoring Plan is required and needs to approve with the EB.

Acceptance and Close out by Lead Assessor: **Date:** 10/03/2011

Lead Assessor Comment:

22/03/2012: During the re-site visit, the PDD has been checked once again and below comments have been observed. Thus CAR#03 is re-opened as below.

Moisture Content:

- Please clearly explain the measurement method of moisture content using moisture analyzer (e.g. traceable international standard method) and its calibration frequency. Please check and ensure that this data is consistent with the PDD (section B7.1 and Annex 4).
- The mean value of moisture content should be weight average with biomass quantity. Please justify.

On-site electricity consumption

- Please clearly explain the meter to quantify imported electricity in the PDD. It is unclear that how many meters are installed and which meter measures imported electricity. In doing so, please substantiate single line diagram and mentioned the position of monitoring equipments/devices in the PDD transparently.
- It has been described in the PDD about read-in and read-out electricity meter in Annex 4. Please check the PDD to make all information consistent.

Grid Emission factor:

- To avoid any confusion on the monitoring parameter of EFgrid (calculate once upon renew of crediting period), this parameter should be not listed in section B.7.1 but B.6.2. Please correct.

Project Participant Response:	**Date:** 24/05/2012

Moisture Content:

- The moisture analyser used on-site works on the thermogravimetic principle and it will be calibrated at least annually.
- The mean value of moisture content will be weight average with the biomass quantity. It is mentioned in revised PDD, section B7.1 and Annex 4.

On-site electricity consumption:

- There are one meters including imported electricity meter and exported electricity. The single line diagram and mentioned the position of monitoring devices in the PDD transparently.
- The information described in the PDD is consistent.

Grid Emission factor:

- The parameter of EF_{grid} has moved to section B.6.2.

Documentation Provided by Project Participant:

Revised PDD

Information Verified by Lead Assessor:

Moisture Content:

- Moisture content will be measured by moisture analyser for each truck delivers and will be calibrated at least annually.
- In section B.7.1 and Annex 4 of the PDD mention that mean value of moisture content will be weight average with the biomass quantity. This is clear explanation.

Grid Emission factor:

- All the parameters related to grid emission factor have been revised to section B.6.2 of the PDD. This is found consistent with the condition to measure once upon renewal of a crediting period.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 28/06/2012

CAR #03 is still open because of the following reasons
Moisture Content:

- This parameter not mention about the calculation frequency of the mean value follow the methodology , please clarify

On-site electricity consumption parameter

- As observed during site visit, it seems that the power meters installed in the project activity is separately monitor the electricity imported and exported to the gri.
- To substantiate the metering position of electricity meter, please provide the single line diagram of the electricity meters installed in the project activity to measure the electricity import and export from the grid.

Grid Emission factor:

- Under section Annex 4, parameter number 13, it mentioned that grid emission factor will be review by ATB head office staff in any verification period. This found inconsistent with response provide by PP. Please justify.

Project Participant Response:	**Date:** 04/07/2012

Moisture Content:

- The calculation frequency of this parameter has been added in the section B.7.1in revised PDD as the mean value will be calculated on monthly basis.

On-site electricity consumption parameter:

- According to single line diagram provide with this finding report, there are three power meter installed in the project activity which is separately monitor the electricity imported and exported to the grid. The imported electricity is measured by PEA meter, but the exported electricity is monitored by main meter and back-up meter.
- Metering position of electricity meters is provided in the single line diagram submitted with the finding report.

Grid Emission factor:

- The paragraph has been changed as the grid emission factor will be reviewed by project participants who can be ATB staffs or its consultant. However, the review can be limited only re-calculation. It can also be the use of national available grid emission factor which published by Thai DNA.

Documentation Provided by Project Participant:

Revised PDD

Information Verified by Lead Assessor:

Moisture content:

- It will be measure when each truck arrives to deliver rice husk.
- The measurement method and QA/QC are complied with the methodology ACM0006 version 04

On-site electricity consumption:

- From the single line diagram provided, it shows the separated meter of electricity import and export. They are monitored by PEA and EGAT respectively.

Grid emission factor

- Grid emission factor is stated clearly to update per verification period with the available information from TGO. This is consistent in both section B.6.2 and Annex 4 of the PDD.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 27/08/2012
CAR #03 is closed as the description of the monitoring methodology in section B.6.2, B.7.1 and Annex 4 are consistent with the methodology ACM0006 version 04	
Acceptance and Close out by Lead Assessor:	**Date:** 27/08/2012
Lead Assessor Comment:	**Date:** 16/11/2012

CAR # 03 is re-opened because the project emission due to on-site electricity imported to the project activity was not included into section B.6. (project emission) as per applied methodology. Please justify. In addition, please also insert the related parameter as appropriate.
Project Participant Response: **Date:** 19/11/2012
The project emission due to on-site electricity imported to the project activity is added in PDD section B.6.1
Documentation Provided by Project Participant:
Revised PDD
Information Verified by Lead Assessor:
The project emission due to CO_2 emission from on-site electricity imported attributable to the project activity was included into section. It is calculated by multiplying the amount of electricity import from EGAT with emission factor for grid electricity.
Reasoning for not Acceptance or Acceptance and Close Out: **Date:** 20/11/2012
CAR #03 is closed as the project emission due to CO_2 emission from on-site electricity imported attributable to the project activity was included into section B.6.1 of the revised PDD. The equation is found correct and comply as methodology mention.
Acceptance and Close out by Lead Assessor: **Date:** 20/11/2012

Date:	21/07/2008		Raised by:	Lead Assessor (Review again on 10/03/2011)	
Type:	CAR	Number:	04	Reference:	Table 1, Item 3
Lead Assessor Comment:				**Date:** 21/07/2008	

Deviation of PDD from the Methodology

The following parameters in the registered PDD are not meeting the monitoring requirement as per the monitoring methodology ACM0006 Version04, please justify:

- As per the Monitoring Methodology, NCV should be measured at least six months, while in the registered PDD it is written for yearly, please justify.
- As per the Monitoring Methodology, the monitoring of NCV should be carried out at reputed laboratories and according to relevant international standards, while in the monitoring plan of the registered PDD the same parameter is written for inhouse monitoring.

Parameter **EFCH4,BF** mentioned in the registered PDD is not being monitored as per the monitoring methodology, as the monitoring methodology says that it should be measured by On-site measurements or default values, as provided in Table 3, while as per the registered PDD IPCCC default values will be used.

Project Participant Response: **Date:** 19/09/2008

Although the monitoring requirements of these monitoring parameters mentioned in the PDD is not meeting the monitoring requirements of ACM0006 version 04, the project proponent has taken steps to ensure that the monitoring plan is implemented accordingly to ACM0006 version 04:

- Project participant currently measure NCV of rice husk every six months, taking at three samples for each measurement and the measurement will be compared with measurements from previous value. This implementation is consistent with ACM0006 version 04.
- The NCV testing is carried out by Department of Science Service, Ministry of Science and Technology, Thailand. Also, the testing method is referred to international standard ASTM D 5865 test Method Standard with Bomb Calorimeter branded TKA C50000. This implementation is consistent with ACM0006 version 04. In-house monitoring written in registered PDD was superseded by the monitoring plan have been revised following ACM0006 version 04.
- According to ACM0006 version 04, this parameter ($EF_{CH4,BF}$) can be derived from on-site measurements or default values, as provided in Table 3. The project proponent chooses to apply a default value available from latest IPCC Guidelines, which is the same as those provided in Table 3 in ACM0006 version 04 (after applying conservativeness factor). This is consistent with both in the registered PDD and ACM0006 version 04.

Documentation Provided as Evidence by Project Participant:

ATB2 Diesel Oil Test Report 140708.pdf
ATB2 Rice Husk Specification and Test Report 140708.pdf

Information Verified by Lead Assessor:	
The monitoring of these parameters are in accordance of the applied methodology. However, The revision of MP is required to seek out for EB decision.	
Reasoning for not Acceptance or Acceptance and Close Out:	
The raised CAR02 is closed as it is inline to the applied methodology. However, The monitoring plan needs to be revised as per para 75 and 84 of EB 33 and needs to approve with the CDM EB.	
Acceptance and Close out by Lead Assessor:	**Date:** 15/03/2011
Lead Assessor Comment:	
During the re-site visit, the PDD has been checked once again and below comments have been observed. Thus CAR#04 is re-opened as below. <u>NCV</u> Please separate monitoring parameter "NCV" of rice husk and diesel oil as separated parameters. The same is not found in the revised PDD with latest version (submitted on 18/12/2011).	
Project Participant Response:	**Date:** 24/05/2012
The NCV of rice husk and diesel oil are revised as separated parameter in revised PDD.	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
In the revised PDD version 04, the NCV of rice husk and diesel oil have been separated parameters as mentioned in section B.7.1 and the Annex 4.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 28/06/2012
CAR #04 is closed as NCV of ricehusk and diesel have been listed separately in the PDD.	
Acceptance and Close out by Lead Assessor:	**Date:** 28/06/2012

Date:	20/03/2012		Raised by:	Lead Assessor	
Type:	CL	Number:	05	Reference:	Site Visit
Lead Assessor Comment:					
<u>Technology</u> 1. According to the suspension-fired boilers are installed to the project activity for electricity producing. Therefore, boilers, turbine and generator should be specified in the PDD. 2. As mentioned in section A.2.3 of the PDD "It is expected that the plant will internally consume about 10% of the electricity it produces. Taking this into consideration, exporting the above amount to EGAT requires ATB to generate 147,627MWh/yr of electricity" Please substantiate "internally consume about 10% of the electricity it produces".					
Project Participant Response:			**Date:** 24/05/2012		
1. The boilers, turbine and generator are specified in the revised PDD. 2. According to Energy balance in the project design, it is estimated about 10%.					
Documentation Provided by Project Participant:					
Revised PDD					
Information Verified by Lead Assessor:					
The main equipments installed in the project activity has been mentioned in section A.4.3 of the PDD.					
Reasoning for not Acceptance or Acceptance and Close Out:			**Date:** 28/06/2012		
CL# 05 is still opened due to the following points; 1. The main equipments list should identify the characteristic as per technical specification (i.e. output capacity), also please substantiate with documentary evidence. 2. Please substantiate the document which shows an energy balance of the project design that 10% of the electricity it produces is consumed internally. It is missing from the response provided.					
Project Participant Response:			**Date:** 04/07/2012		

1. The main equipment such as boiler, turbine and generator is identified the characteristic as per technical specification in section A.4.3.1 in revised PDD.
2. In Project Design Basis Memorandum, the station service consumption is expected around 10% the evidence will be provided to DOE.

Documentation Provided by Project Participant:

Revised PDD

Information Verified by Lead Assessor:

- The technical specification of main equipments have been listed in table 1
- From the electrical station service transformer sizing by EPC contractor's calculation found that the totally operation load is 2,263.91 kW, which is 10% electricity consumption internally.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 27/08/2012

- The technical specification of main equipments were listed and substantiated with documents. These were checked and found consistent.
- The project activity provided the electricity station service transformer sizing to show 10% electricity consumption internally. This is found calculation correctly.

Thus, CL #05 is closed.

Acceptance and Close out by Lead Assessor:	**Date:** 27/08/2012
Lead Assessor Comment:	**Date:** 16/11/2012

CL # 05 is re-opened because why the baseline emission due to CO_2 emissions for grid electricity generation in the revised PDD (67,781 tCO_2/yr) is different from the calculation spreadsheet (67,763 tCO_2/yr). Please justify.

Project Participant Response:	**Date:** 19/11/2012

The figure was not the same because the figure is not round down. After rounded down of the figure in ER calculation spreadsheet, the final figure is 67,760 tCO_2/yr. The figure in the PDD is revised.

Documentation Provided by Project Participant:

Revised PDD
Revised ER calculation spread sheet.

Information Verified by Lead Assessor:

The data in the calculation spreadsheet was round downed to 67,760 tCO_2/ yr. The same value was also applied to the revised PDD in section B.6.3.4.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 20/11/2012

CL #05 is closed because 67,760 tCO_2/ yr is the emission due to displacement of electricity value in the calculation spreadsheet and the revised PDD.

Acceptance and Close out by Lead Assessor:	**Date:** 20/11/2012

Date:	20/03/2012		Raised by:	Lead Assessor	
Type:	CL	Number:	06	Reference:	Section A.3 and Annex 1 of the PDD

Lead Assessor Comment:

Project Participants

Because the PP listed and involve in the project activities is changed, please revised the PDD to reflect the current PP in section A.3 and Annex 1.
Please check against UNFCCC website http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2 to ensure that the PP and MOC are consistent.

Project Participant Response:	**Date:** 24/05/2012

The project participant has been revised according to current project participant presented in UNFCCC website http://cdm.unfccc.int/Projects/DB/DNV-CUK1174909241.2

Documentation Provided by Project Participant:

Revised PDD

Information Verified by Lead Assessor:

Name of the project participants have been revised to comply with MOC as presented in UNFCCC website: http://cdm.unfccc.int/ModalitiesOfCommunication/forms/BOM78UC4NMQ8WKB2O0T1UV87VUHOHZTE/create_pdf_form.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 18/06/2012
Although, the participants list in section A. 3 of the PDD has been complied with MOC, but the information provided in the section contact information in Annex 1 is inconsistent (i.e. Chubu Electric Power Co.,Inc and Mitsubishi UFJ Securities Co.,Ltd). Please revise. Though, CL# 06 is still opened. Editorial comment to PDD are 1. The version of PDD under section A.1 have to be updated every time of the change made to PDD (i.e. Revised PDD provided on 24/05/2012 is version 4 same with previous PDD dated 12/12/2011). Please correct. 2. As the monitoring methodology of project activity is reviewed again after the registration of PDD. Please kindly clear describe the date when monitoring methodology has been reviewed under section B.8.	
Project Participant Response:	**Date:** 04/07/2012
The participants list in Annex 1 has been updated to be complied with MOC and PDD in section A.3. Editorial comment to PDD has been corrected.	
Documentation Provided by Project Participant:	
Revised PDD	
Information Verified by Lead Assessor:	
Project participants list in Annex I has been revised to comply with MOC and section A.3 of the PDD.	
Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 27/08/2012
CL #06 is closed because the project participant descriptions in section Annex 1 are complied with the MOC and section A.3 of the PDD.	
Acceptance and Close out by Lead Assessor:	**Date:** 27/08/2012

Date:	20/03/2012		Raised by:	Lead Assessor	
Type:	CL	Number:	07	Reference:	Section A.3 and Annex 1 of the PDD
Lead Assessor Comment:					
Monitoring parameters Biomass consumption in the project activity • In section B.7.1 dated 18/12/2011, the description of measurement method said “this parameter will be measured continuously by a weight meter (each time trucks arrive). Please justify the word “continuously”. • In the same parameter of row “Any comment”, an energy balance for each verification will be carried out”. In fact, the methodology require “with an annual energy balance”. Please justify as it is possible in case of monitoring period which is longer than one year. The energy balance as describe in the PDD will not be sufficient. Average round trip • As per the revised PDD, description of this parameter is “Average return trip distance between rice millers and ATB plant” whereas description in the methodology require “biomass fuel supply sites or the origin of the biomass” (not limit only rice millers). • Please check the consistency of this information in Annex 4 also (as it present page 62 and page 64 as “rice miller”.					
Project Participant Response:			**Date:** 24/05/2012		

Biomass consumption in the project activity

- The description of measurement method in Section B.7.1 has been revised.
- The row “Anny comment” has been revised to be an energy balance will be carried out annually.

Average round trip

- The description of this parameter has been revised as “biomass fuel supply sites or the origin of the biomass”
- The consistency of this information in Annex 4 has been checked.

Documentation Provided by Project Participant:

Revised PDD

Information Verified by Lead Assessor:

Biomass consumption in the project activity

- The biomass has been revised to measure by a weighting meter in each time truck arrives.
- An energy balance will be carried out annually to comply with methodology requirement.

Average round trip

- The description of this parameter has been revised to comply with the methodology mentioned.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 28/06/2012

CL# 07 is still opened because of parameter “average round trip”

- Please check the consistency of this information in Annex 4, as the phase of “rice miller” still is mentioned in many place. Kindly justify

Project Participant Response:	**Date:** 04/07/2012

In Annex 4, the rice miller has been changed to be the biomass fuel supply site or the origin of the biomass which is more practical.

Documentation Provided by Project Participant:

Revised PDD version 05 (04/07/2012)

Information Verified by Lead Assessor:

The “rice miller” in Annex 4 has been revised to “biomass fuel supply sites or the origin of the biomass”

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 27/07/2012

CL #07 is closed due to a consistency description name of the parameter between section B.7.1 and Annex 4. The rice miller has been more clearly description to biomass fuel supply sites or the origin of the biomass.

Acceptance and Close out by Lead Assessor:	**Date:** 27/08/2012
Lead Assessor Comment:	**Date:** 16/11/2012

CL #07 is re-opened due to the below following;

EF_{CH4}

- Source and applied value does not comply with the applied methodology. Please clarify.

$EF_{km,CO2}$

- Data source and applied QA/QC procedure do not comply with the applied methodology. Please clarify.

$FF_{project\ site}$

- Please specify that this parameter will be applied if option 2 is selected.
- Please confirm which activities that the quantity of fossil fuel combusted at the project site?

EF_{CO2}

- Source of data does not comply with applied methodology. Please clarify.

$EG_{project\ plant,y}$

- According to the QA/QC of the applied methodology, this parameter should be cross check not only with the electricity sale receipts, but also the quantity of fuel fired. Therefore, please justify.

BF

- Please clearly justify the equation of BF on dry basis calculation. It seem that the formulae is incorrect.

Leakages monitoring

- As the description of this parameter in the PDD, it should not be measured only all grid-connected power plant in the region but also the energy generation or as a feedstock in the defined geographical region. Please clarify.

Amount of rice husk available in surplus in the region/country

- As this parameter will be revised in yearly, why source of data is fix at “Agricultural Statistics of Thailand 2004”? Please justify.

Project Participant Response:	**Date:** 19/11/2012

EF_{CH4}

- The source of data and applied value for parameter EF_{CH4} are revised in the PDD section B.7.1 to comply with the methodology. Default value from table 3 of ACM0006 Version 4 was selected. Methane emission factor is 30 kg CH_4/TJ and then multiply with conservativeness factors 1.37, then methane emission factor is 0.0411 tCH_4/TJ.

$EF_{km,CO2}$

- Data source for $EF_{km,CO2}$ is applied from the IPCC default value, which is the most conservative figure. Demonstration comparison between emission factor from IPCC and calculated from national data is provided in "Calculated EFCO2 for truck.rar"

$FF_{project\ site}$

- Specified as per the methodology, this is the quantity of fossil fuel type i combusted at the project site for other purposes that are attributable to the project activity during the year y.
- This is the diesel consumption for heavy machines to manage and prepare the biogas at the project site such as bulldozer used in the power plant.

EF_{CO2}

- The Source of data is adjusted to comply with the methodology ACM0006 version 4.

$EG_{project\ plant,y}$

- In the QA/QC for this parameter, cross check with the quantity of fuel fired (e.g. check whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency that is comparable to previous year.

BF

- The formulae for calculation of BF on dry basis is corrected and revised in the revised PDD.

Leakages monitoring

- The description of this parameter in the PDD is revised to comply with the methodology ACM0006 version 4.

Amount of rice husk available in surplus in the region/country

- The source of data of the parameter is revised to be "Survey or statistics" as per the methodology.

Documentation Provided by Project Participant:
Calculated EFCO2 for truck.rar Revised PDD.
Information Verified by Lead Assessor:

EF_{CH4}

- The source of data and applied value for parameter EF_{CH4} are revised in the PDD section B.7.1. Default value from table 3 of ACM0006 Version 4 was selected. Methane emission factor is 30 kg CH_4/TJ and then multiply with conservativeness factors 1.37, then methane emission factor is 0.0411 tCH_4/TJ. The value is found consistent with the methodology

$EF_{km,CO2}$

- Data source for $EF_{km,CO2}$ is applied from emission factor applicable for truck types used from the literature in a conservative manner (i.e. the higher end within a plausible range). Then the consistency of information will be cross checked with the emission factor referred to in the literature. Demonstration comparison between emission factor from IPCC and calculated from national data is also provided in "Calculated EFCO2 for truck.rar". The value in the supporting document is found correct.

$FF_{project\ site}$

- Specified as per the methodology, this is the quantity of fossil fuel type i combusted at the project site for other purposes that are attributable to the project activity during the year y. Moreover, the PP has states the using of fossil fuel. It mentioned that the diesel is consumed for heavy machines to manage and prepare the biogas at the project site such as bulldozer.

$EF_{CO2,diesel}$

- The Source of data is adjusted to use an accurate and reliable local or national data. Where such data is not available, use IPCC default emission factors (country-specific, if available) if they are deemed to reasonably represent local circumstances. Choose the value in a conservative manner and justify the choice. This is found consistent with methodology.

$EG_{project\ plant,y}$

- The QA/QC of this parameter will be cross check with the quantity of fuel fired (e.g. check whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency that is comparable to previous year.

BF

- The formula for calculation of BF on dry basis is revised as described in the revised PDD.

Leakages monitoring

- The description of this parameter in the PDD is revised to the quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region and quantity of available biomass residues of type k in the region.

Quantity of available biomass residues of type k in the region

- The source of data of the parameter is revised to be "Survey or statistics" as per the methodology.

Reasoning for not Acceptance or Acceptance and Close Out:	**Date:** 20/11/2012
CL #07 is closed because all the monitoring parameters in the revised PDD are comply and consistent with the methodology.	
Acceptance and Close out by Lead Assessor:	**Date:** 20/11/2012

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A.3 Annex 3 Team Members Statements of Competency

Statement of Competence

Name: Pitipoom Tungsirisuteekul

Status

-	Lead Assessor	x	-	Expert	
-	Assessor	x	-	Financial Expert	
-	Local Assessor	Thailand	-	Technical Reviewer	

Scopes of Expertise

1. **Energy Industries (renewable / non-renewable)**

Technical Area(s*):*

2. **Energy Distribution**

Technical Area(s*):*

3. **Energy Demand**

Technical Area(s*):*

4. **Manufacturing**

Technical Area(s*):*

5. **Chemical Industry**

Technical Area(s*):*

6. **Construction**

Technical Area(s*):*

7. **Transport**

Technical Area(s*):*

8. **Mining/Mineral Production**

Technical Area(s*):*

9. **Metal Production**

Technical Area(s*):*

10. **Fugitive Emissions from Fuels (solid, oil and gas)**

Technical Area(s*):*

11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**

Technical Area(s*):*

12. **Solvent Use**

Technical Area(s*):*

13. **Waste Handling and Disposal**

Technical Area(s*):*

14. **Afforestation and Reforestation**

Technical Area(s*):*

15. **Agriculture**

Technical Area(s*):*

Approved Member of Staff by: Siddharth Yadav Date: 20/02/2012

Statement of Competence

Name: Nattarin Thunsiri

Status

-	Lead Assessor	x	-	Expert	
-	Assessor	x	-	Financial Expert	
-	Local Assessor	Thailand	-	Technical Reviewer	

Scopes of Expertise

1. **Energy Industries (renewable / non-renewable)**
Technical Area(s*):*
2. **Energy Distribution**
Technical Area(s*):*
3. **Energy Demand**
Technical Area(s*):*
4. **Manufacturing**
Technical Area(s*):*
5. **Chemical Industry**
Technical Area(s*):*
6. **Construction**
Technical Area(s*):*
7. **Transport**
Technical Area(s*):*
8. **Mining/Mineral Production**
Technical Area(s*):*
9. **Metal Production**
Technical Area(s*):*
10. **Fugitive Emissions from Fuels (solid, oil and gas)**
Technical Area(s*):*
11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**
Technical Area(s*):*
12. **Solvent Use**
Technical Area(s*):*
13. **Waste Handling and Disposal**
Technical Area(s*):*
14. **Afforestation and Reforestation**
Technical Area(s*):*
15. **Agriculture**
Technical Area(s*):*

Approved Member of Staff by: Siddharth Yadav Date: 29/02/2012

Statement of Competence

Name: Kasamol Sansanakul

Status

-	Lead Assessor		-	Expert	
-	Assessor		-	Financial Expert	
-	Local Assessor	Thailand	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)
Technical Area(s*):*

2. Energy Distribution
Technical Area(s*):*

3. Energy Demand
Technical Area(s*):*

4. Manufacturing
Technical Area(s*):*

5. Chemical Industry
Technical Area(s*):*

6. Construction
Technical Area(s*):*

7. Transport
Technical Area(s*):*

8. Mining/Mineral Production
Technical Area(s*):*

9. Metal Production
Technical Area(s*):*

10. Fugitive Emissions from Fuels (solid, oil and gas)
Technical Area(s*):*

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride
Technical Area(s*):*

12. Solvent Use
Technical Area(s*):*

13. Waste Handling and Disposal
Technical Area(s*):*

14. Afforestation and Reforestation
Technical Area(s*):*

15. Agriculture
Technical Area(s*):*

Approved Member of Staff by: Siddharth Yadav Date: 12/03/2012

Statement of Competence

Name: Sandeep Kurmi

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	India	-	Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Technical Area(s*): TA 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar*	
2. Energy Distribution	
Technical Area(s*):*	
3. Energy Demand	**x**
Technical Area(s*): TA 3.1 Energy Demand*	
4. Manufacturing	**x**
Technical Area(s*): TA4.n Other-Air Compression and Separation Units*	
5. Chemical Industry	
Technical Area(s*):*	
6. Construction	
Technical Area(s*):*	
7. Transport	
Technical Area(s*):*	
8. Mining/Mineral Production	
Technical Area(s*):*	
9. Metal Production	
Technical Area(s*):*	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s*):*	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s*):*	
12. Solvent Use	
Technical Area(s*):*	
13. Waste Handling and Disposal	
Technical Area(s*):*	
14. Afforestation and Reforestation	
Technical Area(s*):*	
15. Agriculture	
Technical Area(s*):*	

Approved Member of Staff by: Siddharth Yadav Date: 21/09/2012

Statement of Competence

Name: Michael Wu

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	China	-	Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 19/10/2012

Statement of Competence

Name: S. Thyagaraj

Status

-	Lead Assessor	x	-	Expert	x
-	Assessor	x	-	Financial Expert	
-	Local Assessor	India	-	Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	**x**
Technical Area(s*): TA 1.1 Thermal energy generation from fossil fuels and biomass TA 1.2 Energy generation from renewable energy sources (Wind and Hydro)*	
2. Energy Distribution	
Technical Area(s*):*	
3. Energy Demand	
Technical Area(s*):*	
4. Manufacturing	**x**
Technical Area(s*): 4.n Other-Air Compression and Separation Units*	
5. Chemical Industry	
Technical Area(s*):*	
6. Construction	
Technical Area(s*):*	
7. Transport	
Technical Area(s*):*	
8. Mining/Mineral Production	
Technical Area(s*):*	
9. Metal Production	
Technical Area(s*):*	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s*):*	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s*):*	
12. Solvent Use	
Technical Area(s*):*	
13. Waste Handling and Disposal	**x**
Technical Area(s):TA 13.1: Waste handling and disposal (Waste water only)	
14. Afforestation and Reforestation	
Technical Area(s*):*	
15. Agriculture	
Technical Area(s*):*	

Approved Member of Staff by: Siddharth Yadav Date: 26/04/2012

History

Version	EB Requirement	Nature of revision	Validity
Issue 2.1	EB 66 Report Annex 64 version 2 para 138(b)	Change name on document to Assessment opinion for revision of registered monitoring plan.	02nd October 2012
Issue 2	EB65 Annex 4 VVS Version 02.0	Update to include VVS procedures	25th May 2012
Issue 1	EB 59 para 66	Initial Adoption	22nd February 2011