



VALIDATION REPORT

PROGRAMME OF ACTIVITY

Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia

01 April 2013

Japan Consulting Institute

REPORT NO. JCI-CDM-VAL-12/003

REVISION NO. 02



Validation Report No.	JCI CDM VAL-12/003
Date of revision	01 April 2013 Revision No. 02
Project name	Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia
Project Participant(s)	<ul style="list-style-type: none">- PT. RISET PERKEBUNA NUSANTARA- Centre for Application and Assessment of Energy Resources Technology / Agency for the Assessment and Application of Technology (BPPT)- Shimizu Corporation
Host Country	Indonesia
Project site Location	Indonesia
Methodology	AMS-III.H Version 16 AMS-I.D Version 17
Scale	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale
Sectoral Scope/ Technical Area	Sectoral Scope : 13 / Technical Area: 13.1 Sectoral Scope : 01 / Technical Area: 1.1
GHG reducing measure/ Technology	Methane recovery in wastewater treatment
Emission Reduction estimated	(CPA-001) 18,372 t-CO ₂ e / year (average)

Validation Team	Name
Team leader	Shigeo Aoki
Team member	Mitsuo Takano

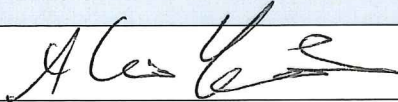
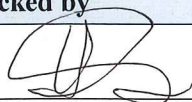
Technical Reviewer	Junji Yoshizawa
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Conclusion of validation
<input checked="" type="checkbox"/> Positive opinion: JCI's opinion is that the proposed CDM project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the methodology. Hence, JCI provides a positive opinion and requests the registration of the proposed project as a CDM project activity.
<input type="checkbox"/> Negative opinion: JCI's opinion is that the proposed CDM project does not meet all relevant UNFCCC requirements for the CDM and all relevant host country criteria and the supportive evidences are not provided sufficiently. Hence, JCI will not provide a positive opinion and requests the registration of the proposed project as a CDM project activity.

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Approved by	Checked by
	
Akio Yoshida Executive Director, JCI CDM Center	Hideyuki Sato Evaluation Group Manager, JCI CDM Center

Abbreviations

AMS-III.H	Methane recovery in wastewater treatment, Version 16
AMS-I.D	Grid connected renewable electricity generation, Version 17
ABR	Anaerobic Baffled Reactor
BE	Baseline emissions
BG	Bio Gas
BM	Build Margin
BPPT	BADAN PENGKAJIAN dan PENERAPAN TEKNOLOGI
DOE	Designated Operational Entity
CME	Coordinating and Managing Entity
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CERs	Certified Emission Reductions
CM	Combined Margin
CO ₂	Carbon dioxide
COD	Chemical Oxygen Demand
CPA-DD	Component Project Activity Design Document
DDR	Detailed Design Report
DOE	Designated Operational Entity
DNA	Designated National Authority
EF	Emission factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
ERPA	Emission Reduction Purchase Agreement
EB	Executive Board
EMB	Environment Management Bureau
FE	Flare Efficiency
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWP	Global Warming Potential
IEA	International Energy Agency
Indonesia	Republic of Indonesia (host country)
JCI	Japan Consulting Institute
LoA	Letter of Approval
MCF	Methane Correction Factor
MER	Ministry of Energy and Resources
OM	Operating Margin
PE	Project Emissions
PLN	PERUSAHAAN LISTRIK NEGARA (Grid company)
PoA-DD	Programme of Activities Design Document
POME	Palm Oil Mill Effluent
PP	Project Participant
PTPN6	PT. PERKEBUNAN NUSANTARA 6
PTPSE/BPPT	Centre for Application and Assessment of Energy Resources Technology (PTPSE) / Agency for the Assessment and Application of Technology (BPPT)
PTPRN	PT. RISET PERKEBUNAN NUSANTARA
Tool for EF	Tool to calculate the emission factor for an electricity system (Version 02.2.1)



Tool for Fuel	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion (Version 02);
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard version 03.0

CONTENT

I. EXECUTIVE SUMMARY - VALIDATION OPINION	6
II. INTRODUCTION OF VALIDATION.....	6
1. Objective of CDM validation	6
2. Validation approach.....	7
3. Means of validation.....	7
3.1 Corrective action requests, clarification requests and forward action requests	7
4. Global Stakeholder Consultation	8
III. VALIDATION WORK.....	9
1. Validation Team	9
2. Appointment certificate of the DOE's validation team member	9
3. Quality Control within the team of the validation process	9
4. Desk Review	10
5. Follow-up actions (Interviews with relevant stakeholders in the host country)	12
IV. VALIDATION FINDINGS	14
1. Approval and authorization	15
2. Modalities of communications	16
3. Management System	16
4. PoA/CPA design document	19
5. Description of a PoA/CPAs	20
6. Additionality of a project activity	21
6.1 Demonstration of additionality of the PoA as a whole	21
6.2 Start date of a PoA/CPA.....	21
6.3 Identification of alternatives as PoA-DD.....	22
6.4 Investment analysis	23
7. Eligibility criteria for inclusion of a CPA in the PoA	32
8. Application of the selected baseline and monitoring methodology	34
8.1 Application of multiple methodologies	34
8.2 Applicability of the selected baseline and monitoring methodology to the project activity.....	34
8.3 Boundary	36
8.4 Baseline scenario for CPA-001 "PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia"	38
8.5 Assessment for the algorithms and/or formulae for estimation of emission reductions of generic CPA in PoA-DD level	38
8.6 Estimation of emission reductions of CPA-001	39
8.7 Monitoring plan	48
9. Environmental impacts	50
10. Local stakeholder consultation	50

Appendix A: Validation Protocol

Appendix B: Certificate of Appointment of Validation Team

I. EXECUTIVE SUMMARY - VALIDATION OPINION

Japan Consulting Institute (JCI) has performed a validation of the “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia” as the CDM PoA. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host country is Republic of Indonesia. It fulfills the participation criteria. Indonesia has approved the project and authorized the project participants. The DNA of Indonesia confirmed that the project assists in achieving sustainable development.

The Programme and project correctly applied AMS-III.H. “Methane Recovery in Wastewater Treatment”; and referred to “Guidelines on the Demonstration of Additionality of Small-scale Project Activities”, “Tool to calculate the emission factor for an electricity system” and “Tool to determine project emissions from flaring gases containing methane”.

The total emission reductions from first CPA (PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia; hereafter referred as CPA-001) under the proposed PoA are estimated to be on the average 18,372 tCO₂e per year over the selected 7 year crediting period under consideration of estimated increase of Annual EFB processing amount. JCI confirmed details of calculation process of average emission reductions over crediting years of period with submitted “Emission Reductions Calculation Spread sheet”. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change. Adequate training and monitoring procedures will be implemented by the time of completion of the proposed project.

In summary, it is JCI’s validation conclusion that the “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia” as PoA-DD Version 04 dated 12/02/2013 and “PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia CPA-001” project as described in the CPA-DD Version 04 dated 12/02/2013 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies AMS-III.H.

JCI thus provides a positive validation opinion and requests for the registration of the proposed project as a CDM Programme of Activities.

II. INTRODUCTION OF VALIDATION

Shimizu Corporation has commissioned JCI to perform a validation of the “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia” as the CDM PoA project in Indonesia (hereafter called “the Programme”).

This report summarizes the findings of the validation of the Programme, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

1. Objective of CDM validation

The objective of the validation is to have an independent assessment of proposed project activities against the applicable CDM requirements as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document.

In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria.

Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2. Validation approach

The validation approach is to determine whether the proposed project activity and proposed PoA complies with the requirements of paragraph 37 of the CDM M&Ps, the applicability conditions of the selected methodology and guidance issued by the Board and to assess the claims and assumptions made in the PoA-DD (including generic CPA-DD) and specific CPA-DD.

The validation is not meant to provide any consultancy towards the project participants.

However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Programme and project design.

3. Means of validation

JCI applies the means of validation specified throughout the CDM Validation and Verification Standard version 03.0 (VVS) and where appropriate standard auditing techniques, including, but not limited to:

- (a) Document review, involving:
 - (i) A review of data and information;
 - (ii) Cross checks between information provided in the PDD (PoA-DD, CPA-DD) and information from sources other than those used, if available, the DOE's sectoral or local expertise and, if necessary, independent background investigations.
- (b) Follow-up actions (e.g. on-site visit and telephone or email interviews), including:
 - (i) Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation;
 - (ii) Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted.
- (c) Reference to available information relating to projects or technologies similar to the proposed CDM project activity registered and under validation; and
- (d) Review, based on the approved methodology being applied, of the appropriateness of formulae and correctness of calculations.

3.1 Corrective action requests, clarification requests and forward action requests

If, during the validation of a project activity, JCI identifies issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, JCI shall ensure that these issues are correctly identified, discussed and concluded in the validation report.

JCI shall raise a corrective action request (CAR) if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

JCI shall raise a clarification request (CL) if information is insufficient or not clear enough to determine

whether the applicable CDM requirements have been met.

JCI shall raise a forward action request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

JCI shall resolve or “close out” CARs and CLs only if the project participants modify the project design, rectify the PDD (PoA, CPA-DD) or provide adequate additional explanations or evidence that satisfies the DOE’s concerns. If this is not done, the DOE shall not recommend the project activity for registration to the CDM Executive Board.

JCI shall report on all CARs, CLs and FARs in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD (PoA, CPA-DD) or supporting annexes.

The validation protocol consists of two tables. The different columns in these tables are described as followings.

Validation protocol tables

Table 1: Requirements checklist (PoA-DD) and Table 2 (specific CPA-DD)

- ✧ Requirement (Checklist Question) :
The various requirements in Table 1 and Table 2 are the checklist questions that the project should meet. The checklist is organised in different sections, following the logic of the latest VVS, the PoA-DD, CPA-DD Guidelines and the PoA-DD, CPA-DD templates. Each section is then further sub-divided.
- ✧ Reference :
Gives reference to documents where the checklist question or item is found. Paragraph No. of VVS is referred.
- ✧ Check Comment :
The column is used to elaborate and discuss the checklist question and/or the conformance to the question.
- ✧ ID No. of CAR, CL and FAR :
 - ID No. of **CAR**, **CL** and **FAR** is described.
 - Corrective Action Request (**CAR**) is used due to non-compliance with the checklist question.
 - Clarification Request (**CL**) is used when the validation team has identified a need for further clarification.
 - Forward Action Request (**FAR**) is used to highlight issues related to project implementation that require review during the first verification of the project activity.

Table 3: Resolution of Corrective Actions, Clarification Requests and Forward Action Requests

- ✧ Clarifications and corrective action requests :
If the conclusions from the draft Validation are a **CAR**, a **CL** or a **FAR**, these should be listed in this section.
- ✧ Ref. to checklist question in Table1 (PoA-DD) and Table 2 (CPA-DD):
Reference to the checklist question number in Table1 where the **CAR**, **CL** or **FAR** is explained.
- ✧ Summary of project owner response :
The responses given by the project participants during the communications with the validation team should be summarised in this section.
- ✧ Validation team conclusion :
This section should summarise the validation team’s responses and final conclusions.

4. Global Stakeholder Consultation

JCI made the PoA-DD, CPA-DD version 01.1 dated 29 May 2012 of the project activity under consideration publicly available on UNFCCC website and Parties, stakeholders and NGOs were through

the CDM website invited to provide comments during a 30 days period from 31 May 2012 to 29 June 2012.

As a result of consultation, no comment was received during above 30 days period.

III. VALIDATION WORK

JCI carried out the validation work to ensure that the project activity complies with the requirements of paragraph 37 of the CDM modalities and procedures.

1. Validation Team

Details of the validation team are shown in below Table.

Role/Qualification	Name	Qualified Technical Areas related to the Project	On-site Visit
All relevant issues / Team Leader	Shigeo Aoki	13.1 Waste handling and disposal 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	✓
CDM auditor / Team Member	Mitsuo Takano	1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	--

Details of the technical reviewer are shown in below Table.

Name	Qualified Technical Areas related to the Project
Junji Yoshizawa	13.1 Waste handling and disposal 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar

2. Appointment certificate of the DOE's validation team member

The certificate of appointment of validation team member is attached in Appendix B to this report.

3. Quality Control within the team of the validation process

The validation report worked out by the team underwent an internal review process for the assurance of being in compliance with the applicable requirement of the latest version of VVS.

JCI applies internally established Quality Management Program for the required review process, which is defined as follows;

- 1) Internal Review for the interim check by the internal audit team and the technical reviewer
- 2) The evaluation of the validation work in the CDM evaluation committee consists of outside experts
- 3) Internal review for the final check by the internal audit team and the technical reviewer

The review and evaluation including the technical review are implemented for every validation work by the competent personnel assigned in accordance with JCI's qualification scheme for CDM validation and verification.

4. Desk Review

Document review, involving:

- (i) Review of data and information to verify the correctness, credibility and interpretation of presented information;
- (ii) Cross checks between information provided in the PoA-DD, CPA-DD and information from sources other than that used, if available, and if necessary independent background investigations

4.1 Document review

The PoA-DD and specific CPA-DD (CPA-001) were submitted to JCI in May 2012. The additional documents related to the PoA have been reviewed by following process.

Document review, involving:

- (i) Review of data and information to verify the correctness, credibility and interpretation of presented information;
- (ii) Cross checks between information provided in the PoA-DD, CPA-DD and information from sources other than that used, if available, and if necessary independent background investigations

4.2 Document list

All the relevant documents to be reviewed through the whole validation process are listed in tabular form in the following table (Table III-1):

The following table outlines the documentation reviewed during the validation:

Table III-1 Documents list

No.	Title
1.	<DDs for POA and CPA>
1.1	CDM-PoA-DD version 01.1, 29/05/2012 (GSC)
	CDM-CPA-DD version 01.1, 29/05//2012 (GSC)
1.2	CDM-PoA-DD version 04, 12/02/2013
	CDM-CPA-DD version 04, 12/02/2013
1.3	Revised IRR spread sheet (Excel sheet)
1.4	Revised Emission Reductions Calculation Spread sheet (Excel sheet)
2.	<Letters of Approval>
2.1	LoA (Letter of Approval) issued by DNA of Indonesia dated 29 th October 2012
2.2	LoA issued by Japan, dated 7th August 2012
2.3	Modalities of Communication
3.	<Outline of the related entities >
3.1	Company profile of PTRPN as the Coordinating / Managing entity (CME)
3.2	Company profile of Shimizu Corporation as a Project Participant (website: http://www.shimz.co.jp/english/)
3.3	Company profile of PTPN6 (website: http://ptpn6.com/)
4.	<Referenced Documents (Methodology, Guidance, Criteria, etc. of UNFCCC)>
4.1	AMS-III.H Methane recovery in wastewater treatment, Version 16
4.2	AMS-I.D. "Grid connected renewable electricity generation" version 17
4.3	"Tool to calculate the emission factor for an electricity system", Version 03.0.0
4.4-1	"Tool to determine project emissions from flaring gases containing methane", EB28 Annex 13
4.4-2	"Project emissions from flaring", Version 02.0.0, EB68 Annex15

No.	Title
4.6	Glossary of CDM terms, Version 07.0, EB70 Annex 7.
4.7	CDM Validation and Verification Standard (VVS) (Version 03.0), EB70 Annex03
4.8	Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, Version 02.0, EB70 Annex 05
4.9	Guidelines for completing the programme design document form for Small Scale CDM programme of activities, Version 01.0, EB66 Annex 13
4.10	Guidelines for completing the component project activity design document form for Small Scale CPA, Version 01.0, EB66 Annex 17
4.11	Guideline on the demonstration and assessment of prior consideration of the CDM Version 04, EB62 Annex 05
4.12	Guidelines for objective demonstration and assessment of barriers, Version 01.0, EB50 Annex 13
4.15	“Guidelines on the demonstration of additionality of small scale project activities” Version 09.0, EB68 Annex 27
4.16	Procedures for registration of a Programme of Activities as a single CDM project activity and issuance of certified emission reductions for a Programme of Activities (version 04.1), EB 55 Annex 38
4.17	Procedures for processing and reporting on validation CDM Project Activities (Version 01.0), EB50 Annex 48
4.18	Clean Development Mechanism Project Cycle Procedure, Version 03.0, EB70 Annex 04
4.19	“F-CDM-MOC “Modalities of Communication Statement (Version 02.1)
4.21	“Guideline on the demonstration of Additionality of Small-scale Project Activity”, EB68 Annex 27
4.22	“Tool to calculate project or leakage CO2 emission from fossil fuel combustion” (Version 02), EB41 Annex 11
4.23	Guidelines on the Assessment of Investment Analysis (version 05), EB 62 Annex 05
4.24	“Tool to calculate baseline, project and/or leakage emissions from electricity consumption” Version 01, EB39 Annex 7
4.25	Methodological “Tool to determine project emissions from flaring gases containing methane” EB28 Annex 13
5.	< Basic Reports for the Programme>
5.1	FSR for PoA issued March 2011
5.2	EIA (UKL-UPL) report completed in January 2012
5.3	EIA Approval letter issued 23 rd February 2012
5.4	Public consultation meeting record held on 10/05/2012
5.5	Announcement of holding “Public consultation meeting”
5.6	Detailed Design Report (DDR: Technical and Financial) completed
5.6-1	Revised DDR dated 24/10/2012
5.6-2	DDR Rev.2 dated 08/02/2013
5.7	Design-note as an Attachment to DDR
5.8	10 days POME analysis report
5.9	Shimizu Corporation’s Basic Design Criteria of “Wastewater handling system”
6.	< Related Codes, Regulations, Standards for Programme >
6.1	MER Act 4/2012 “Renewable energy based Electricity Tariff
6.2	Price index in Indonesia http://dsbb.imf.org/pages/sdds/DQAFBase.aspx?ctycode=IDN&catcode=PPI00
6.3	Ministry of Finance Regulation Number 21/PMK.011/2010
7.	< Published references >
7.1	Decree No.51, 1995 “Decree of the State Minister for Environment concerning Quality Standard of

No.	Title
	Liquid Waste for Industry Activity”
7.2	Sumatra electricity grid emission factor and JAMALI (2008) http://pasarkarbon.dnpi.go.id/web/index.php/dnacdm/read/14/faktor-emisi-jaringan-listrik-sumatera-dan-jamali-2008.html
7.3	Elucidation of the Governmental Regulation (PP) No.27/1999
7.4	Indonesia Taxation Pocket Book, 2011
8.	< Contracts, Agreements for the first CPA >
8.1	MOU, Shimizu/PTPN6/PTRPN/BPPT agreed on 27/04/2012
8.2	Price estimation for civil work by a candidate-contractor
8.3	Price estimation for Water Treatment System by a potential supplier
8.4	Budget for employment cost prepared by Shimizu Corporation
8.5	Cost estimation of Gas engine/Generator by the potential contractor
8.6	Validation Contract with JCI
8.7	Project schedule
9.	< Excel spread sheet for the calculation by PP >
9.1	Excel spread sheet for IRR calculation
10.	< Documentary evidences, Records for the Project >
10.1	On-site summary report by JCI
10.2	Performance of PKS Pinang Tinggi 2008 – 2010
10.3	Pinang Tinggi Mill POME Biogas Project Schedule
10.4	Gas engine-generator Heat balance Data prepared by a potential supplier
10.5	POME Analytical Data for Pinang Tinggi
11.	< Drawings, Flows, Diagrams>
11.1	General flow diagram of Pinang Tinggi Mill
11.2	Civil reference drawing of Pinang Tinggi Mill

5. Follow-up actions (Interviews with relevant stakeholders in the host country)

The on-site assessment and interviews with project stakeholders were held from 11 to 13 July 2012 at the project site.

The names of interviewees and topics are listed in following Table III-2.

Here, PTPSE/BPPT is one of project participants and its full name is “*Centre for Application and Assessment of Energy Resources Technology / Agency for the Assessment and Application of Technology (BPPT)*” which is authorized name in LoA of Indonesia.

Due to its lengthy name, *PTPSE/BPPT* is used instead in this validation report.

Table III-2 List of interviewees and discussion topics at on-site visit

Ref. No.	Date	Organization/ Attendance	Topics
/12.1/	2012/07/11 (Tue)	PTPN6 (Implementer of CPA-001) ♦ Mr. Arief Lubis ♦ Mr. Saepul Bahri ♦ Mr. Payung Environment Management Bureau (EMB) ♦ Mr. A.R.Sayuti ♦ Mr. DRS.Idham ♦ Mr. Mardianis ♦ Ms. Manoian	Interview with PTPN6 ➤ Outline of the company ➤ Business scheme & characteristics of the Project ➤ The project history/milestones & the construction status (including the site survey) ➤ Typical feature of the targeted project Interview with EMB

		<p><u>PTPLN, Jambi</u> (Local grid company)</p> <ul style="list-style-type: none"> ♦ Mr. Suparyanto ♦ Mr. Luoi Prasetyo <p><u>PTPSE/BPPT</u></p> <ul style="list-style-type: none"> ♦ Mr. Irhan Febijanto <p><u>Shimizu Corporation</u></p> <ul style="list-style-type: none"> ♦ Mr. Kazuhide Maruyama ♦ Mr. Sueo Mori <p><u>JCI CDM Centre</u></p> <ul style="list-style-type: none"> ♦ Mr. Shigeo Aoki/ Team Leader ♦ Mr. Yani Marlisna Jana (interpreter) 	<ul style="list-style-type: none"> ➤ Outline of the EMB ➤ Environmental Assessment Criteria for Bio-gas power plant ➤ Positive and negative concerns ➤ Categorization of project in terms of degree of environmental impact <p><u>Interview with PLN</u></p> <ul style="list-style-type: none"> ➤ Outline of the PLN, Jambi ➤ Permission for the project to connection to the grid ➤ Electrification coverage
/12.2/	2012/07/12 (Wed.)	<p><u>PTPN6</u></p> <ul style="list-style-type: none"> ♦ Mr. Anda (Pinang Tinggi Site) ♦ Mr. Saepul Bahr (Head Office) <p><u>Local stakeholder's interview</u></p> <ul style="list-style-type: none"> ♦ Mr. Abd. Wahabb ♦ Mr. Roesmano ♦ Mr. Walidi ♦ Mr. Mililianuiri ♦ Mr. Arja Setwan <p><u>PTPSE/BPPT</u></p> <ul style="list-style-type: none"> ♦ Mr. Irhan Febijanto <p><u>Shimizu Corporation</u></p> <ul style="list-style-type: none"> ♦ Mr. Kazuhide Maruyama ♦ Mr. Sueo Mori <p><u>JCI CDM Centre</u></p> <ul style="list-style-type: none"> ♦ Mr. Shigeo Aoki/ Team Leader ♦ Mr. Yani Marlisna Jana (interpreter) 	<p><u>PTPN6 Pinang Tinggi Site</u></p> <ul style="list-style-type: none"> ➤ Site Observation ➤ Interview of Local stakeholders ➤ Discussion with PTPN6 engineers as to details of Methane recovery process as well as Palm oil production process
/12.3/	2012/07/13 (Thu.)	<p><u>DNPI (Indonesian DNA)</u></p> <ul style="list-style-type: none"> ♦ Mr. Dicky Edwin Hindarto <p><u>MER (Ministry of Energy and Resources)</u></p> <ul style="list-style-type: none"> ♦ Ms. Maritje Hutapea <p><u>PTPSE/BPPT</u></p> <ul style="list-style-type: none"> ♦ Mr. M.A.M Oktaufik ♦ Mr. Irhan Febijanto <p><u>PTRPN (CME)</u></p> <ul style="list-style-type: none"> ♦ Dr. Ir. Gede Wibawa ♦ Dr. Siswanto <p><u>Shimizu Corporation</u></p> <ul style="list-style-type: none"> ♦ Mr. Kazuhide Maruyama ♦ Mr. Sueo Mori <p><u>JCI CDM Centre</u></p> <ul style="list-style-type: none"> ♦ Mr. Shigeo Aoki/ Team Leader ♦ Mr. Yani Marlisna Jana (interpreter) 	<p><u>Interview with DNA</u></p> <ul style="list-style-type: none"> ➤ CDM project authorization criteria and approval process <p><u>Interview with MER</u></p> <ul style="list-style-type: none"> ➤ Policy of keeping balance of the environment and electricity development <p><u>Interview with PTPSE/BPPT</u></p> <ul style="list-style-type: none"> ➤ Role of PTPSE/BPPT in the project <p><u>Interview with PTRPN</u></p> <ul style="list-style-type: none"> ➤ Responsibility of CME in the PoA <p><u>Interview with PPs (BPPT/Shimizu)</u></p> <ul style="list-style-type: none"> ➤ Discussion on DDR (Worked out based on the original FSR/5.1/ ➤ Outstanding issues ➤ Validation schedule afterwards ➤ Wrap-up

IV. VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

Findings issued through the validation

JCI issued seven (7) CARs, thirteen (13) CLs and zero (0) FAR for PoA-DD. Furthermore four (4) CARs, forty two (42) CLs and zero (0) FAR for CPA-DD as shown in the Validation Protocol are issued as Appendix A of this report. All the CARs and CLs were resolved and then closed as shown in the Table 2.1 and 2.2 of the Appendix A.

Major issues and its resolution process through the CARs and CLs are described in following items according to VVS /4.7/.

(1) Major changes in the PoA-DD and CPA-DD

Major changes in the PoA, CPA-DDs between the version /1.1/ published for the 30 days stakeholder commenting period and the final version /1.2/ submitted for registration are summarized in the Table IV-1 below:

Table IV-1 Major Changes in the PoA-DD, and CPA-DD

Subject and section in the PoA-DD	Original content in the PoA, CPA-DD/1.1/	Revised content in the PoA, CPA-DD/1.2/	Reason for change Relevant tool, guidance, or guidelines applied, (Related CAR or CL)
Changes in PoA-DD			
A.2 Purpose and general description of the PoA	Organization structure is not clearly stated.	Figure of organization structure is added	CAR-7
A.5. Physical/ Geographical boundary of the PoA	No map is presented.	Maps are added to make boundary explicit.	Improvement of A.5.
B.2. Eligibility criteria	Only eligibility criteria are itemized.	Eligibility criteria together with requirement for CPAs are added.	CAR-6
Section C Management system	Not in line with PoA standard	Revised according to the relevant paragraph in PoA standard	CL-8
Part II Generic CPA	Not being a template of specific CPA	Revised to be a template of specific CPA	CAR-3, CAR-4, CAR-5
	Sample ex-ante calculation is based on values just sample.	Sample calculation is totally revised based on the finally fixed values for CPA-001.	CL-13
Changes in CPA-DD			
In general	Financial data and technical data are all derived from DDR/5.6/	Financial data and technical data are all derived from DDR/5.6-2/	According to the progress of design work Latest revision: Dated on 08/02/2013
A.7. Geographic reference or other means of identification	Not identifying the exact location of the project	Enlarged map is added.	CL-1

A.7. Description of FFB production forecast	Just general description is provided.	Detailed forecast of future FFB production trend is added.	CL-41
A.8.2. Operational lifetime of CPA	14 years	15 years (excluding construction period)	CL-4
A.10 Estimated amount of GHG emission reductions (Table) D.6.4. Summary of the ex-ante estimates of emission reductions	Not reflecting annual increase of amount of wastewater (ER is constant; =15,970)	Reflecting annual increase of amount of wastewater and conditions of estimation has been changed. average ER = 18,372 Also, reflecting revision	CAR-4 CL-41
D.5. Table of financial parameters	Only values are raised.	Source of each value is added to the table. Values are changed according to the revised design assumptions. Some values are provided as average ones instead of those in first crediting year.	CL-30, CL-36
D.5. Result of IRR calculation	4.4% without CER at lifetime of 16 years	2.5% without CER at lifetime of 15 years	Changed due to operational life time (14yrs to 15yrs) and related design changes. CL-4, CL-38, CL-41
D.5. Sensitivity Analysis	Based on the wrong assumption	Based on the revised assumption of values	Changed due to operational life time (14yrs to 15yrs) and related design changes. CL-4, CL-38, CL-41
D.6.1. Explanation of methodological choices	The source of employed equation is not transparent.	Each equation formula is pertained with equation No in relevant methodology.	CL-29

1. Approval and authorization

1) Approval

JCI has received the Letter of Approvals from the project participant, with clearly referencing the letter itself and any supporting documentation. There is no doubt about authenticity of the LoA.

- DNA of Indonesia LoA dated 29th October 2012 /2.1/
- Japanese government approval letter (LoA) dated 07 August 2012

JCI also has confirmed the followings in the LoAs

- (a) The party is a Party to the Kyoto Protocol (Indonesia ratified KP on 28/07/2004 and Japan has ratified in June 2002.
- (b) Participation is voluntary
- (c) The programme contributes to the sustainable development of the host party
- (d) The title of the programme is precisely consistent with that in the DDs

2) Authorization

JCI confirmed that the PPs authorized in LoA of Indonesia are PTRPN as CME and PTPSE/BPPT and Shimizu Corporation is a PP authorized in LoA of Japan which is consistent with those listed in Section A.4 of the PoA-DD, and that the information of the PPs are consistent with the contact details provided in Annex 1 of the PoA-DD. It is also confirmed that no entities other than those approved as project participants are included in these sections of the PoA, CPA-DD /1.2/.

3) Contribution to sustainable development

JCI confirmed that the contribution of the programme to the sustainable development of the host Party is stated in the LoAs issued by the DNAs of Indonesia and Japan /2.1/, /2.2/.

2. Modalities of communications

JCI validated and confirmed that all corporate and personal details, including specimen signatures in writing in the MoC /2.3/ statement received from the CME are valid and accurate.

JCI confirmed in writing that the MoC/2.3/ statement complies with all relevant forms and requirements established as VVS Track by UNFCCC “F-CDM-MOC “Modalities of Communication Statement (Version 02.1)” /4.19/.

JCI has performed due diligence on the MoC statement in accordance with the requirements established in VVS para. 53 and 54(c), through the written confirmation from CME /2.3/

Therefore JCI concluded the MoC statement was correctly completed and duly authorized.

3. Management System

1) Coordinating/managing entity and participants in a PoA

JCI confirmed that the PTRPN is the entity who manages and oversees communication with JCI, the UNFCCC secretariat and the Executive Board.

JCI confirmed through the document review and the interviews with the person responsible of the PoA project from the PTRPN that PTRPN as CME has the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA.

JCI confirmed that the management system described in the PoA-DD is in accordance with the “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” /4.8/.

2) Entity/individual responsible for CPA

JCI confirmed that PTPN6 is the responsible project owner and implementer of CPA-DD-“PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia” (hereafter referred as CPA-001).

JCI confirmed through the document review and the interviews with the person in responsible of the CPA project from PTPN6 that PTPN6 as implementer has the competencies to operate and monitor the CPA-001 “PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia”.

The CME demonstrated the specified criteria for the inclusion of CPA in the section B.2. of the PoA-DD /1.2/. , as shown below Table IV-2.

Table IV-2 Check for Management System as PoA

Management system of CME to ensure the eligibility criteria for inclusion	Description in PoA-DD	Check result
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	Management system of CME to ensure the eligibility criteria for inclusion	Description in PoA-DD	Check result
(a)	A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies	<ul style="list-style-type: none"> • <u>CME Head</u> <ul style="list-style-type: none"> • Registration of the PoA • Proper and timely validation of the PoA • Review of program compliance as per guidelines • Awareness creation and promotion of the PoA • Ensuring proper CPA operation and management as per required guidelines throughout the crediting period • <u>PoA Operator</u> <ul style="list-style-type: none"> • Review of CPA compliance as per guidelines • Ensure verification of CPAs • Identification of CPA • Listing of eligible CPAs • Development of CPA-DD and PoA-DD • Validation and verification support to CPA implementer throughout the crediting period • Create a standard format for recording monitoring data, and provide it to each CPA implementer • Record keeping of monitoring parameters • <u>Technical Supporter</u> <ul style="list-style-type: none"> • Support regarding selection of devices, contracting with the power company, preparation of verification and provision of technical guidance, etc. • Collaborate with the outsourcing company to ensure that the required specifications are met when introducing or maintaining the equipment systems in each CPA • Review and improvement suggestions of monitoring system and plan • Monitoring support to CPA implementers • <u>Document Controller</u> <ul style="list-style-type: none"> • Collecting information and documentation of the CPA • Collection and scrutiny of all documents related to the eligibility criteria of CPA inclusion • Collection of necessary statutory approvals from CPA implementers • Preservation and management of a general document 	OK Confirmed the appropriateness in the PoA-DD and CPA-DD
(b)	Records of arrangements for training and capacity development for personnel	<p>The capacity building will focus on the following main areas:</p> <ul style="list-style-type: none"> • Management of the PoA: Members of the CME should be well equipped with basic knowledge of the CDM rules and guidelines. They should also acquire sufficient 	OK Confirmed the appropriateness in the PoA-DD and CPA-DD

	Management system of CME to ensure the eligibility criteria for inclusion	Description in PoA-DD	Check result
		<p>data to help them identify the types of projects which would be eligible under this PoA. They will be responsible for interaction with the UNFCCC on the transfer of credits and other matters.</p> <ul style="list-style-type: none"> Supervising the Monitoring Plan: <p>The CDM and Technical Experts will be responsible for setting and following a monitoring schedule. CPA implementers will be expected to keep record of monitoring parameters for the CPAs. The CDM Expert will be expected to follow all requests from DOEs and convey the necessary instructions to CPA implementers. Capacity building in this area will involve both CME experts as well as CPA implementers in order to follow the monitoring plan accurately until the issuance of credits for the length of the crediting period.</p> <ul style="list-style-type: none"> Administration and record keeping: <p>The CME will provide administrative support, particularly in keeping track of communication, monitoring records, and schedules, contractual agreements, sales dates for CERs, and related material.</p>	
(c)	Procedures for technical review of inclusion of CPAs	The CME must have an onsite due diligence visit to the CPA location. They would also be able to inspect the physical boundaries of the CPA. Additional technical information regarding the description of the CPA could be obtained afterward from the responsible authorities or literature.	OK Confirmed the appropriateness in the PoA-DD and CPA-DD
(d)	A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA)	The CME will conclude letters of intent with CPA implementers, guaranteeing that each CPA will be incorporated into the PoA (i.e. will not be registered with other PoA or as independent CDM projects), thereby avoiding double-counting. In each CPA that is based on this PoA, a monitoring plan will be compiled and verification of the greenhouse gas reduction effect will be conducted based on the amount of recovered gas, generated electric energy and project power consumption, etc. Moreover, the CME will confirm the verified numerical information once every year and conduct checks to ensure that data are not double counted.	OK Confirmed the appropriateness in the PoA-DD and CPA-DD (Refer to Table IV-9 in this report)
(e)	Records and documentation control process for each CPA under the PoA	The CME will confer an identification number to each CPA and conduct management based on	OK Confirmed the appropriateness

	Management system of CME to ensure the eligibility criteria for inclusion	Description in PoA-DD	Check result
		<p>serial numbers. Moreover, it will prepare an electronic database to manage the following items of information concerning each CPA. Through managing the information of each CPA, it will simultaneously conduct debundling check.</p> <ul style="list-style-type: none"> - Name of CPA - Implementer of CPA - Location of CPA <p>The name of the mill of the project site of each CPA is included in the title of each CPA.</p>	in the PoA-DD and CPA-DD
(f)	Measures for continuous improvements of the PoA management system	<ul style="list-style-type: none"> • Internal audits • A review of the previous period and the latest developments, • Recurring issues related to the inclusion process, • Comments provided by the members of the compliance team and CME, • Feedback from the CPA implementers, • Potential improvements to be implemented for the next period. 	OK Confirmed the appropriateness in the PoA-DD and CPA-DD
(g)	Any other relevant elements	NA	NA

4. PoA/CPA design document

JCI confirmed that the PoA-DD and CPA-DD are in compliance with relevant forms and guidance.

Through desk reviews and Q&A sessions with the project participant (PP), JCI confirmed that the DDs are described based on and referring to the following relevant methodology, guidance, guidelines, and manual:

- (1) AMS-III.H “Methane recovery in wastewater treatment, Version 16” (Version 16) /4.1/
- (2) Methodological tool “Tool to calculate the emission factor for an electricity system” (Version 03.0.0)/4.3/
- (3) Methodological tool “Tool to calculate project or leakage CO₂ emission from fossil fuel combustion” (Version 02), EB41 Annex 11 /4.22/
- (4) Glossary of CDM terms (Version 07.0), EB 70 Annex 07 /4.6/
- (5) CDM Validation and Verification Standard (VVS) (Version 03.0) /4.7/
- (6) Standard for demonstration of additionality development of eligibility criteria and application of multiple methodologies for programme of activities, Version 02.0, EB70 Annex 05 /4.8/
- (7) Guidelines for completing the programme design document form for Small Scale CDM programmes of activities (Version 01.0), EB 66 Annex 13 /4.9/
- (8) Guidelines for completing the component project activity design document form (Version 01.0) for Small Scale CPA, EB 66 Annex 17 /4.10/
- (9) Guideline on the demonstration and assessment of prior consideration of the CDM (Version 04), EB62 Annex13 /4.11/
- (10) Guidelines for objective demonstration and assessment of barriers, Version 01.0, EB50 Annex 13 /4.12/
- (11) Guidelines on the demonstration of additionality of small scale project activities, Version 09.0, EB68 Annex 27 /4.15/

- (12) Guidelines on the assessment of Investment Analysis (Version 05), EB62 Annex 05
- (13) Procedures for registration of a Programme of Activities as a single CDM project activity and issuance of certified emission reductions for a Programme of Activities (version 04.1) /4.16/
- (14) Procedures for processing and reporting on validation CDM Project Activities (Version 03), EB50 Annex 48 /4.17/
- (15) Clean Development Mechanism Project Cycle Procedure, Version 03.0, EB70 Annex 04 /4.18/
- (16) AMS-I.D. “Grid connected renewable electricity generation” version 17/4.2/

The project design was described using the appropriate template of VVS Track (F-CDM-SSC-PoA-DD version 02.0) as shown in the DDs, those were confirmed through comparison with the template listed on the UNFCCC website.

JCI confirmed that the DDs (PoA-DD and CPA-DD) are compiled with the appropriate format and are described based on appropriate tools, guidelines, manual and guidance which are specified and requested by the PoA procedures.

5. Description of a PoA/CPAs

JCI conducted the following process to validate the accuracy and completeness of the project description;

Process: Document review through the whole validation stage and follow-up actions during on-site assessment.

- Document review: Findings (CARs, CLs) on PoA-DD and CPA-DD/1.2/, DDR (Detailed Design Report), Preliminary Environmental Report
- Follow-up action: Direct interview to the project owner, relevant stakeholders, CDM consultants etc. during the on-site assessment of the proposed PoA, as shown in the section III. –Table III-2. Observation/inspection of the physical site was conducted during the period of 11 to 13 July 2012.

As a result of the above process, JCI concluded that the descriptions of the PoA-DD /1.2/ and the first specific CPA-DD /1.2/ were accurate and their contexts were complete, and well outlined the nature and technical aspects of the project activity.

Followings are the confirmed outlines of description of PoA and CPA;

1) Description of a PoA

The Programme of Activities (PoA) of “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia” is designed to consist of projects applying technology of “power generation using biogas” implemented by participating entities in Indonesia.

All project activities in the CPAs included in this PoA will be installed within the border of Indonesia.

PTRPN acts as the CME for the PoA, and provides an open platform for generated electricity suppliers to participate in the PoA by developing their own Component project activity (CPAs).

2) Description of a CPA

The context of the PoA, PoA-DD /1.2/ and CPA-DD/1.2/ were checked during the on-site assessment conducted from 11 to 13 July 2012 with the following measures:

- 1) Observation of the project site
- 2) Cross-check of the plan of the project with relevant drawings provided by the project participant /10.2/, /11.1/, /11.2/.

- 3) Interviews with the project participant, relevant organizations/entities, and local stakeholders shown in Table-III.2 of section III-5 above and in on-site assessment report /10.1/.

As the result of the above steps, JCI validated and concluded that the descriptions of the PoA-DD, CPA-DD /1.2/ are correct and its context is sufficient, and well outlines the nature and technical aspects of the project activity.

The major feature of the power generation plant for project activity of CPA-DD "Power generation using biogas from state-owned palm oil mills in the republic of Indonesia was confirmed during the site visit and also described in the CPA-DD /1.2/.

6. Additionality of a project activity

6.1 Demonstration of additionality of the PoA as a whole

As the PoA will consist of small scale projects as CPAs, demonstration of additionality will be conducted in CPA level in accordance with "Guidelines on the demonstration of Additionality of small scale project activities". The guidelines stipulate that the project participants to provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- (a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;
- (b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- (c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- (d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

The project participant applied "(a) Investment barrier" among the above 4 barriers and adequately demonstrated in the CPA-DD for the purpose of the demonstration of the additionality of each CPA to be conducted in the CPA-DD section D.5 "Demonstration of eligibility for the CPA" as follows in 6.2 – 6.5;

As a result, JCI validated and concluded that the additionality of this PoA project "Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia" as a whole is reasonable and appropriate in accordance with methodology AMS-III.H /4.1/, relevant guidelines and the additionality tool /4.21/.

6.2 Start date of a PoA/CPA

1) PoA-DD start date

JCI validated and confirmed that 31 May 2012 is the start date of PoA in the final version of PoA-DD/1.2/, which is the date of the commencement of GSC of PoA-DD. Regarding the start date of CPA-001, it is explained below.

JCI considers that this is appropriate and acceptable.

2) Specific CPA-DD start date

JCI validated and confirmed that the start date of CPA-001 01 January 2013, which is the date expected in the project schedule/8.7/ and later than the date of the commencement of the validation of the PoA, 31/05/2012, that is, the date when the CDM-PoA-DD is published for GSC (Global Stakeholder Consultation).

Also JCI confirmed the appropriateness of the timeline of the PoA and CPA-001 with review of major key milestones relevant to PoA/CPA-001 as shown in below Table IV-3;

Table IV-3 Timeline of major key milestones of CDM PoA activities

Date	Key Milestone	Evidence
March 2011	FSR for PoA completed	/5.1/
21 October 2011	Cost Estimation of Civil Work submitted by PT. HAMANROKO, construction company	/8.2/
31 October 2011	Cost Estimation of Wastewater Treatment System by the potential supplier was submitted	/8.3/
31 October 2011	Cost estimation of Gas engine/Generator was submitted by the potential contractor	/8.5/
30 November 2011	Detailed design report (Technical and Financial Design Report was completed	/5.6/
January 2012	EIA (UKL-UPL) Report completed	Environmental Impact Assessment Report_ /5.2 /
23 February 2012	EIA was approved by EMB	/5.3/
27 April 2012	MOU among BPPT/PTRPN/PTPN6/Shimizu has been agreed	/8.1/
10 May 2012	Local Stakeholder Consultation Meeting	/5.4/
11 May 2012	Validation contract agreed with DOE	/8.6/
31 May 2012 - 29 June 2012	GSC for PoA-DD and CPA-DD of the project	/1.1/
9 July 2012 – 13 July 2012	On-site Audit by JCI	/10.1/
24/10/2012	Revised DDR is completed. (Following this revision of DDR, CPA-DD is revised accordingly.)	/5.6-1/
29/10/2012	LoA from DNA of Indonesia	/2.3/
01/01/2013	Contract for project equipment Start date of CPA-001	Glossary of CDM terms /4.6/ Project schedule /8.7/
15/02/2013	Request for registration regarded as incomplete by UNFCCC	----
08/02/2013	DDR Rev.2 is issued due to revision of GWP for CH4	/5.6-2/

In conclusion, JCI concluded that the start dates of a PoA/CPA-001 are appropriate with reference to the above timeline explaining the actions/events taken by the project participants.

6.3 Identification of alternatives as PoA-DD

JCI reviewed that the PoA-DD /1.2/ appropriately describes that the credible and feasible baseline alternatives according to the selected methodology AMS-III.H /4.1/, AMS-I.D/4.2/, that is, the baseline alternative scenario for (1) wastewater treatment system and (2) electricity generation system as described below;

- (1) Baseline determination for wastewater treatment system

The PoA-DD /1.2/ determined the possible alternative scenario for water treatment system as below:

Indonesia does not have any legal system for obliging palm oil mills to collect biogas discharged from lagoons and sludge. Accordingly, if each CPA is not implemented, biogas collection equipment will not be installed in the future. Therefore, the baseline scenario for the wastewater treatment process would be the utilisation of open lagoons.

JCI confirmed the credibility of the above description with relevant legal standard in Indonesia which stipulates the environmental criteria for POME (Decree No.51, 1995 /7.1/).

Accordingly it can be judged appropriate that the alternative baseline scenario for “wastewater treatment system” is the utilisation of open lagoon.

(2) Baseline determination for electricity generation system

The PoA-DD /1.2/ determined the possible alternative scenario for electricity generation system as below:

Indonesia does not have any legal system for obliging palm oil mills to install generating equipment that uses renewable energy. Accordingly, if each CPA is not implemented, methane gas power generation equipment will not be installed in the future.

According to paragraph 10 of AMS-I.D, the baseline scenario is the electricity delivered to the grid by each CPA would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

The baseline emission factor of electricity from a grid is determined in line with paragraph 12 (a) of AMS-I.D., i.e. a combined margin(CM), consisting of the combination of operating margin (OM) and build margin (BM), according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system”.

JCI reviewed the above discussion in the PoA-DD regarding the alternative scenario for the electricity generation system with same standard mentioned above/7.1/ together referring to the quoted part of AMS-I.D/4.2/.

As JCI’s judgement, it is confirmed credible and acceptable that the baseline scenario of the electricity generation system is the continuation of the current situation, i.e. to use all power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance. The additional power generated under the project would be generated in existing and new grid-connected power plants in the electricity system.

JCI reviewed above discussion about the baseline scenarios of PoA-DD /1.2/, and confirmed the scenarios are the most suitable as the baseline scenarios.

6.4 Investment analysis

Demonstration of additionality of the PoA is stipulated as described in Section 6.1 above. The eligibility criteria for the demonstration of additionality for each CPA type were derived from the Guidelines on the demonstration of additionality of small-scale project activities (Version 09.0) /4.15/, and its additionality can be demonstrated according to the Guidelines /4.15/, which includes the investment barrier analysis.

In order to demonstrate the Additionality of the CPA-001, investment barrier is applied in accordance to the guideline provided as “EB68 Annex 27”/4.15/. The requirement of the guideline for “Investment barrier” is saying that “a financially more viable alternative to the project activity would have led to higher emissions”. As appropriately described in the section B.4 of the PoA-DD/1.2/ and D.4 in the

CPA-DD/1.2/, for both cases of “Wastewater treatment system” and “Electricity generation system”, alternative scenario is continuation of existing system, which leads to higher emissions by nature.

In consideration of the above, it is suitable to demonstrate the additionality with investment barrier approach, so PP of CPA-001 conducted the investment analysis to demonstrate that the proposed project is less viable in comparison with the baseline scenario, in other words, to demonstrate whether the equity IRR of the proposed project is lower than the benchmark IRR or not.

The CPA-DD/1.2/ selects investment barrier out of the 4 options specified in Guideline on the demonstration of additionality of small-scale project activities (Version 09.0)/4.15/ as the investment barrier is considered to be the most prohibitive factor in implementing the project activity.

Before conducting the validation of the benchmark analysis in order to demonstrate the investment barrier, JCI clarifies here the assumed project operation to justify each value applied in the process of validation as follows:

- Forecast of volume of FFB treatment during the lifetime of the project, by which the volume of bio-gas collection is determined planned as follows;

Based on the assumption in the DDR/5.6-2/, Production of FFB is estimated to increase at the annual rate of 5%, starting with 223,000t-FFB/year in 2013 and those parameters influenced by the volume of FFB (Electricity supply, Maintenance for gas engine) are assumed to increase as follows;

Table IV-4. Annual increase of FFB, Electricity generation, Maintenance for Gas Engine

Project operation	Production of FFB (t-FFB/year)	Electricity Supply (MWh/y)	Maintenance for gas engine (\$/y)
1 st year	223,000	4,001	87,892
2 nd year	234,150	4,206	92,281
3 rd year	245,858	4,422	96,894
4 th year	258,159	4,648	101,731
5 th year	271,058	4,886	106,832
6 th year	284,611	5,136	112,176
7 th year	298,841	5,398	117,785
8 th year	Supposed to increase at the same rate up to 360,000	5,673	123,658
9 th year		5,963	129,856
10 th year		6,266	136,339
11 th year		6,525	141,887
12 th year		6,525	141,887
13 th year		6,525	141,887
14 th year		6,525	141,887
15 th year		6,525	141,887
Average	259,381 (1 st 7yrs Ave.)	5,548	120,992

JCI confirmed that the data in the above Table IV-4 is exactly based on the DDR/5.6-2/ and judged appropriate.

Following benchmark analysis is implemented on the condition of the above table;

1. Benchmark Analysis

Benchmark analysis is applied and the equity IRR after tax (hereafter IRR) was calculated to be 2.5% without CERs revenue, and 5.8% with CER. Here the benchmark is set as 12.5% by applying the default value of the expected return on equity from Appendix of “Guidelines on the Assessment of Investment Analysis/4.23/”, in which it is defined that the benchmark of the project belong to Group 1 is 12.5%. “Energy industries (Sectoral scope 1)” and “Waste handling and disposal (Sectoral scope 13)” are belonging to Group 1, therefore the benchmark of the proposed PoA/CPA can be said rightly defined.

It is, therefore, concluded that the project activity without CERs is not financially attractive, of which processes are validated with below steps:

1) Application of benchmark analysis

Here the benchmark is set as 12.5% by applying the default value of the expected return on equity from Appendix of “Guidelines on the Assessment of Investment Analysis/4.23/”.

JCI judges that the selection of benchmark analysis for investment analysis is appropriate and fully complies with the relevant guidelines/4.15/.

2) Validation of input values used for the IRR calculation

With the result of benchmark analysis, the CPA-DD/1.2/ concluded that the project activity would not be implemented without CDM application, as the IRR without CERs revenue worked out to be 5.8% lower than the benchmark 12.5% below:

A) As shown in section 6.1, the DDR was originally prepared in 30 November 2011 by Shimizu Corporation (/5.5/), which is worked out based on the FSR/5.1/, relevant cost estimate provided candidate contractors (/8.2/, /8.3/, 8.4/) and the specific facts relevant to the CPA-001.

Afterwards, DDR/5.6/ was revised according to the revised design conditions which have emerged required to be revised as designing work has progressed, which can be deemed normal in itself as far as this type of engineering work is concerned. (Reference number of the revised DDR is /5.6-1/.)

CPA-DD for GSC is completed with reference to the DDR/5.6/ and the latest version of CPA-DD is updated reflecting the revisions made on the DDR/5.6/ (= Revised DDR/5.6-2/, dated 08/02/2013) as mentioned above.

Among the revisions, there found the revision of GWP (Global Warming Potential) from 21 to 25, which is decided in the “Decision 4/CMP.7 and in EB 69 Annex 3. This revision affects a lot of part of PoA-DD and CPA-DD, especially toward the result of ex-ante calculation of the emission reductions.

As all CPAs belong to the proposed PoA are expected to generate the emission reductions after 01/01/2013 (second commitment period), JCI judged the revision of GWP for methane from 21 to 25 in the PoA-DD and CPA-DD is appropriate even though the value of GWP_{CH_4} is still 21 in the applied methodology (AMS-III.H version 16).

JCI thinks that the revisions made on DDR/5.6/ do not give any impact to the established eligibility of the project as a CDM, therefore JCI judged the revised DDR/5.6-2/ is appropriate and acceptable.

B) The input values for the IRR calculation are derived from DDR/5.6-2/ and those are summarized in Table IV-5. All input values listed are the same between the DDR/5.6-2/ and CPA-DD/1.2/.

Table IV-5 Comparison of investment and input value of investment analysis

Parameters	Unit	DDR/5.6-2/	CPA-DD/1.2/
Initial investment	US\$	4,547,833	4,547,833
Civil work	US\$	2,864,500	2,864,500
Water treatment system	US\$	850,000	850,000
Gas engine generator	US\$	833,333	833,333
Average Annual O&M cost	US\$	211,874	211,874
Power tariff	IDR/kWh	975	975
Increase rate of production	%	5	5
Exchange rate 1	Yen/ US\$	78	78
Exchange rate 2	IDR/US\$	9,461	9,461
Project period	Years	15	15

3) Cross check

Initial investment, Power tariff and annual O&M cost used in the CPA-DD/1.2/ were validated through the cross-check in below A) – E);

A) Initial investment

Validation of the initial investment between the budget and the prospect

Values are shown in Table IV-6.

Table IV-6. Comparison of capital investment (units: US\$)

Major cost item	Estimated cost	Source
Gas-engine & generator	833,333	/5.6-2/
Wastewater treatment system	850,000	/5.6-2/
Civil work	2,864,500	/5.6-2/
Total Initial investment	4,547,833	---

Validation of the investment per kWh index with four (4) AMS III.H./AMS-I.D projects

In Indonesia, there are some AMS III.H./AMS-I.D with newly installed generators CDM projects which are similar to the proposed CPA and have been already registered.

In order to validate the initial investment cost for the proposed CPA-001, JCI selected 4 similar projects among the registered CDM project, and the investment per kW index of the Project is compared with those 4 projects.

Following table shows data derived from similar projects in Indonesia registered as CDM projects available on the UNFCCC website to compare;

Table IV-7 Comparison of investment cost with registered CDM projects

Ref No.	Investment cost (US\$)	Annual electricity (kWh/year)	Investment per kWh index (US\$/kWh)	O&M/Initial investment (%)
2631	2,880,722	7,151,000	0.403	5.7
2650	2,880,722	13,626,897	0.211	10.5
2652	2,880,722	11,737,925	0.245	7.8
4070	3,740,242	14,082,624	0.266	12.7
Average	---	---	0.281	9.18
<i>Proposed CPA (Ref. IRR excel sheet)</i>	<i>4,547,833</i>	<i>5,548,000</i>	<i>0.820</i>	<i>4.66</i>

Here, it is to be noted that the annual electricity of the proposed CPA delivered to the grid is estimated according to the scale Palm oil production, that is, POME volume. In the first year after the project starts, it is estimated 4,001,000kWh under the assumption of the volume of POME (= 156,100m³) however it would become 6,525,000kWh when POME reached to the planned maximum (= 252,000m³) as stated in the DDR/5.6-2/.

As average of project lifetime (= 15 years), power supply is 5,548MW (Table IV-4, Table IV-7) and POME is estimated 181,567 m³..

According to DDR/5.6-2/, assumed FFB processing amount in the 1st year is 223,000 ton as shown in Table IV-4 and FFB to Wastewater (POME) Ratio is 70%.

Here, considering the assumption of increase rate 5% of yearly processing amount of FFB in the 1st 7 year crediting period, ex-ante emission reduction calculation is carried out based on the 7 year average POME, namely 181,567m³ (= 259,381 x 0.7).

Detailed calculation result of all of above is found in the ER calculation spread sheet/1.4/, which JCI deemed totally appropriate with reference to the latest design work result in the revised DDR/5.6-2/.

Also JCI confirmed the assumption of the capacity of gas-engine generator with submitted design document/10.4/ provided by the potential supplier whether the average volume of POME could generate 5,548MWh and result is positive.

Also JCI confirmed this assumption is reflected in the calculation of IRR with the IRR excel sheet/1.3/ and it is positive as well.

As shown in the above Table IV-7, the investment cost for the proposed CPA is far greater in comparing to other registered CDM projects (= 0.820 > 0.281).

In consideration above, JCI studied the possible reasons of why it is such higher than others as follows;

- Firstly, Estimation cost is forwarded based on the fundamental design concept of “Shimizu Corporation” which is one of most experienced entity world-wide in this sort of project like operation of wastewater treatment system and its design concept has influenced the conditions of cost estimate to be prepared by candidate-contractors for Gas engine generator, Civil work and Wastewater treatment system.

JCI confirmed that the typical wastewater treatment system developed by Shimizu Corporation is designed for aiming higher operation performance and efficiency, less-required maintenance work, better robustness in structure with relevant drawings/11.1/, /11.2/ and “Basic Design Concept for Wastewater Treatment System”/10.6/.

It is quite understandable that such design architecture concept requires quality materials, quality equipment, and quality construction work force and so on, which lead to higher

cost estimate.

According to JCI's assessment on the design criteria/5.9/ which Shimizu Corporation applied during the design stage of the project, it is considered that the investment for above listed precedent four CDM projects could be far lower than Shimizu's.

- Secondly, CME is PTRPN, which is one of prestigious R&D institute in Indonesia and one of Participants is PTPSE/BPPT which is "Centre for Application and Assessment of Energy Resources Technology, Agency for the Assessment and Application of Technology" and the fact that these publicly responsible institutes pursuing social benefit recognized and accepted estimate of investment cost following the Shimizu's concept could be a strong support for higher investment for this CPA.
- Tertiarily, the estimated investment cost is worked out mainly for the purpose of budgeting at this stage and actual implementation will start in a bit more future, accordingly some cost down effort could be expected to be done by the time of reaching agreement between PP and respective contractors.
- Lastly, there is no similar project completed in Indonesia along with the design concept such as one that Shimizu Corporation presented for this particular project (CPA-001), accordingly no reference cost model is available.

JCI considers that the above procedure in planning stage of the project development is usual practice from project developer's point of view. And also JCI understands that introducing more quality system in view of long-term benefit costs more at the moment of initial investment as a pioneering venture.

Furthermore, in order to validate the appropriateness of the investment cost above in terms of CDM mind just for the purpose of presenting reference, JCI tried to substitute 0.403US\$/kWh which is an investment cost level of one of registered CDM projects in the above table in the calculation of IRR for the proposed CPA to find out whether the result of IRR calculation. The result is 10.4% and it is still less than the benchmark (12.5%). Accordingly the investment cost is even at this stage acceptable as a CDM project.

In consideration of above-mentioned background and some possible cost down effort, JCI judges that the estimated "Initial investment cost" in the CPA-DD can be said appropriate and acceptable.

B) Power Tariff

The Power tariff used in CPA-DD/1.2/ is 975 IDR/kWh including VAT, which is based on the MER Act 4/2012 "Renewable energy based Electricity Tariff /6.1/, which is authorized figure by the Indonesia government.

JCI reviewed the submitted relevant document issued by the government/6.1/ and confirmed it appropriate to apply 975 IDR/kWh as Power tariff.

C) Annual O&M cost

The annual O&M cost used in PDD/2/ is US\$211,874 and it is 4.66 % to the initial investment. And it is far lower than the cases of other 4 CDM projects according to the above Table IV-6. However this result is quite predictable because the investment cost is far higher due to the design concept of aiming a quality system as already mentioned in the above A.

Also, as mentioned before, it would be another reason of lower cost for O&M that the design concept of the proposed project is aiming less maintenance required system.

From CDM point of view, lower O&M cost can be deemed conservative in comparison to the cases of O&M cost level of other 4 projects (5.7%, 10.5%, 7.8%, 12.7%, average is 9.175%).

Accordingly, JCI judged the O&M cost estimated as above is appropriate and acceptable.

Table IV-7 Details of O&M cost estimate (Sourced from the DDR/5.6-2/)

No.	Item	Unit (US\$/year)	JCI judgement
-----	------	------------------	---------------

1	Gas engine maintenance	120,992	This is 15 years average and in line with DDR/5.6-1/, so appropriate. Detailed annual increase value is found in the IRR excel sheet.
2	Water treatment maintenance	20,000	Assumption in DDR is determined as constant by relevant expert, so can be judged appropriate
3	Operation fee	46,443	Ditto
4	Price of Pilot fuel	24,439	Ditto
Total		211,874	This is 15 years average and in line with DDR/5.6-2/, so appropriate. Detailed annual increase is found in the IRR excel sheet, which JCI deemed as appropriate.

As for the “Gas engine maintenance” cost, it increases 5% annually by the estimation of the expert in the DDR/5.6-2/. JCI accepts the value determined by the expert

As for Pilot fuel, JCI confirmed how it consumed while gas-engine is operating according to the estimation detailed in the DDR/5.6-2/.

As for the water treatment maintenance cost, it is assumed as no change over the lifetime of 15 years in the DDR/5.6-2/. It is also determined by the expert and in addition it is conservative to assume no increase. Accordingly JCI deemed it as appropriate.

Accordingly, JCI judges that the annual O&M cost in the investment analysis of the CPA-DD/1.2/ are appropriate.

D) Tax/Tax exemption/Depreciation rate

Income tax rate is assumed 25%, Tax exemption rate is assumed 30% and Depreciation rate is 6.25% in the DDR/5.6-2/ and IRR spread sheet for calculation of IRR.

All of these figures are sourced in the DDR/5.6-2/.

JCI confirmed that the original source to DDR/5.6-2/ is “Ministry of Finance Regulation Number 21/PMK.011/2010”/6.3/ for tax exemption and Indonesia Taxation Pocket Book, 2011/7.4/ for depreciation rate which have both been submitted to JCI and JCI admitted those evidence is credible.

With reference to those source documents, it is found that the tax can be exempted as long as the cumulative balance of profit is less than max tax exemption value, which is 1,364,350 US\$ (=Initial investment cost x tax exemption rate = 4,547,833 x 30%)

Accordingly JCI judged those figures are correct and acceptable due to its credibility and the result is correctly reflected on the calculations in the IRR spread sheet/1.3/.

E) Estimated net annual power supply

Estimated net annual power supply to the grid ($EG_{BL,y}$) is appropriately calculated as explained below;

The project activity generates methane biogas which is used in electricity generation and generated electricity displaces grid electricity, and thus fulfills AMS III H.

As to the net annual power supply, it is appropriately estimated in the CPA-DD as follows;

$$EG_{BL,y} = BG_{burnt,GEG,y} \times \text{“LHV of Methane”} / \text{“unit conversion”} / 1000 \times \text{“power generation efficiency”} \times (1 - \text{“Internal consumption of GEG”}) - \text{“Electricity (GEG to water treatment system)”}$$

Here, assumption is made as below in the CPA-DD and the justification of assumed value is confirmed respectively as shown in the below tables in the rightmost column;

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
CFE_{ww}	Capture efficiency of the biogas recovery equipment in the wastewater treatment systems (a default value of 0.9 shall be used)	0.9	Sourced in AMS-III.H/4.1/
$Q_{ww,y}$	Volume of treated wastewater discharged in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{PJ}	Model correction factor to account for model uncertainties (1.12)	1.12	Sourced in AMS-III.H/4.1/
$COD_{removed,PJ,P2,y}$	The chemical oxygen demand removed by the treatment system 2 ($P2$) of the project activity equipped with biogas recovery in the year y (t/m ³)	0.02882	Sourced in DDR/5.6-2/
$MCF_{ww,treatment,PJ,P2}$	Methane correction factor for the project wastewater treatment system 2 ($P2$) equipped with biogas recovery equipment (MCF values as per Table III.H.1)	0.8	Sourced in AMS-III.H/4.1/
“annual operating days” (-)		313	Estimated in DDR/5.6-2/ JCI validated the assumed operational date is acceptable and appropriate.
ρ_{CH_4}	Density of methane at normal conditions (0.716) (kgCH ₄ /m ³ CH ₄)	0.716	IPCC value

Under the above assumption, calculation result is as follows;

$$\begin{aligned}
 BG_{burnt,GEG,y} &= CFE_{ww} \times Q_{ww,y} \times B_{o,ww} \times UF_{PJ} \times (COD_{removed,PJ,P2,y} \times MCF_{ww,treatment,PJ,P2}) \\
 &\quad \times \text{“annual operating days”} / 365 / \rho_{CH_4} \times 1000 \\
 &= 0.9 \times 181,567 \times 0.25 \times 1.12 \times (0.02882 \times 0.8) \times 313 / 365 / 0.716 \times 1000 \\
 &= 1,263,455
 \end{aligned}$$

In addition, following assumption is also presented for the calculation of $EG_{BL,y}$;

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$BG_{burnt,GEG,y}$	The volume of biogas which is burnt by gas engine generator (m ³)	1,263,455	Based on “MEP” sourced in AMS-III.H/4.1/
“LHV of Methane” (kcal/m ³)		8,560	IPCC value
“unit conversion” (kcal/kWh)		860	IPCC value
“power generation efficiency” (-)		0.4	DDR/5.6-2/
“Internal consumption of GEG” (-)		0.05	DDR/5.6-2/
“Electricity (GEG to water treatment system)” (MWh)		108	DDR/5.6-2/

$$\begin{aligned}
 E_{GBL,y} &= B_{Gburnt,GEG,y} \times \text{"LHV of Methane"} / \text{"unit conversion"} / 1000 \times \text{"power generation efficiency"} \times (1 - \text{"Internal consumption of GEG"}) - \text{"Electricity (GEG to water treatment system)"} \\
 &= 1,263,455 \times 8,560 / 860 / 1,000 \times 0.4 \times (1 - 0.05) - 108 \\
 &= 4,672 \text{ MWh}
 \end{aligned}$$

JCI confirmed that the applied equations are in line with AMS-III.H. Also valued assumed are all checked with provided data sources such as DDR/5.6-2/ and "Attachment to DDR", which clearly explains how the proposed system is designed.

Accordingly, JCI concludes the annual power supply is properly estimated and acceptable.

2. Sensitivity analysis

A sensitivity analysis has been conducted with variations of the three parameters: 1) Initial Investment Cost, 2) Power Tariff, 3) Annual O&M Cost. All the three parameters constitute more than 20% of the total project cost or the total revenue.

The result shows that within (+) / (-) 10% variation ranges, the IRRs do not exceed the benchmark 12.5%: at (-) 10% of initial investment and annual O&M cost, the IRRs calculated are 3.5% and 3.0% respectively, and at (+) 10% of electricity tariff, the IRR calculated is 3.9%, which is shown at Table IV-8;

Table IV-8. Parameter changes when project IRR is equal to the benchmark

Factor	-10%	0%	+10%
Initial Investment Cost	3.5	2.5	1.5
Power Tariff	0.6	2.5	3.9
Annual O&M Cost	3.0	2.5	1.9

To reach the benchmark 12.5%, the electricity tariff needs to increase by 84% or the capital investment cost to decrease by 58%. As for the annual O&M cost, even if it decreases to zero, IRR does not reach to the benchmark.

JCI validated such cases are unlikely as below:

- 1) It is also unlikely that only the tariff increases by over 84% leaving other cost parameters behind and gives positive financial impacts on the investor's financial position. When the tariff increases, other commodity-price-sensitive costs, such as annual O&M cost would increase prior to increase of the tariff, and even at higher rates as shown in Table IV-8. This means that even if the tariff increases, its positive financial impacts would be limited being off-set to some extent by the cost increase of other parameters. Furthermore it should be noted that the tariff itself increases by 84% is not realistic and it is obvious not to happen.
- 2) The decrease in the capital investment by 58% is also unlikely to occur due to the continuous increase in material and labor costs etc. as known from the economic trend in Indonesia/6.2/.
- 3) The decrease in the annual O&M cost to zero, it is also unlikely to occur and there is no need to consider.

JCI validates that the above arguments clearly demonstrate that it is unlikely that the project IRR may exceed the benchmark within reasonable variations of financial parameters. JCI, therefore,

concludes that the result of the above investment analysis with use of the benchmark analysis is robust and then the project activity is financially unattractive.

7. Eligibility criteria for inclusion of a CPA in the PoA

JCI assessed the specified eligibility criteria in the PoA to determine those criteria are sufficient to ensure that all CPAs would comply with CDM requirements applicable to the PoA.

The CME demonstrated the specified criteria for the inclusion of CPA in the section B.2. of the PoA-DD, Part I /1.2/ as shown below Table IV-9.

JCI assessed the demonstration by the CME about the criteria, and filled up DOE's justification at the right column of the same Table IV-9, through *Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities /4.8/, and AMS-III.H/4.1/ and AMS-I.D/4.2/*.

1) Eligibility criteria in PoA-DD level

The defined eligibility criteria in the PoA-DD/1.2/ can be verified in accordance with “*Standard for demonstration of additionality, development of eligibility criteria of multiple methodologies for programme of activity*” /4.8/.

The verified result is shown in Table IV-9 for generic CPA-DD inclusion as well as for CPA-001.

Table IV-9 Check for Eligibility criteria for inclusion of a CPA in generic CPA-DD in PoA

No	Eligibility criteria of the PoA:	Requirements for CPAs in the PoA	Confirmation in view of generic CPA (Proof)	Check results in view of CPA-001
1	The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA	Each CPA shall be implemented within the territorial boundary of Republic of Indonesia. The project boundary shall involve the lagoons, the wastewater treatment systems, the biogas collection systems, the biogas power generation facilities, and the regional electricity grid.	Yes/No (The geographical location of the project site shall be specified in each CPA-DD)	OK. Confirmed the appropriateness of the description in the CPA-DD against criteria in the PoA-DD
2	Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo)	A search of the CDM database on the UNFCCC website will be conducted by the CME prior to inclusion to ensure that each CPA-DD has not been registered as a single CDM project or another CPA. Moreover, if CME is not one of CPA implementers, CME and each CPA implementer conclude the letter which consent for CPA to contain in PoA, and not be registered as other PoA or CDM projects (refer to SECTION C of proposed PoA) .	Yes/No (The geographical coordinates of the project site to search of the database shall be specified in each CPA-DD. In addition, searching for other carbon market such as VCS, Gold standard, etc. is to be conducted.)	OK. Confirmed that the “Procedure to avoid double counting” and statement of CME are appropriate to avoid double counting.

No	Eligibility criteria of the PoA:	Requirements for CPAs in the PoA	Confirmation in view of generic CPA (Proof)	Check results in view of CPA-001
3	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications	Each CPA shall specify: a) a biogas collection system which covers the lagoon and collects the biogas will be used for the wastewater treatment of an anaerobic lagoon; and b) the gas engine generator and/or the enclosed type flare will be used for combustion of biogas collected from the anaerobic lagoon	Yes/No (The relevant information shall be specified in each CPA-DD)	OK. Confirmed the appropriateness of the description in the CPA-DD
4	Conditions to check the start date of the CPA through documentary evidence	The start date of the CPA shall be after the date of start of validation of the PoA.	Yes/No (The information proving the start date of each CPA was after the PoA GSC date shall be provided in each CPA-DD)	OK Confirmed by the Project Schedule provided as an evidence (/8.7/ for CPA-001)
5	Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs	Each CPA shall apply the applicability of both AMS-III.H Ver.16.0 and AMS-I.D Ver.17.0.	Yes/No (It shall be indicated in each CPA-DD that each CPA is applicable under AMS-III,H and AMS-I.D)	OK. Confirmed the appropriateness of the criteria in the PoA-DD
6	The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality	The additionality of each CPA shall be demonstrated in accordance with “Guidelines on the demonstration of additionality of small-scale project activities” Ver. 09.0. For details, it is shown below.	Yes/No (The additionality of each CPA shall be demonstrated in each CPA-DD)	OK. Confirmed that the “Guidelines on the demonstration of additionality of small-scale project activities” for demonstration of additionality to be applied to CPA.
7	The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis	The local stakeholder consultation and environmental impact analysis must be carried at the CPA level.	Yes/No (The details of the local stakeholder consultation and environmental impact analysis shall be provided in each CPA-DD)	OK. Confirmed the appropriateness of the details of the local stakeholder consultation and environmental impact analysis

No	Eligibility criteria of the PoA:	Requirements for CPAs in the PoA	Confirmation in view of generic CPA (Proof)	Check results in view of CPA-001
8	Conditions to provide an affirmation that funding from Annex I parties, if any does not result in a diversion of official development assistance	In each CPA, there should be no public funding from Annex I parties.	Yes/No (The information about public funding from Annex I parties shall be provided in each CPA-DD)	OK. Confirmed the appropriateness of the information about public funding from Annex I parties
9	Target group (e.g. domestic/commercial /industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms	The target group of the PoA is State-owned Palm Oil Mills in the Republic of Indonesia.	Yes/No (The information of the project site shall be provided in each CPA-DD)	OK. Confirmed the appropriateness of the information of the project site
10	The requirements for the debundling check	Each CPA shall demonstrate that the project is not a debundling project. The debundling check is carried out when the CME manages the information on each CPA (refer to the section C of PART I of the PoA-DD).	Yes/No (It shall be indicated in each CPA-DD that each CPA will not a debundling project)	OK Confirmed that each CPA will not a debundling project

Thus, JCI validated and confirmed that the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

8. Application of the selected baseline and monitoring methodology

8.1 Application of multiple methodologies

JCI confirmed that the generic CPA will consist to implement power generation plant using biogas base on the methane recovery in wastewater treatment project that is eligible under methodology AMS-III.H, therefore, multiple methodologies will not be applied for the project.

8.2 Applicability of the selected baseline and monitoring methodology to the project activity

JCI has confirmed that application of “AMS-III.H: Methane recovery in waste water treatment” /4.1/ to the project activity is appropriate by the following steps and viewpoints;

1) Document Review

JCI has reviewed the Technical Reports/5.1 of the proposed project, and project related documentation and confirmed the proposed project is a newly installed power plant using biogas where no renewable energy power plant operating prior to the implementation of the project activity.

2) On-site visit dated 11 - 13 July 2012

JCI has confirmed that the power generation plant using biogas base on the methane recovery in wastewater treatment project which will be connected to the provincial grid has been scheduled as a small scale plant in Jambi city by meeting with the PP during the on-site visit.

JCI has also confirmed that the plant is designed with national laws and regulations.

As shown in B.2 of Part II in the PoA-DD/1.2/, the applicability is sufficiently demonstrated that the project activity meets with the applicable conditions specified by the methodology AMS-III.H/4.1/ and AMS-I.D/4.2/. JCI judges that application of AMS III.H. "Methane Recovery in Wastewater Treatment" version 16/4.1/ and AMS I.D. "Grid connected renewable electricity generation" version 17/4.2/ to the project activity is appropriate.

The project activity will introduce methane recovery facilities to the existing Pinang Tinggi POME Treatment System and the recovered methane will be used to generate electricity by the newly installed gas engines and generators, totally installed capacity of 1.050MW of which validity is confirmed with the submitted DDR/5.6-2/ and Design-note as an Attachment to DDR/5.7/.

AMS-III.H: the baseline for methane recovery component

The methane recovery component of the project activities meets the following six (6) conditions for the application of the methodology AMS-III.H version 16/4.1/ (Confirmation was made that paragraphs not listed below are not applicable):

1) Paragraph 1(f):

Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery (e.g. introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery)

2) Paragraph 2(a):

The lagoons are ponds with a depth greater than two meters, without aeration. The value for depth is obtained from engineering design documents, or through direct measurement, or by dividing the surface area by the total volume. If the lagoon filling level varies seasonally, the average of the highest and lowest levels may be taken;

3) Paragraph 3(a):

Thermal or electrical energy generation directly

4) Paragraph 4:

If the recovered biogas is used for project activities covered under paragraph 3 (a), that component of the project activity

5) Paragraph 13:

The location of the wastewater treatment plant as well as the source generating the wastewater shall be uniquely defined and described in the PDD.

6) Paragraph 14:

Measures are limited to those that result in aggregate emissions reductions of less than or equal to 60 kt CO₂ equivalent annually from all type III components of the project activity

AMS-I.D: the baseline for electricity generation component

The electricity generation component of the project activities meets the following four (4) conditions for the application of the methodology AMS I.D. version 17/4.2/ (Confirmation was made that paragraphs not listed below are not applicable):

1) Paragraph 1(a):

This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid

2) Paragraph 2:

Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included in Table 2.

3) Paragraph 3:

This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant)

4) Paragraph 7:

In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units

In conclusion, JCI judges that the baseline scenario for both of Methane recovery component and Electricity generation Component to the project activity has been identified complying with the relevant methodologies and tool.

JCI has confirmed that application of “AMS-III.H: Methane recovery in waste water treatment” /4.1/ to the project activity is appropriate by the following steps and viewpoints;

8.3 Boundary

1) Boundary for the PoA in terms of geographical area

JCI confirmed that the project boundary is appropriate for this project activity from the following steps and viewpoints:

1) Document review

JCI has reviewed the relevant documents and has confirmed that the project activities in PoA level are the country boundary of Indonesia.

2) On-site visit on 11- 13 July 2012

JCI has confirmed that the PoA project will be implemented in Sumatra, Indonesia through the interviews with the PP.

The boundary of the PoA is defined as the geographical area within which all the implemented the CPAs included in the PoA. All project activities in the CPAs included in this PoA will be installed within the border of Indonesia. Therefore, the boundary of the PoA is defined as Indonesia.

The programme will be designed so that individual CPAs can be included in the PoA within Republic of Indonesia. Each CPA will be identified uniquely with the help of addresses and GPS coordinates.

As the programme will replace grid electricity and hence the project boundary will include all the power plants connected physically to the national electricity system. The CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the PoA are included under this programme.

JCI concluded that the project boundary is appropriately defined in the PoA-DD/1.2/ and fully complies with the methodology AMS-III.H /4.1/.

2) Sources and GHGs in PoA-DD (Generic-CPA)

JCI checked that the system boundary and associated emissions for the project activity and the conclusion is summarized in the Table IV-10 below.

Table IV-10 Check for System Boundary and Emissions sources in PoA-DD

Emissions	Source	Gas	Inclusion in Methodology	Inclusion in PoA-DD	Check result
Baseline	Wastewater treatment process	CH ₄	Yes	Emissions from the existing open lagoon wastewater treatment system	OK
		CH ₄	No	In this project, treated wastewater will use for field application, therefore there is no emissions from degradable organic carbon in discharged into river.	OK
		N ₂ O	No	Excluded for simplification This is conservative	OK
		CO ₂	No	CO ₂ emissions from the decomposition of organic waste are not account for	OK
	Electricity consumption / generation	CO ₂	Yes	Emissions from consumption of grid electricity substituted by the power generated from biogas in the project	OK
		CH ₄	No	Excluded for simplification This is conservative	OK
		N ₂ O	No	Excluded for simplification This is conservative	OK
	Wastewater treatment process	CH ₄	Yes	Emissions from non-collected parts; Emissions from biogas release capture system; Emissions due to incomplete flaring system	OK
Project Activity	Wastewater treatment process	CH ₄	No	In this project, treated wastewater will use for field application, therefore there is no emissions from degradable organic carbon in discharged into river.	OK
		CO ₂	No	CO ₂ emissions from the decomposition of organic waste are not account for	OK
		N ₂ O	No	Excluded due to the project is not involved land application of sludge	OK
	Electricity consumption / generation	CO ₂	Yes	Electricity from grid is consumed to operate the project activity, emissions shall be included.	OK
		CO ₂	Yes	At the time of starting of a gas engine, diesel is used. Emissions from consumption of diesel shall	OK

Emissions	Source	Gas	Inclusion in Methodology	Inclusion in PoA-DD	Check result
				be included.	
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small	OK
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small	OK

3) Location and Boundary of the project activities implemented under the CPA-001 (CPA-DD)

(1) Location of CPA-001

The CPA-001 is planned to be implemented as project activity of CPA-001.

JCI confirmed that the geographical location of CPA-001 is in Jambi City, Jambi Province in Sumatera, Indonesia through the on-site visit.

(2) Sources and GHGs in CPA-001 (Generic-CPA)

Since the project technology of CPA-001 is designed and operated as Greenfield Power generation plant, the system boundary and associated emissions for the project activity of CPA-001 is confirmed as follows.

JCI confirmed that the CO₂ gas from connected the grid of Indonesia is only the emission source as shown in the Table 4 of Section C. of CPA-001 (CPA-DD)

(3) GHG emissions more than 1% of the overall (VVS Para.87)

JCI validated all potential sources of GHG emissions within the boundary of proposed project and concluded that all sources, which are expected to contribute more than 1% of the overall expected average annual emissions reductions are included in the estimation of the CPA-001 (CPA-DD).

8.4 Baseline scenario for CPA-001 “PTPN VI Pinang Tinggi Mill POME Biogas Project in Jambi Province, Sumatera in Indonesia”

As for the baseline scenario for CPA-001 is correctly demonstrated in the Section D.4 of CPA-DD as follows;

According to paragraph 10 of AMS-I.D, the baseline scenario is the electricity delivered to the grid by each CPA would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

The baseline emission factor of electricity from a grid is determined in line with paragraph 12 (a) of AMS-I.D., i.e. a combined margin(CM), consisting of the combination of operating margin (OM) and build margin (BM), according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system”.

Thus, the electricity displacement component of each CPA will displace the electricity that would have been supplied by the connecting grid in the region.

JCI has validated above demonstration in the CPA-DD and concluded the baseline scenario and emissions are appropriately defined complying with AMS-III.H /4.1/, AMS-I.D/4.2/.

8.5 Assessment for the algorithms and/or formulae for estimation of emission reductions of generic CPA in PoA-DD level

JCI validated for the algorithms and/or formulae through taking into consideration on following steps in accordance with the paragraphs 97, 98 and 99 of VVS /4.7/.

1) Step-1 Validation work:

JCI has verified the data and parameters used in the equations, including references to any other data sources used.

2) Step-2 Results of Validation work (Providing the opinion of validation):

JCI has provided the opinion by taking following steps to assess whether the algorithms and/or formulae used to determine emission reductions for CO₂ abatement of the project activity is appropriate or not.

- (a) All assumptions and data used by the PP are listed in the PoA-DD, CPA-DD /1.2/, including their references and sources are appropriate.
- (b) All documentation used by the PP as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA-DD, CPA-DD /1.2/;
- (c) All values used in the PoA-DD, CPA-DD /1.2/ are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA-DD, CPA-DD /1.2/;

JCI validated that the Part II. Generic component project activity (CPA) of PoA-DD /1.2/ explains how the methods or methodological steps, in the selected methodology AMS-III.H/4.1/,

JCI confirmed that the equations applied for calculating baseline emissions, project emissions, leakage emissions and emission reductions under the generic CPA is according to the AMS-III.H/4.1/.

8.6 Estimation of emission reductions of CPA-001

JCI validated the estimation of emission reductions of CPA-001 according to the methodology AMS-III.H /4.1/ and “Tool for emission factor /4.2/

1) Data and parameters that are to be reported ex-ante

JCI confirmed that the CPA-DD/1.2/ fully complies with the methodology AMS-III.H/4.1/, AMS-I.D/4.2/ and relevant tool/4.3/ based on the baseline scenario selected. The calculations were conducted to work out the project emissions based on the methodologies/4.1/, /4.2/and the relevant Tool /4.2/.

JCI also confirmed that the data and parameters used in the calculations are appropriate and correctly interpreted and applied through cross-checks with grid data available on the website of DNA Indonesia/7.2/. Main parameters for methane recovery component in ex-ante estimation are summarized in Table 7 and other parameters are default values. The spreadsheet of emission reduction calculation will be uploaded when the requesting registration for this PoA is carried out.

2) Ex-ante calculations of emission reductions in CPA-001

Emission Reductions is rightly estimated based on the emission reductions from “Waste water treatment” process and “Electricity generation” process in the CPA-DD as validated below.

JCI confirmed that all calculation process are in line with the requirements of UNFCCC and values are rightly obtained from the right source as indicated in the following confirmation and validation approach.

JCI also confirmed and validated the appropriateness of each values referring to respective data sources and its result is stated in the rightmost column of each parameters table shown below;

A) Emission reductions in waste water treatment process

a) Baseline emission

According to the applied methodology/4.1/, Baseline emissions ($BE_{ww,y}$) consist of following elements according to the equation (1), in the paragraph 18 of AMS-III.H /4.1/;

$$BE_{ww,y} = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\}$$

Where:

$BE_{ww,y}$	Baseline emissions in waste water treatment in year y (tCO ₂ e)
$BE_{power,y}$	Baseline emissions from electricity or fuel consumption in year y (tCO ₂ e) No electricity is required to operate baseline wastewater treatment system. Therefore $BE_{power,y} = 0$
$BE_{ww,treatment,y}$	Baseline emissions of the wastewater treatment systems affected by the project activity in year y (tCO ₂ e)
$BE_{s,treatment,y}$	Baseline emissions of the sludge treatment systems affected by the project activity in year y (tCO ₂ e) No sludge treatment system exists in the baseline scenario. Therefore $BE_{s,treatment,y} = 0$
$BE_{ww,discharge,y}$	Baseline methane emissions from degradable organic carbon in treated wastewater discharged into sea/river/lake in year y (tCO ₂ e).
$BE_{s,final,y}$	Baseline methane emissions from anaerobic decay of the final sludge produced in year y (tCO ₂ e). The final sludge is used for soil application. Therefore $BE_{s,final,y} = 0$

From above consideration,

$$BE_{ww,y} = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\} \\ = 0 + BE_{ww,treatment,y} + 0 + BE_{ww,discharge,y} + 0$$

(1) $BE_{ww,treatment,y}$

According to the applied methodology AMS-III.H/4.1/, methane emissions from the baseline wastewater treatment systems affected by the project ($BE_{ww,treatment,y}$) are determined using the COD removal efficiency of the baseline plant as follows (Paragraph 20, AMS-III.H/4.1/ equation (2));

$$BE_{ww,treatment,y} = \Sigma i(Q_{ww,i,y} \times COD_{inflow,i,y} \times \eta_{COD,BL,i} \times MCF_{ww,treatment,BL,i}) \\ \times B_{o,ww} \times UF_{BL} \times GWP_{CH4} \\ = Q_{ww,B1,y} \times COD_{inflow,B1,y} \times \eta_{COD,BL,B1} \times MCF_{ww,treatment,BL,B1}) \\ \times B_{o,ww} \times UF_{BL} \times GWP_{CH4} \\ = 181,567 \times 0.04142 \times 0.7805 \times 0.8 \times 0.25 \times 0.89 \times 25 \\ = 26,120$$

Where;

Parameter Symbol	Description	Applied value	JCI's confirmation/ validation
$Q_{ww,B1,y}$	Volume of wastewater treated in baseline wastewater treatment system (B1) in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$COD_{inflow,B1,y}$	Chemical oxygen demand of the wastewater inflow to the baseline treatment system (B1) in year y (t/m ³)	0.04142	10 days POME Analysis
$\eta_{COD,BL,B1}$	COD removal efficiency of the baseline treatment system (B1)	0.7805	Based on 10 days POME Analysis/5.8/

$MCF_{ww,treatment,BL,B1}$	Methane correction factor for baseline wastewater treatment system (B1) (MCF values as per Table III.H.1 : Anaerobic deep lagoon (depth more than 2 m) 0.8)	0.8	Sourced in AMS-III.H
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{BL}	Model correction factor to account for model uncertainties (0.89)	0.89	Sourced in AMS-III.H
GWP_{CH_4}	Global Warming Potential for methane (value of 25)	25	IPCC value

(2) $BE_{ww,discharge,y}$

According to the applied methodology AMS-III.H/4.1/, methane emissions from degradable organic carbon in treated wastewater in year y ($BE_{ww,discharge,y}$) are determined as follows;

$$\begin{aligned}
 BE_{ww,discharge,y} &= Q_{ww,y} \times COD_{ww,discharge,BL,y} \times MCF_{ww,discharge,BL} \times B_{o,ww} \times UF_{BL} \times GWP_{CH_4} \\
 &= 181,567 \times 0.00452 \times 0.1 \times 0.25 \times 0.89 \times 25 \\
 &= 457
 \end{aligned}$$

Where;

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$Q_{ww,y}$	Volume of treated wastewater discharged in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$COD_{ww,discharge,BL,y}$	Chemical oxygen demand of treated wastewater discharged into sea, river or lake in the baseline situation in year y(t/m ³)	0.00452	10 days POME Analysis
$MCF_{ww,discharge,BL}$	Methane correction factor based on discharge pathway in the baseline situation (e.g. into sea, river or lake) of the wastewater (MCF values as per Table III.H.1 : Discharge of wastewater to sea, river or lake 0.1)	0.1	Sourced in AMS-III.H
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{BL}	Model correction factor to account for model uncertainties (0.89)	0.89	Sourced in AMS-III.H
GWP_{CH_4}	Global Warming Potential for methane (value of 25)	25	IPCC value

JCI confirmed that CM emission factor is 0.743tCO₂/MWh in the CPA-DD, referring to the published data by the Indonesia government at its website/7.2/.

JCI confirmed that the above calculations cannot be replicated based on equations in the relevant tool/4.3/ because the grid data source needed to calculate the emission factors (OM, BM) are not available to public which is strictly kept as confidential under the Indonesian government policy.

JCI directly confirmed this fact when visited DNA in Jakarta, Indonesia for the purpose of the interview to an officials in DNA office as part of onsite audit.

Only available data to DOE as well as PP is the calculation result, which is proved when visiting relevant website.

JCI confirmed that the applied emission factor in calculation of emission reductions are same as one in the relevant website and can be judged correct.

Total baseline emissions under wastewater treatment

$$\begin{aligned} BE_{ww,y} &= \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\} \\ &= 0 + BE_{ww,treatment,y} + 0 + BE_{ww,discharge,y} + 0 \\ &= 26,120 + 457 = 26,577 \end{aligned}$$

JCI checked the calculation process and result here with reference to the relevant methodology and the revised DDR/5.6-2/.

It can be concluded that all described here are in line with references and can be deemed as appropriate.

b) Project emission

According to the applied methodology, Project emissions ($PE_{ww,y}$) consist of following elements according to the equation (8), in the paragraph 29 of AMS-III.H /4.1/;

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

Where;

$PE_{ww,y}$	Project emissions in waste water treatment in year y (tCO ₂ e)
$PE_{power,y}$	Project emissions from electricity or fuel consumption in year y (tCO ₂ e)
$PE_{ww,treatment,y}$	Project emissions of the wastewater treatment systems affected by the project activity in year y (tCO ₂ e)
$PE_{s,treatment,y}$	Project emissions of the sludge treatment systems affected by the project activity in year y (tCO ₂ e) No sludge treatment system exists in the baseline scenario. Therefore $PE_{s,treatment,y} = 0$
$PE_{ww,discharge,y}$	Project methane emissions from degradable organic carbon in treated wastewater discharged into sea/river/lake in year y (tCO ₂ e). As discussed above,
$PE_{s,final,y}$	Project methane emissions from anaerobic decay of the final sludge produced in year y (tCO ₂ e). No sludge treatment system exists in the baseline scenario. Therefore $PE_{s,final,y} = 0$
$PE_{fugitive,y}$	Project methane emissions from biogas release in capture systems in year y.
$PE_{flaring,y}$	Project methane emissions due to incomplete flaring in year y (tCO ₂ e).
$PE_{biomass,y}$	Project methane emissions from biomass stored under anaerobic conditions. $PE_{biomass,y} = 0$

From above consideration,

$$PE_{ww,y} = \{PE_{power,y} + PE_{ww,treatment,y} + 0 + PE_{ww,discharge,y} + 0 + PE_{fugitive,y} + 0 + PE_{flaring,y}\}$$

(1) Emissions from electricity or fuel consumption

$$\begin{aligned} PE_{power,y} &= EC_{PJ,grid,y} \times EF_{EL,grid,y} \times (1 + TDL_{grid,y}) + FC_{diesel,y} \times NCV_{diesel,y} \times EF_{CO2,diesel,y} \\ &= 18 \times 0.743 \times 1.2 + 22 \times 42.7 \times 0.0741 \\ &= 86 \end{aligned}$$

Parameter Symbol	Description	Applied value	JCI's confirmation/
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			validation
$EC_{PJ,grid,y}$	Quantity of electricity consumed by the project electricity consumption from the grid in year y (MWh/y)	18	DDR/5.6-2/
$EF_{EL,grid,y}$	Emission factor for electricity generation from the grid in year y (tCO ₂ /MWh)	0.743	Grid emission factor
$TDL_{grid,y}$	Average technical transmission and distribution losses for providing electricity to from the grid in year y	20%	DDR/5.6-2/
$FC_{diesel,y}$	Quantity of diesel combusted in year y (ton)	22	DDR/5.6-2/
$NCV_{diesel,y}$	Weighted average net calorific value of diesel in year y (GJ/ton)	42.7	IPCC value
$EF_{CO2,diesel,y}$	Weighted average CO ₂ emission factor of diesel in year y (tCO ₂ /GJ)	0.0741	IPCC value

- (2) Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery

$$\begin{aligned}
 PE_{ww,treatment,y} &= \sum k(Q_{ww,k,y} \times COD_{inflow,k,y} \times \eta_{COD,PJ,k} \times MCF_{ww,treatment,PJ,k}) \times Bo_{ww} \times UF_{PJ} \times GWP_{CH4} \\
 &= (Q_{ww,P1,y} \times COD_{inflow,P1,y} \times \eta_{COD,PJ,P1} \times MCF_{ww,treatment,PJ,P1} + Q_{ww,P3,y} \times COD_{inflow,P3,y} \times \eta_{COD,PJ,P3} \\
 &\quad \times MCF_{ww,treatment,PJ,P3}) \times Bo_{ww} \times UF_{PJ} \times GWP_{CH4} \\
 &= (181,567 \times 0.04142 \times 0.1300 \times 0.8 + 181,567 \times 0.00721 \times 0.2950 \times 0.8) \times 0.25 \times 1.12 \times 25 \\
 &= 5,475 + 2,163 \\
 &= 7,638
 \end{aligned}$$

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$Q_{ww,P1,y}$	Volume of wastewater treated in project wastewater treatment system 1 (P1) in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$COD_{inflow,P1,y}$	Chemical oxygen demand of the wastewater inflow to the project treatment system 1 (P1) in year y (t/m ³)	0.04142	10 days POME Analysis
$\eta_{COD,PJ,P1}$	COD removal efficiency of the project wastewater treatment system 1 (P1) in year y (t/m ³)	0.1300	Based on 10 days POME Analysis/5.8/
$MCF_{ww,treatment,PJ,P1}$	Methane correction factor for project wastewater treatment system 1 (P1) (MCF values as per Table III.H.1 : Anaerobic deep lagoon (depth more than 2 m) 0.8)	0.8	Sourced in AMS-III.H/4.1/
$Q_{ww,P3,y}$	Volume of wastewater treated in project wastewater treatment system 3 (P3) in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$COD_{inflow,P3,y}$	Chemical oxygen demand of the wastewater inflow to the project treatment system 3 (P3) in year y (t/m ³)	0.00721	10 days POME Analysis
$\eta_{COD,PJ,P3}$	COD removal efficiency of the project wastewater treatment system 3 (P3) in year y (t/m ³)	0.2950	10 days POME Analysis

$MCF_{ww,treatment,PJ,P3}$	Methane correction factor for project wastewater treatment system 3 (P3) (MCF values as per Table III.H.1 : Anaerobic deep lagoon (depth more than 2 m) 0.8)	0.8	Sourced in AMS-III.H/4.1/
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{PJ}	Model correction factor to account for model uncertainties (1.12)	1.12	Sourced in AMS-III.H/4.1/
GWP_{CH4}	Global Warming Potential for methane (value of 25)	25	IPCC value

(3) Methane emissions from degradable organic carbon in treated wastewater

$$\begin{aligned}
 PE_{ww,discharge,y} &= Q_{ww,y} \times COD_{ww,discharge,PJ,y} \times MCF_{ww,discharge,PJ} \times B_{o,ww} \times UF_{PJ} \times GWP_{CH4} \\
 &= 181,567 \times 0.00508 \times 0.1 \times 0.25 \times 1.12 \times 25 \\
 &= 216
 \end{aligned}$$

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$Q_{ww,y}$	Volume of treated wastewater discharged in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$COD_{ww,discharge,PJ,y}$	Chemical oxygen demand of treated wastewater discharged into sea, river or lake in the project scenario in year y (t/m ³)	0.00508	10 days POME Analysis
$MCF_{ww,discharge,PJ}$	Methane correction factor based on discharge pathway in the project scenario (e.g. into sea, river or lake) of the wastewater (MCF values as per Table III.H.1 : Discharge of wastewater to sea, river or lake 0.1)	0.1	Sourced in AMS-III.H/4.1/
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{PJ}	Model correction factor to account for model uncertainties (1.12)	1.12	Sourced in AMS-III.H/4.1/
GWP_{CH4}	Global Warming Potential for methane (value of 25)	25	IPCC value

(4) Methane emissions from biogas release in capture systems

$$\begin{aligned}
 PE_{fugitive,y} &= PE_{fugitive,ww,y} \\
 &= (1 - CFE_{ww}) \times MEP_{ww,treatment,y} \times GWP_{CH4} \\
 &= (1 - 0.9) \times 1,172.7 \times 25 \\
 &= 2,930
 \end{aligned}$$

$$\begin{aligned}
 MEP_{ww,treatment,y} &= Q_{ww,y} \times B_{o,ww} \times UF_{PJ} \times \Sigma k(COD_{removed,PJ,k,y} \times MCF_{ww,treatment,PJ,k}) \\
 &= Q_{ww,y} \times B_{o,ww} \times UF_{PJ} \times (COD_{removed,PJ,P2,y} \times MCF_{ww,treatment,PJ,P2}) \\
 &= 181,567 \times 0.25 \times 1.12 \times (0.02882 \times 0.8) \\
 &= 1,172
 \end{aligned}$$

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
CFE_{ww}	Capture efficiency of the biogas recovery equipment in the wastewater treatment systems (a default value of 0.9 shall be used)	0.9	Sourced in AMS-III.H/4.1/
GWP_{CH_4}	Global Warming Potential for methane (value of 25)	25	IPCC value
$Q_{ww,y}$	Volume of treated wastewater discharged in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{PJ}	Model correction factor to account for model uncertainties (1.12)	1.12	Sourced in AMS-III.H/4.1/
$COD_{removed,PJ,P2,y}$	The chemical oxygen demand removed by the treatment system 2 ($P2$) of the project activity equipped with biogas recovery in the year y (t/m ³)	0.02882	10 days POME Analysis
$MCF_{ww,treatment,PJ,P2}$	Methane correction factor for the project wastewater treatment system 2 ($P2$) equipped with biogas recovery equipment (MCF values as per Table III.H.1)	0.8	Sourced in AMS-III.H/4.1/

(5) Methane emissions due to incomplete flaring

$PE_{flaring,y}$ is correctly calculated by using “Tool to determine project emissions from flaring gases containing methane”/4.4-1/, the equation is shown as below;

$$PE_{flare,y} = \sum (h=1 \sim 8760) TM_{RG,h} \times (1 - \eta_{flare,h}) \times GWP_{CH_4} / 1000$$

$$\begin{aligned}
 TM_{RG,h} &= FV_{RG,h} \times fv_{CH_4,RG,h} \times \rho_{CH_4} \\
 &= 23.962 \times 0.716 \\
 &= 17.157
 \end{aligned}$$

Accordingly,

$$\begin{aligned}
 PE_{flare,y} &= 8,760 \times 17.157 \times (1 - 0) \times 25/1000 \\
 &= 376
 \end{aligned}$$

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$TM_{RG,h}$	Mass flow rate of methane in the residual gas in the hour h (kgCH ₄ /h)		
$\eta_{flare,h}$	Flare efficiency in hour h	0.9	Sourced in Tool/4.4-1/
$FV_{RG,h}$	Volumetric flow rate of the residual gas in dry basis at normal conditions in hour h (m ³ /h)	23.962 (The volume)	Estimated in DDR/5.6-2/

$f_{CH_4, RG, h}$	Volumetric fraction of methane in the residual gas on dry basis in hour h (-)	value of methane)	
ρ_{CH_4}	Density of methane at normal conditions (0.716) (kgCH ₄ /m ³ CH ₄)	0.716	Sourced in Tool/4.4-1/
GWP_{CH_4}	Global Warming Potential for methane	25	IPCC value

Total project emissions under wastewater treatment

From the above described calculation result, “Total project emissions under wastewater treatment” can be obtained as follows;

$$\begin{aligned}
 PE_{ww,y} &= \{PE_{power,y} + PE_{ww,treatment,y} + PE_{s,treatment,y} + PE_{ww,discharge,y} + PE_{s,final,y} + PE_{fugitive,y} + PE_{biomass,y} \\
 &\quad + PE_{flaring,y}\} \quad (4) \\
 &= 86 + 7,638 + 0 + 646 + 0 + 2,930 + 0 + 376 \\
 &= 11,676
 \end{aligned}$$

As for the leakage emission in the process here, it can be deemed zero according to the methodological definition (AMS-III.H/4.1/).

Accordingly, $LE_{ww,y} = 0$

Accordingly, Emission Reductions in the process of wastewater treatment is as follows:

$$\begin{aligned}
 ER_{ww,y} &= BE_{ww,y} - PE_{ww,y} - LE_{ww,y} \\
 &= 26,577 - 11,676 \\
 &= 14,901
 \end{aligned}$$

In addition to the above $ER_{ww,y}$, it is necessary to take $ER_{BL,y}$ into consideration due to the electricity delivered to the grid which is generated by combustion of collected biogas in the gas-engine generator.

$$\begin{aligned}
 ER_{elec} &= BE_{elec,y} \\
 &= EG_{BL,y} \times EF_{CO_2, grid,y}
 \end{aligned}$$

$$EG_{BL,y} = BG_{burnt,GEG,y} \times \text{“LHV of Methane”} / \text{“unit conversion”} / 1000 \times \text{“power generation efficiency”} \times (1 - \text{“Internal consumption of GEG”}) - \text{“Electricity (GEG to water treatment system)”}$$

$$BG_{burnt,GEG,y} = CFE_{ww} \times Q_{ww,y} \times B_{o,ww} \times UF_{PJ} \times (COD_{removed,PJ,P2,y} \times MCF_{ww,treatment,PJ,P2}) \times \text{“annual operating days”} / 365$$

Parameter Symbol	Description	Applied value	JCI's confirmation/validation
$BG_{burnt,GEG,y}$	The volume of biogas which is burnt by gas engine generator (m ³)	1,263,455	Calculated with assumed values below
“LHV of Methane” (kcal/m ³)		8,560	IPCC value
“unit conversion” (kcal/kWh)		860	IPCC value
“power generation efficiency” (-)		0.4	Estimated in DDR/5.6-2/

“Internal consumption of GEG” (-)		0.05	Estimated in DDR/5.6-2/
“Electricity (GEG to water treatment system)” (MWh)		108	Estimated in DDR/5.6-2/
CFE_{ww}	Capture efficiency of the biogas recovery equipment in the wastewater treatment systems (a default value of 0.9 shall be used)	0.9	Sourced in AMS-III.H/4.1/
$Q_{ww,y}$	Volume of treated wastewater discharged in year y (m ³)	181,567	Estimated in DDR/5.6-2/
$B_{o,ww}$	Methane producing capacity of the wastewater (IPCC value of 0.25 kg CH ₄ /kg COD)	0.25	IPCC value
UF_{PJ}	Model correction factor to account for model uncertainties (1.12)	1.12	Sourced in AMS-III.H/4.1/
$COD_{removed,PJ,P2,y}$	The chemical oxygen demand removed by the treatment system 2 ($P2$) of the project activity equipped with biogas recovery in the year y (t/m ³)	0.02882	10 days POME Analysis
$MCF_{ww,treatment,PJ,P2}$	Methane correction factor for the project wastewater treatment system 2 ($P2$) equipped with biogas recovery equipment (MCF values as per Table III.H.1)	0.8	Sourced in AMS-III.H/4.1/
“annual operating days” (-)		313	Estimated in DDR/5.6-2/

Ex-ante calculation result substituting the assumed values is as follows;

$$\begin{aligned}
 BG_{burnt,GEG,y} &= CFE_{ww} \times Q_{ww,y} \times B_{o,ww} \times UF_{PJ} \times (COD_{removed,PJ,P2,y} \times MCF_{ww,treatment,PJ,P2}) \\
 &\quad \times \text{“annual operating days”} / 365 \\
 &= 0.9 \times 181,567 \times 0.25 \times 1.12 \times (0.02882 \times 0.8) \times 313 / 365 \\
 &= 1,263,455
 \end{aligned}$$

$$\begin{aligned}
 EG_{BL,y} &= BG_{burnt,GEG,y} \times \text{“LHV of Methane”} / \text{“unit conversion”} / 1000 \times \text{“power generation efficiency”} \times (1 - \text{“Internal consumption of GEG”}) - \text{“Electricity (GEG to water treatment system)”} \\
 &= 1,263,455 \times 8,560 / 860 / 1,000 \times 0.4 \times (1 - 0.05) - 108 \\
 &= 4,671
 \end{aligned}$$

$$\begin{aligned}
 BE_{elec,y} &= EG_{BL,y} \times EF_{CO2,grid,y} \\
 &= 4,671 \times 0.743 \\
 &= 3,471
 \end{aligned}$$

As for the leakage emission in the process here, it can be deemed zero according to the methodological definition (AMS-I.D/4.2/).

Accordingly, $LE_{elec} = 0$

Emission Reductions in the process of electricity generation

As the project emissions can be assumed zero, Emission Reduction in the process of electricity generation/delivery to the grid can be obtained as follows;

$$ER_{elec,y} = BE_{elec,y} = EG_{BL,y} \times EF_{CO2,grid,y}$$

$$=4,671 \times 0.743$$

$$=3,471$$

As a conclusion, it can be summarized as to the total emission reductions in below;

$$\text{Baseline emissions: } BE_y = BE_{ww,y} + BE_{ele,y} = 26,577 + 3,471 = 30,048$$

$$\text{Project emissions: } PE_y = PE_{ww} = 11,676$$

$$\text{Leakage emissions: } LE_y = LE_{ww,y} + LE_{ele,y} = 0$$

$$\text{Emission Reductions: } ER_y = 30,048 - 11,676 = 18,372 \text{ tCO}_2\text{e}$$

Above calculation process is exactly the same as that in the PoA-DD and CPA-DD and it is carried out based on the average annual FFB processing amount during the crediting period (=259,381t-FFB/y) and it can be converted to the waste water volume (= 181,567m³/y) with conversion factor (= 0.7 m³/t-FFB) which is specified in the DDR/5.6-2/.

All of detailed data during the crediting period is shown in the below table;

Table IV-11 Yearly breakdown of Emission Reductions Calculation

	FFB t-FFB/y	POME m ³ /y	BE _{ww} tCO ₂ e	BE _{elec} tCO ₂ e	PE _{ww} tCO ₂ e	PE _{elec} tCO ₂ e	ER tCO ₂ e
1 st year	223,000	156,100	22,849	2,973	10,049	0	15,773
2 nd year	234,150	163,905	23,992	3,125	10,547	0	16,570
3 rd year	245,858	172,101	25,192	3,286	11,071	0	17,407
4 th year	258,150	180,705	26,450	3,453	11,620	0	18,283
5 th year	271,058	189,741	27,773	3,630	12,197	0	19,206
6 th year	284,611	199,228	29,162	3,816	12,801	0	20,177
7 th year	298,841	209,189	30,620	4,011	13,439	0	21,192
Average	259,381	181,567	26,577	3,471	11,676	0	18,372

JCI validated all of above calculation process referring to the applied methodologies, relevant tools, submitted documents such as DDR/5.6-2/ and concludes that the resulted estimation of the emission reduction is reasonable and accurate.

As JCI's conclusion, the calculated emission reduction is properly worked out in the procedures which are totally appropriate.

8.7 Monitoring plan

The monitoring plan of the proposed CDM PoA project activity is based on and in compliance with the applied monitoring methodology AMS-III.H /4.1/ and AMS-I.D/4.2/.

The monitoring plan as for the general approach and concept in Generic-CPA (as Part II of PoA-DD) /1.2/ was validated and concluded the purposes and coverage of the monitoring plan are appropriately addressed in the section B.7.2. in the Generic-CPA

The monitoring plan as for the specific approach in Specific-CPA (CPA-001) was validated as follows.

1) Compliance of the monitoring plan with the approved methodology in CPA-DD:

The monitoring plan was validated from the aspect of compliance with the requirements of the applied methodology AMS-III.H /4.1/ and AMS-I.D/4.2/.

A) Parameters to be monitored for ex-post

The monitoring parameters specified in the Generic CPA and CPA-001 were cross-checked with the relevant methodology and tool, and confirmed that the parameters for ex-post monitoring parameters in section D.7.1 "Data and parameters to be monitored" of CPA-001/1.2/ are fully compliance with the methodology.

8.7.1 The implementation plan of monitoring

The implementation plan of monitoring of these parameters, described in the Specific-CPA was validated as follows.

1) Equipment for monitoring

JCI validated that the equipment installation plan was in accordance with the CDM requirements and International Standard (IEC 62053-21) /11.8/.

The accuracy required to electricity meters has been appropriately will be complied with the International Standard (IEC 62053-21) /11.8/ as well as monitoring frequency and calibration interval.

JCI concluded through the above validation work that the applied equipment for monitoring (or monitoring meter) and treatment of the monitoring data are appropriate.

2) Monitoring organization

The PP planned to set up a CDM monitoring management system to cover entire processes of the monitoring: from meter readings through internal audits of monitoring reports.

3) Monitoring manual

The CDM monitoring manual is not prepared by the PP.

JCI issued FAR-1, that it would cover CDM-related monitoring operation, information like number and type of metering equipment, calibration method, organization/responsibility and corrective action for the monitoring instrument troubles, before start-up the project.

8.7.2 Parameters to be monitored ex-post

The CPA-DD/1.2/, in section D.7.1.Data and parameters monitored, specifies to monitor the following parameters ex-post.

JCI confirmed that all parameters below are in line with the applied methodology AMS-III.H, AMS-I.D and relevant tool:

- A) Quantity of electricity consumed by the project electricity consumption from the grid in year y ($EC_{PJ,grid,y}$)
- B) The amount of diesel used in year y ($FC_{diesel,y}$)
- C) Weighted average net calorific value of diesel in year y ($NCV_{diesel,y}$)
- D) The flow of wastewater (POME) that is treated in baseline wastewater treatment system (B1) during the year y ($Q_{ww,B1,y}$)
- E) The flow of wastewater (POME) that is treated in project wastewater treatment system 1 (P1) during the year y ($Q_{ww,P1,y}$)
- F) The flow of wastewater (POME) that is treated in project wastewater treatment system 3 (P3) during the year y ($Q_{ww,P3,y}$)
- G) The flow of treated wastewater discharged in year y ($Q_{ww,y}$)
- H) The chemical oxygen demand of the wastewater before the treatment system affected by the project activity ($COD_{ww,untreated,y}$)
- I) The chemical oxygen demand of the wastewater after the treatment system 1 (P1) affected by the project activity ($COD_{ww,treated,P1,y}$)
- J) The chemical oxygen demand of the wastewater after the treatment system 2 (P2) affected by the project activity ($COD_{ww,treated,P2,y}$)
- K) The chemical oxygen demand of the wastewater after the treatment system 3 (P3) affected by the project activity ($COD_{ww,discharge,PJ,y}$)
- L) The volume of biogas which is burnt by gas engine generator ($BG_{burnt,GEG,y}$)
- M) The volume of biogas which is burnt by flare system ($BG_{burnt,flare,y}$)
- N) Volumetric flow rate of residual gas in dry basis at normal conditions in hour h ($FV_{RG,h}$)
- O) Volumetric fraction of methane in the residual gas in the residual gas in the hour h ($fv_{CH4,h}$)

- P) Methane content in biogas ($w_{CH_4,y}$)
- Q) Temperature of the biogas ($T_{BG,y}$)
- R) Pressure of the biogas ($P_{BG,y}$)
- S) Temperature in the exhaust gas of the flare ($T_{flare,h}$)
- T) Quantity of net electricity supplied to the grid in year y ($EG_{BL,y}$)

As the actual project implementation is scheduled in 2013, the detailed selection of meters is not completed. Accordingly, accuracy of meters and details regarding calibration are not specifically described.

JCI accepted it as long as those requirements are satisfied before starting verification at some future stage.

Accordingly, JCI concludes that the monitoring plan based on the parameters above is appropriate.

9. Environmental impacts

In general, legal basis which the environmental management effort (UKL) and environmental monitoring effort (UPL) are to be applied in Indonesia and listed as follows, which JCI confirmed in the CPA-DD and during the interview with a representative of MEB at the on-site audit stage;

- 1) Article 15 of Law of the Republic of Indonesia, No.23/1997, regarding environmental management
- 2) Elucidation of the Governmental Regulation (PP) No.27/1999/7.3/, regarding analysis of environmental impact (Analisis Mengenai Dampak Lingkungan: AMDAL)

1) PoA-DD level

As stated in the PoA-DD, Environmental Assessment will be performed at CPA level given the singularity of each CPA to be included in the PoA and its presumably unique environmental impacts related to specific project context.

2) CPA-DD (CPA-001) level

The EIA is required for the proposed projects to comply with the environmental regulations in Indonesia that are set out in the relevant regulations 1999/7.3/ (paragraph 5. (1) and 6)).

Therefore an EIA will be carried out for the CPA level in compliance with the laws of Indonesia. As stated in the CPA-001, JCI confirmed that the EIA procedure has started in March 2012 with the selection of an Environmental Consulting firm by the PP to undertake the EIA in accordance with the adequate terms of reference.

It is confirmed that the conclusions of EIA confirm that there are no significant negative impacts related to the construction and operation of the proposed project as stated in the CPA-001.

The issuance of the approval by the Ministry of Environment is dated 23rd February 2012/5.3/.

Report on consideration of comments received

As stated in the CPA-DD, comments on the project benefits to the local society is to be taken into consideration of priority to hire the local residents in the recruiting the construction labors and operators, as which is stated in EIA (UKL-UPL) report/5.2/.

10. Local stakeholder consultation

1) PoA level

As stated in the section F.1, PoA-DD, local stakeholder consultation is done at SSC-CPA level.

Since local stakeholders are different at each site, the local stakeholder consultation should be undertaken at the CPA level.

JCI confirmed that the description of the process by which comments from local stakeholders were invited and compiled is provided in CPA-001 level.

2) CPA-DD (CPA-001) level

Indonesian Government regulates to project participants of CDM projects to hold a public consultation by the sustainable development criteria to be consulted for local community. (<http://pasarkarbon.dnpi.go.id/web/index.php/dnacdm/read/12/the-sustainable-development-criteria.html>).

Local stakeholders were assembled for a meeting to hear the project explanation and to discuss the contents. Invitations were sent to the stakeholders in advance (April 24, 2012). An outline of the meeting is as follows.

Day/ Date: May 10, 2012

Time: 8:30 – 12:00

Location: Guest House of POM Pinang Tinggi,

Muaro Jambi Regency, Jambi Province

Participant: 23 persons

The following stakeholders attended the meeting:

- Mill staff and employee
- Head of village and staff

The following project participants attended the meeting:

- Staff of PTPN 6 Headquarter
- BPPT
- Shimizu Corporation

Basically, the project plan of methane gas capture has been agreed by Mill employee, village society and sub-district government with the annotation by Head of village as below:

- The society intends to be received project benefits, which the government should provide the information to villagers for supporting the project implementation.

Summary of comments received

No significant comments were expressed to be taken for consideration on the project activities and implementation. Benefits to the society were identified and expressed to the attendance that;

- Stability of electrical voltage to the consumers could be expected by the supply of electricity at the connection within the district, which will be send by bio-gas engine generator, and
- Job opportunity could be increased by the project construction.

Some technical matters were questioned; equipment, maintenance in anaerobic ponds and waste water disposed into the river.

APPENDIX A: CDM VALIDATION PROTOCOL (POA/CPA)

Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia

1. INTRODUCTION

The validation protocol is prepared for the following purposes:

- To ensure that, in accordance with VVS version 03.0 (Annex 3, CDM-EB70, "VVS"), CDM requirements and other relevant guidelines for PoA projects issued by EB, these rules are complied with for any project activities requesting registration as a proposed PoA project activity.
- To ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed PoA project activity against the applicable PoA/CPA requirements.
- To assess whether the project design of the proposed PoA project activity meets the PoA/CPA requirements, using objective evidence, and to assess the completeness and accuracy of the claims and conservativeness of the assumptions made in the project design document.

The validation protocol is consisted of the following two types of tables, which are effective for the purposes of validation above.

TABLE-1 contains the checklist with questions along with the thematic chapter of VVS and other relevant guidelines for PoA/CPA project issued by EB.

TABLE-2 shows the corrective actions or clarifications which are requested to be taken in **TABLE-1** and the response from the PP.

<Index>

TABLE-1.1 Requirements Checklist for PoA-DD

TABLE-2.1 Resolution of Corrective Actions and Clarification Requests for PoA-DD

TABLE-1.2 Requirements Checklist for CPA-DD


TABLE-2.2 Resolution of Corrective Actions and Clarification Requests for CPA-DD

2. CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

If, during the validation of a project activity, issues are identified that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the PoA requirements and can achieve credible emission reductions, these issues shall be ensured that are correctly identified, discussed and concluded in the validation report.

- **CAR** : a corrective action request (**CAR**) is raised, if one of the following occurs:
 - (a) The PPs have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
 - (b) The PoA requirements have not been met;
 - (c) There is a risk that emission reductions cannot be monitored or calculated.
- **CL** : a clarification request (**CL**) is raised,
 - if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.
- **FAR** : a forward action request (**FAR**) is raised,
 - during validation to highlight issues related to project implementation that require review during the first verification of the project activity.
 - FARs** shall not relate to the PoA requirements for registration.

The CARs and CLs are resolved or "closed out" only if the project participants modify the project design, rectify the design documents (PoA-DD, CPA-DD) or provide adequate additional explanations or evidences that satisfy the requirements. If this is not done, the project activity will not be recommended for registration to the CDM EB.

	JCI CDM Center	APPENDIX A	No : JCI-CDM-VAL-12-003	Rev.No 01
CDM Validation Protocol (PoA) on “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”				

All CARs, CLs and FARs will be reported on in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issues raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the DDs or supporting annexes.

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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Appendix A Protocol for CDM (PoA) Project

TABLE-1.1 REQUIREMENTS CHECKLIST(PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	General guidelines(PoA)		--	--
	Title of the project activity:		--	--
1.	When designing a PoA and completing the F-CDM-PoA-DD, and in addition to applying the Project standard, the PoA standard and the selected approved baseline and monitoring methodology(ies) (hereinafter referred to as the selected methodology(ies)), CMEs should also consult the “Rules and References” section on the UNFCCC CDM website < http://cdm.unfccc.int/ >	PoA GL	OK	
2.	Information used to:(a) demonstrate additionality; (b) describe the application of selected baseline and monitoring methodology(ies); and (c) support the environmental impact assessment, is not considered proprietary or confidential. Any data, values and formulae included in electronic spreadsheets provided must be accessible and verifiable.	PoA GL	OK	
3.	The F-CDM-PoA-DD must be completed in English, and all attached documents must be in English or contain a full translation of relevant sections into English	PoA GL	OK	
4.	The F-CDM-PoA-DD must be completed using the same format without modifying its font, headings or logo, and without any other alteration to the form.	PoA GL	OK	
5.	Tables and their columns in the F-CDM-PoA-DD may not be modified or deleted, but rows may be added, as needed. Additional appendices may be added.	PoA GL	OK	
6.	If a section of the F-CDM-PoA-DD is not applicable, it must be explicitly stated that the section is left blank intentionally	PoA GL	OK	
7.	The format used for presentation of values in the F-CDM-PoA-DD should be in an internationally recognized format, for example digits grouping should be done in thousands and a decimal point should be marked with a dot (.), not with a comma (,).	PoA GL	OK	
	Specific guidelines(PoA)		--	--
PART I.	Programme of activities (PoA)		--	--
SECTION A.	General description of PoA			
A.1	Title of the PoA:			
(a)	Policy/measure or stated goal of the PoA	PoA DD	OK	
(b)	The current version number of the PoA-DD;	PoA DD	OK	

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.1 REQUIREMENTS CHECKLIST(PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
(c)	The date the PoA-DD was completed (DD/MM/YYYY).	PoA DD	OK	
A.2.	Purpose and general description of the PoA:			
(a)	Policy/measure or stated goal that the PoA seeks to promote;	PoA DD	OK	
(b)	Framework for the implementation of the proposed PoA. Include a confirmation that the PoA is a voluntary action by the CME.	PoA DD		CAR-1 CL-1
A.3	CMEs and participants of PoA			
(a)	Identity of the CME of the proposed PoA, as the entity which communicates with the Board;	PoA DD		CAR-7
(b)	Project participants to the PoA (project participants may or may not be involved in one of the component project activities (CPAs) related to the PoA).	PoA DD		CAR-7
A.4	Party(ies)			
	List in the table below Party(ies) and CMEs involved in the proposed PoA and provide contact information in Appendix 1	PoA DD	OK	
A.5.	Physical/ Geographical boundary of the PoA			
	Provide details of the defined boundary of the proposed PoA in terms of a geographical area (e.g. municipality, region within a country, country or several countries) within which all CPAs to be included in the PoA will be implemented.	PoA DD		CL-2
A.6.	Technologies/measures			--
	Describe the technologies and/or measures to be employed and/or implemented by the CPAs in the PoA. Do not provide information that is not essential to understanding the purpose of the PoA and how it reduces GHG emissions. Information related to equipment, systems and measures that are auxiliary to the main scope of the CPAs in the PoA and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the CPAs in the PoA should not be included.	PoA DD		CAR-3
A.7.	Public funding of PoA			
	Indicate whether the PoA receives public funding from Parties included in Annex I. If so: (a)Provide information on Parties providing public funding; (b)Attach in Appendix 2: the affirmation obtained from such Parties in accordance with applicable provisions related to official development assistance in the Project standard.	PoA DD	OK	--
SECTION B.	Demonstration of additionality and development of eligibility criteria			

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.1 REQUIREMENTS CHECKLIST(PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
B.1.	Demonstration of additionality for PoA			
	Describe how in the absence of CDM, none of the implemented CPAs would occur.	PoA DD	OK	
B.2.	Eligibility criteria for inclusion of a CPA in the PoA		--	--
	Describe the eligibility criteria in accordance with the applicable provisions in the PoA standard.	PoA DD		CAR-2 CL-3
B.3.	Application of methodologies			
	Describe the technology/measures and indicate the methodology chosen. In cases where multiple technologies/measures or multiple methodologies are being applied, list all the combinations of technologies/measures and methodologies that will be used in the PoA. If applicable, provide a description of the sampling plan and demonstrate how it meets applicable provisions in the “Standard for sampling and surveys for CDM project activities and programme of activities”.	PoA DD		CAR-3
SECTION C.	Management system			
	Describe the management system in accordance with applicable provisions in the PoA standard.	VVS para 185, 186 PoA DD		CL-8
SECTION D.	Duration of PoA			
D.1.	Start date of PoA			
	Describe how the start date was determined.	PoA DD	OK	
D.2.	Length of the PoA			
	State the length of the proposed PoA in years.	PoA DD	OK	
SECTION E.	Environmental impacts			
E.1.	Level at which environmental analysis is undertaken			
	Indicate whether the environmental analysis is performed at the PoA and/or the CPA level, and justify the choice of level at which the environmental analysis is undertaken.	PoA DD	OK	
E.2.	Analysis of the environmental impacts			
	Provide a summary of the analysis of the environmental impacts, including transboundary impacts and references to all related documentation.	PoA DD	OK	

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.1 REQUIREMENTS CHECKLIST(POA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
E.3.	Environmental impact assessment			
	If an environmental impact assessment is required provide conclusions and references to all related documentation	PoA DD	No	CL-2
SECTION F.	Local stakeholder comments			
F.1.	Solicitation of comments from local stakeholders			
	Indicate whether the local stakeholder consultation process is performed at the PoA and/or the CPA level, and justify the choice of level at which the local stakeholder consultation is undertaken. Describe the process by which comments from local stakeholders were invited and compiled	PoA DD	OK	
F.2.	Summary of comments received			
	Identify stakeholders that have made comments and provide a summary of these comments.	PoA DD	OK	
F.3.	Report on consideration of comments received			
	Provide information demonstrating that all comments received have been considered	PoA DD	OK	
SECTION G.	Approval and authorization			
	Indicate whether the letter(s) of approval from Party(ies) which wishes to be involved in the PoA, is available at the time of submitting the PoA-DD to the validating DOE. If so, provide along with the PoA-DD the letter(s) of approval of the: (a)Party(ies) involved in the proposed PoA; (b)CME letters of authorization of its coordination of the PoA from each Party.	PoA DD		CAR-1
PART II.	Generic component project activity (CPA)			
	Use this section to demonstrate the application of the PoA framework to implement generic CPAs and to demonstrate that each type of CPA meets the requirements. Where multiple technologies/measures and/or multiple methodologies are being applied, the demonstration of the application of the PoA framework to implement generic CPAs must be done for each of the combinations of technologies/measures and/or methodologies. Therefore, repeat all of Part II of these guidelines for each of the combination of technologies/measures and/or methodologies.	PoA DD		CAR-3 CL-4
SECTION A.	General description of a generic CPA			
A.1.	Purpose and general description of generic CPAs			
	Provide a description of each generic CPA within the PoA.	PoA DD		CAR-3 CL-5

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.1 REQUIREMENTS CHECKLIST(POA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
SECTION B.	Application of a baseline and monitoring methodology			
B.1.	Reference of the approved baseline and monitoring methodology(ies) selected			
	<p>Indicate exact reference (number, title, version) of:</p> <p>(a)The selected methodology (e.g. ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities” (Version 11.0)) or multiple methodologies (see “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities”);</p> <p>(b)Any tools and other methodologies to which the selected methodology refers (e.g. “Tool for demonstration and assessment of additionality” (Version 05.2.1)).</p> <p>Refer to the UNFCCC CDM website for the exact reference of approved baseline and monitoring methodologies and tools.</p>	PoA DD	OK	
B.2.	Application of methodology(ies)			
	<p>Justify the choice of the selected methodology(ies) by showing that each generic CPA meets each applicability condition of the methodology(ies). If applicable, provide a general description of the sampling plan.</p> <p>Explain documentation that has been used as a basis of justification and provide references or include the documentation in Appendix 3: below.</p>	PoA DD		CAR-2
B.3.	Sources and GHGs			
	<p>Describe the sources and GHGs included in each generic CPA boundary.</p> <p>Use the table below to describe emission sources and GHGs included in the CPA boundary for the purpose of calculating project emissions and baseline emissions.</p> <p>In addition to the table, where possible, present a flow diagram physically delineating each generic CPA, based on the description provided in section A.6 “Technologies/measures” of Part I above.</p> <p>Include in the flow diagram all the equipment, systems and flows of mass and energy described in that section. In particular, indicate in the diagram the emissions sources and GHGs included in the project boundary and the data and parameters to be monitored</p>	PoA DD		CL-6
B.4.	Description of baseline scenario			
	<p>Describe how the baseline scenario is identified for each generic CPA.</p> <p>Explain how the baseline scenario is established in accordance with the selected methodology(ies) and applicable provisions for establishment and description of baseline scenarios in the Project standard.</p> <p>Where the procedure in the selected methodology(ies) involves several steps, describe how each step is applied and transparently document the outcome of each step. Explain and justify key assumptions and</p>	PoA DD		CAR-3

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NA: Not Applicable, Tbv:To be verified, PDD GL: PDD Guidelines, PA: Project Activities, PP: Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.1 REQUIREMENTS CHECKLIST(PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	rationales. Provide and explain all data used to establish the baseline scenario (variables, parameters, data sources, etc.). Provide all relevant documentation and/or references. Provide a transparent description of the baseline scenario as established above. Note: The full description of the technology of the baseline scenario is to be provided in section A.6 of Part I above			
B.5.	Demonstration of eligibility for a generic CPA		--	--
	Demonstrate how each generic CPA meets the eligibility criteria of the PoA including confirmation of additionality of the generic CPA for its inclusion into the PoA.	PoA DD		CAR-2 CL-3
B.6.	Estimation of emission reductions of a generic CPA			
B.6.1.	Explanation of methodological choices			
	Explain how the methods or methodological steps, in the selected methodology, for calculating baseline emissions, project emissions, leakage emissions and emission reductions are applied to each generic CPA. Clearly state which equations will be used in calculating emission reductions.	PoA DD		CAR-3
B.6.2.	Data and parameters that are to be reported ex-ante			
	Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the validation and remain fixed throughout the crediting period. Data that become available only after the registration/inclusion of the CPAs in the PoA (e.g. measurements after the implementation of the CPAs in the PoA) should not be included here but in the table in section B.7 below. The compilation of information may include data that are measured or sampled, and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Data that are calculated with equations provided in the selected methodology(ies) or default values specified in the methodology(ies) should not be included in the compilation. For each piece of data or parameter, complete the table below, following these instructions: (a)“Value(s) applied”: Provide the value applied. Where a time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Appendix 4:. To report multiple values referring to the same data or parameter, use one table. If necessary, reference(s) to electronic spreadsheets may be used; (b)“Choice of data”: Indicate and justify the choice of data source. Provide clear and valid references and, where applicable, additional documentation in Appendix 4: below; (c)“Measurement methods and procedures”: Where values are based on measurement, include a description of the measurement methods and procedures applied (e.g. which standards have been used), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information can be provided in Appendix 4: below;	PoA DD		CAR-4 CAR-5

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.1 REQUIREMENTS CHECKLIST(POA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	(d)“Purpose of data”: Choose one of the following: (i)Calculation of baseline emissions; (ii)Calculation of project emissions; (iii)Calculation of leakage.			
B.6.3.	Ex-ante calculations of emission reductions			
	Provide a transparent ex ante calculation of project emissions, baseline emissions(or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the selected methodology. For data or parameters available before validation, use values contained in the table in section B.6.2 above. For data/parameters not available before validation and monitored during the crediting period, use estimates for parameters contained in the table in section B.7.1 below. If any of these estimates has been determined by a sampling approach, provide a description of the sampling efforts in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities”. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and/or data in Appendix 4:, including relevant electronic spreadsheets. Provide a sample calculation for each equation used, substituting the values used in the equations	PoA DD		CAR-5
B.7.	Application of the monitoring methodology and description of the monitoring plan			
B.7.1.	Data and parameters to be monitored by each generic CPA			
	Include specific information on how the data and parameters that need to be monitored would actually be collected during monitoring. Include here data that are determined only once for the crediting period but that will become available only after registration/inclusion of the CPAs in the PoA (e.g. measurements after the implementation of the CPAs in the PoA). For each piece of data or parameter, complete the table below, following these instructions: (a)“Source of data”: Indicate the source(s) of data that will be used for the CPAs in the PoA (e.g. which exact national statistics). Where several sources may be used, justify which data sources should be preferred; (b)“Value(s) applied”: The value applied is an estimate of the data/parameter that will be monitored during the crediting period, but is used for the purpose of calculating estimated emission reductions. To report multiple values referring to the same data or parameter, use one table. If necessary, reference(s) to electronic spreadsheets may be used; (c)“Measurement methods and procedures”: Where data or parameters are to be monitored, specify the measurement methods and procedures, standards to be applied, accuracy of the measurements, person/entity responsible for the measurements, and, in case of periodic measurements, the measurement intervals; (d)“QA/QC procedures”: Describe the Quality Assurance (QA)/Quality Control (QC) procedures to be	PoA DD		CAR-4 CL-9 CL-10 CL-12 CL-13

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.1 REQUIREMENTS CHECKLIST(PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 13 “ Guidelines for Completing The Programme Design Document Form For Small Scale CDM Programs of Activities”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	<p>applied, including the calibration procedures, where applicable;</p> <p>(e)“Purpose of data”: Choose one of the following:</p> <p>(i)Calculation of baseline emissions;</p> <p>(ii)Calculation of project emissions;</p> <p>(iii)Calculation of leakage.</p> <p>Provide any relevant further background documentation in Appendix 5: below.</p>			
B.7.2.	Description of the monitoring plan for a generic CPA			
	<p>Describe the monitoring plan for a generic CPA developed in accordance with the approved monitoring methodology(ies).</p> <p>If data and parameters monitored in section B.7.1 above are determined by a sampling approach, provide a description of the sampling plan in accordance with the recommended outline for a sampling plan in the “Standard for sampling and surveys for CDM project activities and programme of activities”.</p> <p>Provide any relevant further background information in Appendix 5:</p>	PoA DD		CL-7 CL-10 CL-12
Appendix 1:	Contact information on entity/individual responsible for the PoA			
.	For each organisation listed in section A.4 above, complete the table below, with the following mandatory fields: Organization, Street/P.O. Box, City, Postcode, Country, Telephone, Fax and E-mail, and Name of contact person. Copy and paste the table as needed.	PoA DD	OK	
Appendix 2:	Affirmation regarding public funding			
	If applicable, attach the affirmation obtained from Parties included in Annex I providing public funding to the PoA.	PoA DD	NA	
Appendix 3:	Application of methodology(ies)			
	Provide any further background information on the applicability of the selected methodology(ies).	PoA DD	OK	
Appendix 4:	Further background information on ex ante calculation of emission reductions			
	Provide any further background information on the ex-ante calculation of emission reductions. This may include data, measurement results, data sources, etc.	PoA DD	OK	
Appendix 5:	Further background information on the monitoring plan			
	<p>Provide any further background information used in the development of the monitoring plan. This may include tables with time series data, additional documentation of measurement equipment, procedures etc.</p> <ul style="list-style-type: none"> ♦ revision of existing methodologies to the Board ♦ publication in a newspaper ♦ interviews with the DNA ♦ earlier correspondence on the project with the DNA or the secretariat. 	PoA DD	OK	

TABLE-2.1 Resolution of Corrective Actions and Clarification Requests(PoA)

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CAR Corrective Action Requests				
CAR-1	Corrective action is requested on provision of LoA from Host Party the Republic of Indonesia	A.2 (b) Section G	LoAs from Japanese government and Indonesian government are provided.	JCI confirmed LoAs provided. CAR-1 is closed.
CAR-2	It is needed to review the criteria for additionality. In generic CPA, the value of cost for financial analysis is not to be those for the specific CPA. Generalized approach is required for generic CPA.	B.2. B.5.	P.P reviewed the criteria for additionality in the table of P5 and P21. .	PP’s response is appropriate. Revised generic CPA is accepted. CAR-2 is closed.
CAR-3	In order to estimate emission reductions of a generic CPA, a generic system configuration is to be assumed beforehand.	Part I A.6. Part I B.3. Part II B.6.1. Part II A.1. Part II A.4.	P.P showed the typical project in A.1 and B.6.3. of Part II.	JCI confirmed PoA-DD is revised rightly. CAR-3 is closed.
CAR-4	Data and parameters in the table in B.6.2. and B.7.1. are all to be those for generic CPA. Figures are all to be sorted out to be generic. Re-confirmation for each parameter is to be required.	B.6.2. B.6.3. B.7.1	In accordance with “Guidelines for completing the programme design document form for small-scale CDM programmes of activities”, P.P. have to provide a sample calculations for each used, substituting the values used in the equations in B.6.3. Therefore, data or parameters are written in the table in B.6.2 and B.7.1. PP described the document both for the general CPA and for the sample calculation.	PP’s response is not appropriate. Figures specific to the CPA shall not be given in the generic CPA. Such figures and other features particular to CPA is to be shown like [xxxx] for the convenience of the desk review for future inclusion of CPAs. Revised generic CPA is acceptable. CAR-4 is closed.
CAR-5	Ex-ante calculation of emission reductions seems same as that for specific CPA. Generic description is to be presented in the Part II of PoA-DD.	B.6.2. B.6.3.	In accordance with “Guidelines for completing the programme design document form for small-scale CDM programmes of activities”, P.P. have to provide a sample calculations for each used, substituting the values used in the equations in B.6.3. PP described the document both for the general CPA and for the sample calculation.	Refer to CAR-4. After the discussion with PP, both reached to agreement how to revise. JCI confirmed the revision as agreed. CAR5 is closed.
CAR-6	Eligibility criteria is to be pertained with requirement for CPA	A.1. B.4. B.5.	Table for eligibility criteria is added with CPA requirement and confirmation column.	JCI confirmed the revised description of eligibility criteria. CAR-6 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.1 Resolution of Corrective Actions and Clarification Requests(PoA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CAR-7	Organization of the PoA involving all entities getting engaged is to be demonstrated.	Part I A.3. (a), b)	Organization chart is added in the PoA-DD to demonstrate relation one another	JCI confirmed the organization chart added correctly. CAR-7 is closed.
CL	Clarification Requests			
CL-1	It is required to add organization structure to implement PoA project in a figure.	Part I A.2.	P.P. added organization structure to implement PoA project in A.2.	Added organization chart is acceptable. CL-1 is closed.
CL-2	It is required to detail in more specific manner explaining how each CPA will be developed.	Part I A.5.	P.P. added how each CPA will be developed in A.1 in organization structure.	Added description is confirmed appropriate. CL-2 is closed.
CL-3	It is required to add more criteria which are specific to the proposed PoA.	Part I B.2.	P.P. already described needed criteria.	PP’s response is accepted. CL-3 is closed.
CL-4	It is required to describe Part II so that the reader can understand which part is common to all CPAs and which part is specific to respective CPA.	Part II	P.P revised the description of Part II. Please refer to CAR-4.	The revised description is sufficient. CL-4 is closed.
CL-5	It is required to define the title of how to name differently to make discrimination.	Part II A.1.	P.P. described how to name differently to make discrimination in A.1. of Part II as "The name of the mill of the project site of each CPA is included in the title of each CPA.”.	PP’s response is confirmed as appropriate. CL-5 is closed.
CL-6	It is required to define the project boundary of generic CPA, not specific CPA.	Part II B.3. Figure 1	P.P revised Figure4.	Revision is correct. CL-6 is closed.
CL-7	It is requested to review the monitoring plan in generic CPA is based on the generic system of the project.	B.7.2. Figure 2	P.P revised Figure 7.	Revision is correct. CL-7 is closed.
CL-8	It is required to describe “Section C Management System” in the PoA-DD referring to “PoA Standard EB65 Annex 5 Para 145 and EB65 Annex 3 Para 17. In doing so, please make it in the tabular format so that to make sure all requirement are fulfilled.	Section C	PP revised description of “Section C Management System” in accordance with “PoA Standard EB65 Annex 5 Para 145 and EB65 Annex 3 Para 17”. In the revision PP also described the role of BPPT as technical support to CME and CPAn also.	PP’s response and revision are appropriate. CL-8 is closed.
CL-9	It is required to indicate the locations of measurements for wastewater of P1,P2,P3 in the relevant figures. If not needed, clarification is required.	B.7.1.	P1, P2 and P3 are same value. Therefore only P1 is measured.	PP’s response is reasonable. CL-9 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.1 Resolution of Corrective Actions and Clarification Requests(PoA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-10	It is requested to describe about required accuracy and calibration for all measuring equipment listed in the table for monitoring parameters in the PoA-DD.	B.7.1. B.7.2.	PP added description about required accuracy and calibration.	Added description is acceptable. CL-10 is closed.
CL-11	It is required to improve the naming of BE, namely BE _y is used for the total baseline emissions for the wastewater treatment as well as is used for the baseline emissions of the electricity generated by the gas-engine/generator system. It is to be orderly named to avoid any confusion in view of the DOE.	B.6.2. B.6.3.	PP revised description as BE _{wastewater,y} and BE _{electricity,y} respectively.	JCI confirmed the revised DD's as appropriate. CL-11 is closed.
CL-12	It is required to clarify the source of data used in the calculation equations in the PoA-DD, such as $Q_{ww,BI,y} = 200,000m^3/y$ and so forth on the page 36, for example.	B.7.1. B.7.2.	PP described the optional value for the purpose of example calculation. It is changed to the ex-ante value in the appropriate location of the PoA-DD.2.	PP revised with appropriate value and it is acceptable. CL-12 is closed.
CL-13	It is required to revise the sample calculations applying more realistic and practical values such as those used in CPA-001.	B.7.1 B.7.2	PP has changed sample calculation using data of CPA-001 instead of those in halfway.	JCI confirmed sample calculation is based on the CPA-001 result. CL-13 is closed.
FAR	Forward Action Requests			
FAR-1				

Appendix A Protocol for CDM (CPA) Project

TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	General guidelines(CPA)	CPA GL	--	--
	Title of the project activity:	CPA GL	--	--
1.	When designing an actual CPA, the CPA implementer(s) must apply the provisions specified in the PoA.	CPA GL	OK	.
2.	Information used to: (a) demonstrate additionality; (b) describe the application of selected baseline and monitoring methodology(ies); and (c) support the environmental impact assessment, is not considered proprietary or confidential. Any data, values and formulae included in electronic spreadsheets provided must be accessible and verifiable	CPA GL	OK	
3.	The F-CDM-CPA-DD must be completed in English, and all attached documents must be in English or contain a full translation of relevant sections into English	CPA GL	OK	
4.	The F-CDM-CPA-DD must be completed using the same format without modifying its font, headings or logo, and without any other alteration to the form.	CPA GL	OK	
5.	Tables and their columns in the F-CDM-CPA-DD may not be modified or deleted, but rows may be added, as needed. Additional appendices may be added.	CPA GL	OK	
6.	If a section of the F-CDM-CPA-DD is not applicable, it must be explicitly stated that the section is left blank intentionally.	CPA GL	OK	
7.	The format used for presentation of values in the F-CDM-CPA-DD should be in an internationally recognized format, for example digits grouping should be done in thousands and a decimal point should be marked with a dot (.), not with a comma (,).	CPA GL	OK	
	Specific guidelines(CPA)		--	--
SECTION A.	General description of CPA			
A.1	Title of the proposed or registered PoA			
	Provide the reference and title of the PoA to which this CPA is included.	CPA DD	OK	
A.2.	Title of the CPA			
(a)	The title of the CPA and the unique identification of the CPA;	CPA DD	OK	
(b)	The current version number of the CPA-DD;	CPA DD	OK	
(c)	The date the CPA-DD was completed (DD/MM/YYYY).	CPA DD	OK	
A.3	Description of the CPA			
	Describe the technology(ies) and/or measures to be used by the CPA in accordance with the proposed or registered PoA, and in accordance with the applicable provisions in the Project standard.	CPA DD	OK	

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
A.4	Entity/individual responsible for CPA			
	Provide information on the CPA implementer(s). CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided the name is included in the registered PoA	CPA DD	OK	
A.5.	Technical description of the CPA			
	<p>Describe the technologies and/or measures to be employed and/or implemented by the CPA including a list of the facilities, systems and equipment that will be installed and/or modified by the CPA. This includes:</p> <p>(a)A list and the arrangement of the main manufacturing/production technologies, systems and equipment involved. Include in the description information about the age and average lifetime of the equipment based on manufacturer’s specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies. The monitoring equipments and their location in the systems are of particular importance;</p> <p>(b)Energy and mass flows and balances of the systems and equipment included in the CPA;</p> <p>(c)The types and levels of services (normally in terms of mass or energy flows) provided by the systems and equipment that are being modified and/or installed under the CPA and their relation, if any, to other manufacturing/production equipment and systems outside the project boundary. The types and levels of services provided by those manufacturing/production systems and equipment outside the project boundary may also constitute important parameters of the description. The description should clearly explain how the same types and levels of services provided by the CPA would have been provided in the baseline scenario.</p> <p>Also provide a list of:</p> <p>(a)Facilities, systems and equipment in operation under the existing scenario prior to the implementation of the CPA;</p> <p>(b)Facilities, systems and equipment in the baseline scenario.</p> <p>If the baseline scenario is a continuation of current practice, thus identical to the scenario existing prior to the implementation of the CPA, there is no need to repeat the description of the scenarios, but only to state that both are the same.</p> <p>Do not provide information that is not essential to understanding the purpose of the CPA and how it reduces GHG emissions. Information related to equipment, systems and measures that are auxiliary to the main scope of the CPA and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the CPA should not be included.</p>	CPA DD		CL-40
A.6.	Party(ies)			
	List in the following tabular format Party(ies) and CPA implementer(s) involved in the CPA and provide	CPA DD		CAR-1

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	contact information in Appendix 1:.			
A.7.	Geographic reference or other means of identification			--
	Provide geographic reference or other means of identification that allows for the unique identification of the CPA (maximum one page). For identification: in case of stationary CPAs provide geographic reference (e.g. map that identifies the location of the CPA); and in case of mobile CPAs provide means such as registration number of GPS devices.	CPA DD		CL-1 CL-2
A.8.	Duration of the CPA			
A.8.1.	Start date of the CPA			
	Indicate the start date (DD/MM/YYYY) and describe how the start date was determined.	CPA DD		CL-3
A.8.2.	Expected operational lifetime of the CPA			
	State the expected operational lifetime of the CPA in years and months	CPA DD		CL-4
A.9.	Choice of the crediting period and related information			
	State the type of crediting period chosen i.e. fixed or renewable.	CPA DD	OK	--
A.9.1.	Start date of the crediting period			
	State the expected start date of the crediting period of the CPA (DD/MM/YYYY).	CPA DD		CL-5
A.9.2.	Length of the crediting period			
	Indicate the length of the crediting period. In case a renewable crediting period is chosen, indicate the length of the first crediting period and the number of renewal periods. Ensure that the total renewal periods do not exceed the PoA validity period. Note: The duration of crediting period, fixed or renewable, of any CPA is limited to the end date of the PoA regardless of when the CPA was added.	CPA DD	OK	--
A.10.	Estimated amount of GHG emission reductions			
	Provide the estimate of annual GHG emission reductions for each year of the crediting period and, the annual average and the total GHG emission reductions over the chosen crediting period (or the first crediting period)	CPA DD		CL-13
A.11.	Public funding of the CPA			
	Indicate whether the PoA receives public funding from Parties included in Annex I. If so: (a)Provide information on Parties providing public funding;	CPA DD	OK	

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	(b)Attach in Appendix 2: the affirmation obtained from such Parties in accordance with applicable provisions related to official development assistance in the Project standard			
A.12.	Confirmation for CPA			
	Include a confirmation that the CPA is neither registered as an individual CDM project activity nor is part of another registered PoA.	CPA DD		CL-1
SECTION B.	Environmental analysis			
B.1.	Analysis of the environmental impacts			
	Where the analysis of the environmental impacts is undertaken, describe the analysis undertaken as per the PoA	CPA DD		CL-6 CL-7 CL-12
B.2.	Environmental impact assessment			
	If an environmental impact assessment is required, provide conclusions and references to all related documentation. Note: If the environmental analysis information is provided at the PoA level, sections B.1 and B.2 should not be left blank but indicate here that the environmental analysis is provided at the PoA level.	CPA DD		CL-12
SECTION C.	Local stakeholder comments			
C.1.	Solicitation of comments from local stakeholders			
	Describe the process by which comments from local stakeholders have been invited for the CPA.	CPA DD		CL-8
C.2.	Summary of comments received			
	Identify stakeholders that have made comments and provide a summary of these comments.	CPA DD		CL-8
C.3.	Report on consideration of comments received			
	Provide information demonstrating that all comments received have been considered. Note: If the stakeholder consultation information is provided at the PoA level, sections C.1 and C.2 should not be left blank but indicate here that the stakeholder consultation is provided at the PoA level.	CPA DD		CL-8
SECTION D.	Eligibility of CPA and estimation of emissions reductions			
D.1.	Title and reference of the approved baseline and monitoring methodology(ies) selected			

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:**To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	Identify the exact reference and title of the approved methodology(ies).	CPA DD		CL-40
D.2.	Application of methodology(ies)			
	Demonstrate how the applicability conditions are met in accordance with the approved methodology(ies) and the PoA. Explain documentation that has been used and provide references or include the documentation in Appendix 3:	CPA DD		CAR-2 CL-18 CL-40 CL-41 CL-42
D.3.	Sources and GHGs			
	Describe the sources and GHGs included in the CPA boundary in accordance with the PoA. Provide proof that the CPA is located within the geographical boundary of the proposed or registered PoA. Use the table below to describe emission sources and GHGs included in the CPA boundary for the purpose of calculating project emissions and baseline emissions. In addition to the table, present a flow diagram physically delineating the CPA, based on the descriptions provided in section A.5. “Technical description of the CPA” above. Include in the flow diagram the equipment, systems and flows of mass and energy described in that section. In particular, indicate in the diagram the emissions sources and GHGs included in the project boundary and the data and parameters to be monitored.	CPA DD		CL-17 CL-19 CL-26 CL-28 CL-31 CL-32 CL-33
D.4.	Description of the baseline scenario			
	Describe how the baseline scenario is identified for the CPA in accordance with the PoA.	CPA DD		CL-17 CL-26 CL-28
D.5.	Demonstration of eligibility for a CPA			
	Demonstrate how each CPA meets the eligibility criteria of the PoA including confirmation of additionality of the CPA for its inclusion into the PoA.	CPA DD		CL-11 CL-14 CL-21 CL-26 CL-30 CL-33 CL-34 CL-35

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
				CL-36 CL-37 CL-38 CL-39 CL-40 CL-41 CL-42
D.6.	Estimation of emission reductions			
D.6.1.	Explanation of methodological choices			
	Explain how the methods or methodological steps, in the selected methodology, for calculating baseline emissions, project emissions, leakage emissions and emission reductions are applied to the CPA. Clearly state which equations will be used in calculating emission reductions in accordance with the PoA.	CPA DD		CL-9 CL-10 CL-13 CL-17 CL-19 CL-22 CL-27 CL-28 CL-29 CL-40
D.6.2.	Data and parameters that are to be reported ex-ante			
	Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the registration and remain fixed throughout the crediting period. Data that become available only after the registration of the CPA (e.g. measurements after the implementation of the CPA) should not be included here but in the table in section D.7.1 below. The compilation of information may include data that are measured or sampled, and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Data that are calculated with equations provided in the selected methodology(ies) or default values specified in the methodology(ies) should not be included in the compilation. For each piece of data or parameter, complete the table below, following these instructions: (a)“Value(s) applied”: Provide the value applied. Where a time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Appendix 4: below. To report multiple values referring to the same data and parameter, use one table.	CPA DD		CL-17 CL-19 CL-27 CL-28 CL-29 CL-40

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	<p>If necessary reference(s) to electronic spreadsheets may be used;</p> <p>(b)Choice of data”: Indicate and justify the choice of data source. Provide clear and valid references and, where applicable, additional documentation in Appendix 4: below;</p> <p>(c)“Measurement methods and procedures”: Where values are based on measurement, include a description of the measurement methods and procedures applied (e.g. which standards have been used), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information can be provided in Appendix 4: below;</p> <p>(d)“Purpose of data”: Choose one of the following:</p> <p>(i)Calculation of baseline emissions;</p> <p>(ii)Calculation of project emissions;</p> <p>(iii)Calculation of leakage.</p>			
D.6.3.	Ex-ante calculation of emission reductions			
	<p>Provide a transparent ex ante calculation of project emissions, baseline emissions, project emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the selected methodology. For data or parameters available before validation, use values contained in the table in section D.6.2 above.</p> <p>For data/parameters not available before validation and monitored during the crediting period, use estimates for parameters contained in the table in section D.7.1 below. If any of these estimates has been determined by a sampling approach, provide a description of the sampling efforts undertaken in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities”.</p> <p>Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and/or data in Appendix 4: below, including relevant electronic spreadsheets.</p> <p>Provide a sample calculation for each equation used, substituting the values used in the equations.</p>	CPA DD	CAR-4	CAR-3 CL-13 CL-20 CL-23 CL-24 CL-25
D.6.4.	Summary of the ex-ante estimates of emission reductions	CPA DD	CAR-4	CL-13 CL-19
D.7.	Application of the monitoring methodology and description of the monitoring plan			
D.7.1.	Data and parameters to be monitored			
	<p>Include specific information on how the data and parameters that need to be monitored would actually be collected during monitoring. Include here data that are determined only once for the crediting period but that will become available only after registration/inclusion of the CPA in the PoA (e.g. measurements after the implementation of the CPA).</p> <p>For each piece of data or parameter, complete the table below, following these instructions:</p>	CPA DD		CL-13 CL-15 CL-16

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	<p>(a)“Source of data”: Indicate the source(s) of data that will be used for the CPA (e.g. which exact national statistics). Where several sources may be used, justify which data sources should be preferred;</p> <p>(b)“Value(s) applied”: The value applied is an estimate of the data/parameter that will be monitored during the crediting period, but is used for the purpose of calculating estimated emission reductions in section 0 above. To report multiple values referring to the same data and parameter, use one table. If necessary, reference(s) to electronic spreadsheets may be used;</p> <p>(c)“Measurement methods and procedures”: Where data or parameters are to be monitored, specify the measurement methods and procedures, standards to be applied, accuracy of the measurements, person/entity responsible for the measurements, and, in case of periodic measurements, the measurement intervals;</p> <p>(d)“QA/QC procedures”: Describe the Quality Assurance (QA)/Quality Control (QC) procedures to be applied, including the calibration procedures, where applicable;</p> <p>(e)“Purpose of data”: Choose one of the following:</p> <p>(i)Calculation of baseline emissions;</p> <p>(ii)Calculation of project emissions;</p> <p>(iii)Calculation of leakage.</p> <p>Provide any relevant further background documentation in Appendix 5: below.</p>			
D.7.2.	Description of the monitoring plan			
	Describe the monitoring plan for the CPA in accordance with the approved monitoring methodology(ies). If data and parameters monitored in section D.7.1 above are determined by sampling approach, provide a description of the sampling plan in accordance with the recommended outline for a sampling plan in the “Standard for sampling and surveys for CDM project activities and programme of activities”.	CPA DD		CL-15 CL-16
SECTION E.	Approval and authorization			
	Indicate whether the letter(s) of approval from each Party that wishes to be involved in the CPA, is available at the time of submitting the CPA-DD to the validating DOE. If so, provide along with the CPA-DD the letter(s) of approval of the Party(ies).	CPA DD	OK	
Appendix 1:	Contact information on entity/individual responsible for the CPA			
.	For each organisation listed in section A.6, complete the table below, with the following mandatory fields: Organization, Street/ P.O. Box, City, Postcode, Country, Telephone, Fax, E-mail and name of contact person. Copy and paste the table as needed.	CPA DD	OK	
Appendix 2:	Affirmation regarding public funding			
	If applicable, attach the affirmation obtained from Parties providing public funding to the CPA.	CPA DD	NA	
Appendix 3:	Applicability of the selected methodology(ies)			

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-1.2 REQUIREMENTS CHECKLIST (CPA)

(OK/No/NA/Tbv)

CPA-DD Section	Check Points (according to EB 66 Annex 17 “GUIDELINES FOR COMPLETING THE COMPONENT PROJECT ACTIVITY DESIGN DOCUMENT FORM for Small Scale CPA”(Ver.01.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	Provide any further background information on the applicability of the selected methodology(ies).	CPA DD	OK	
Appendix 4:	Further background information on ex ante calculation of emission reductions			
	Provide any further background information on the ex ante calculation of emission reductions. This may include data, measurement results, data sources, etc.	CPA DD	OK	
Appendix 5:	Further background information on the monitoring plan			--
	Provide any further background information used in the development of the monitoring plan. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.	CPA DD		

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CAR Corrective Action Requests				
CAR-1	Corrective action is requested on provision of LoA from Host Party the Republic of Indonesia and Annex I country, Japan	A.6	LoAs from Japanese government and Indonesian government for the PoA project has been provided.	LoAs for the PoA project of both countries were issued. JCI confirmed the appropriateness. CAR-1 is closed.
CAR-2	It is required to provide active excel spreadsheet for IRR calculations	D.2.	P.P. provided active excel spreadsheet for IRR calculations.	PP’s comment does not reflect the current situation. JCI confirmed the submission is rightly done. CAR-2 is closed.
CAR-3	It is requested to describe the calculation process for the emission reductions with applying relevant figures into the equations so that DOE can properly replicate and validate the calculation results in the CPA-DD.	D.6.3	PP revised the necessary calculation process with adding correct conversion coefficient of ton-CH ₄ to m ³ -CH ₄ and proper formulas numbers.	PP revised relevant part of DDs correctly. CAR-3 is closed.
CAR-4	It is requested to revise values of emission reductions by reflecting estimated annual increase of amount of wastewater. In doing it, PP is requested to review all of other relevant process values as well as emission reductions.	D.6.3 D.6.4 D.7.1	PP revised relevant part of CPA-DD and submitted to JCI. In addition, PP submitted ER calculation sheet to clarify the ER calculation details.	JCI confirmed the revised CPA-DD and provided ER calculation excel sheet which are both appropriate and acceptable. Therefore CAR-4 is closed.
CL Clarification Requests				
CL-1	It is requested to provide detailed information for the exact location of the project with coordinates. In addition, Figure 1 is to be replaced with clear map so as to distinguish the spot of the project site on the map.	A.7.	P.P described detail information for the exact location in A.7. In addition P.P revised Figure 1. PP revised Figure 1 as showing the site location on the map of Jambi Province.	At least showing the site location on the map of Jambi Province in addition to the map of Indonesia. Revised map is acceptable. CL-1 is closed.
CL-2	There described key parameters of facility and waste water treatment process such as production capacity of mill, tons of FFB, size of features of lagoon system , etc. on the page 3. It is required to provide source of those parameters so that the described figures of parameters are credible.	A.7.	P.P. provided source of those parameters and system figure.	Provision is not sufficient. All figures are clarified with appropriate source data. CL-2 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-3	It is required to provide rational explanation to expect the start date of the CPA.	A.8.1.	P.P provided the project schedule.	ES is provided and confirmed acceptable. CL-3 is closed.
CL-4	It is required to provide the reason of why the expected operational lifetime of the CPA is 14 years.	A.8.2.	For the life of the equipment such as gas engine is usually said about 15 years. So we decided our project period as 14 years (7years x 2times).We submitted documents about Japanese legal aspect as the idea of 15 years in basic.	PP’s clarification of reason why is acceptable. CL-4 is closed.
CL-5	It is required to submit the engineering schedule of the proposed project for DOE to understand the process of completion of the CPA project.	A.9.1.	P.P. provided the project schedule.	ES is provided and confirmed acceptable. CL-5 is closed.
CL-6	It is required to submit all relevant documents referred in the B.1 as the legal basis of the environmental measurement efforts.	B.1.	P.P. provided these documents and English translation.	Please clarify which corresponds to which. Clarification is done satisfactory. CL-6 is closed.
CL-7	It is requested to provide EIA report for the confirmation of the validity of the description in B.1. on the CPD-DD.	B.1.	P.P. provided the documents regarding EIA.	Provided EIA report is confirmed acceptable. CL-7 is closed.
CL-8	It is required to submit the copy of the real record of holding public consultation conducted to ensure the fact described in C.1., C.2. and C.3. in the CPA-DD.	C.1. – C.3.	P.P. provided the documents regarding stakeholder’s consultation.	Provided document is confirmed acceptable. CL-8 is closed.
CL-9	It is required to clarify why the adjustment factor of 0.89 which comes from para 27 AMS-III.H. ver.16 is considered as inserted in the equation (2) for the calculation of $BE_{ww,treatment,y}$.	D.6.1.	P.P. revised the description in D.6.1. The figure of 0.89 was deleted in equation (2). On the other hand, the explanation of figure 0.89 was added the item of $\eta_{COD,BL,BI}$ in D.6.2 for Ex-ante calculation.	Please describe in more explanatory manner. PP’s clarification with necessary correction on CPA-DD is acceptable. CL-9 is closed.
CL-10	No sludge treatment system is considered in the baseline scenario according to the description for the emissions of the sludge treatment system (c). It is required to clarify how it can be confirmed that there is no sludge treatment system.	D.6.1.	Sludge is used as fertilizer to the farm nearby. Therefore, no sludge treatment systems in this project.	Please describe in more explanatory manner. Clarification is properly given during the mutual meeting and CL-10 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-11	It is required to review the eligibility criteria is appropriate.	D.5	P.P. revised description of the eligibility criteria.	The revised eligibility criteria are confirmed appropriate. CL-11 is closed.
CL-12	It is requested to provide EIA Approval in English.	B.1. B.2.	PP provided English translation.	JCI confirmed the submission. CL-12 is closed.
CL-13	It is required to provide Emission Reduction spread sheet.	A.10. D.6.1. D.6.3. D.6.4. D.7.1.	PP provided ER spread sheet as required.	JCI confirmed the submission of ER excel sheet. CL-13 is close.
CL-14	The document provided regarding the electricity tariff (MER Act 4/2012) is required to be translated into English so that DOE can confirm the tariff applied.	D.5	PP Provided English translation.	JCI confirmed the submission. CL-14 is closed.
CL-15	It is requested to describe about required accuracy and calibration for all measuring equipment listed in the table for monitoring parameters in the CPA-DD.	D.7.1. D.7.2.	PP added description about required accuracy and calibration.	Revised CPA-DD is confirmed as appropriate. CL-15 is closed.
CL-16	It is required to indicate the locations of measurements for wastewater of P1,P2,P3 in the relevant figures. If not needed, clarification is required.	D.7.1. D.7.2.	P1, P2 and P3 are same value. Therefore only P1 is measured.	JCI agreed with PP’s approach. CL-16 is closed.
CL-17	It is required to clarify the source and amount of POME which is 156,100m3/year (B1,P1,P3) in the parameter table in D.7.1 in the CPA-DD.	D.3. D.4. D.6.1. D.6.2.	PP provided calculation result with certain evidence.	Provided design note is acceptable. CL-17 is closed.
CL-18	It is required to provide exact source of the initial investment cost of US\$4,547,833 with explicit breakdown, which shall be authentic.	D.2.	PP provided breakdown cost in the calculation sheet.	JCI confirmed the provided breakdown of investment. CL-18 is closed.
CL-19	In the CPA-DD, page 21, it is defined that the gas engine capacity is 1,050kW sourced from “Project plan”. Please submit the official document titled “Project plan” which should be also authentic.	D.3. D.6.1. D.6.2. D.6.3.	PP provided calculation of the gas engine capacity.	Provided design note for explaining the estimation process is acceptable. CL-19 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-20	In the CPA-DD, page 21, it is defined that “Maximum electricity supply” is 7,385MWh/year. In the column of Source, it reads “Calculated value” only. It is required to submit documented calculation result with certain evidence to ensure it reliable and credible.	D.6.3.	PP provided calculation result with certain evidence of 7,385 MWh/year.	Evidence is confirmed. CL-20 is closed.
CL-21	In the CPA-DD, page 21, it is defined that “Power tariff” is 975 sourced from “FIT resume”. Please clarify “FIT resume”.	D.5.	PP revised description of “FIT resume”.	JCI confirmed the meaning of PP’s response. CL-21 is closed.
CL-22	It is required to submit details of O&M cost.	D.6.1.	PP provided detail of O&M cost and revised the value.	Submission and revised CPA-DD is acceptable. CL-22 is closed.
CL-23	It is required provide the justification on how “simple OM method” can be applied for the determination of “Operating Margin” in the section D.6.1 in the CPA-DD.	D.6.3.	PP used the value of Emission Factor which was supplied by DNPI(Indonesian DNA). DNPI announced the Emission Factor ($EF_{CO_2,grid,y}$) in the WEB site. However, DNPI unlisted the data basis and calculation process there. This is why we cannot show the computation and calculation process in PDD. This is sure that DOE interviewed and checked it to DNPI directly in Site Visit(2012/7/12).	JCI accept PP’s clarification which is as confirmed with DNA in Indonesia. CL-23 is closed.
CL-24	It is required to provide further background information on ex-ante calculation of emission reductions in as an Appendix 4 for the CPA-DD.	D.6.3.	As stated above	Background is fully confirmed. CL-24 is closed
CL-25	It is required to describe the detailed process of BM calculation according to the applied Tool in the CPA-DD.	D.6.3.	As stated above	JCI accepts the situation in Indonesia. CL-25 is closed.

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 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
---	------------	--	--------------------

TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-26	It is required to provide convincing evidence to justify why the baseline emissions from electricity or fuel consumption can be neglected. More detailed description is to be added in the relevant part of the CPA-DD (page 36)	D.3. D.4. D.5.	PP described no use of electricity in Baseline and no change in fuel use for sludge treatment system between Baseline and Project Activities in wastewater treatment, and so this item can be neglected in page 22 and referred it in page 36 in the CPA-DD.	JCI confirmed PP’s clarification as appropriate. CL-26 is closed.
CL-27	It is required to clarify the document source of all of figures of parameters applied in the calculation formula for baseline and project emissions; Ex.1 $\eta_{COD,BL,BI} = 0.8464 (= 0.951 \times 0.89)$ (Page 30) <i>0.89 is OK because it is given in para 27, AMS-III.H, however what is the source of 0.951</i> Ex.2 $TM_{RG,h} = FV_{RG,h} \times fV_{CH_4,RG,h} \times \rho_{CH_4}$ This equation is sourced from Tool (annex 13, EB28), however no indication is given regarding applied “Tool”.	D.6.1. D.6.2.	PP described that the figure of 0.951 is defined as the removal ratio by the replacement of ABR system to the part of existing lagoons, and this estimation and data evidence by continuous sampling and analysis of COD were stated in Appendix 4. The reference of the stated above was added in the box of $\eta_{COD,BL,BI}$ of D.6.2. $TM_{RG,h}$ is referred to the name of Tool as a source in page 26.	PP’s clarification os acceptable. CL-27 is closed.
CL-28	It is required to confirm whether the calculation result of $BG_{burnt,GEG,y}$ is correct in equation (6), page 40 of the CPA-DD.	D.3. D.4. D.6.1. D.6.2.	PP described correct equation (20) for $BG_{burnt,GEG,y}$ in page 40 and density of methane: $\rho_{CH_4} = 0.716 \text{ kg-CH}_4/\text{m}^3\text{-CH}_4$, was evaluated in CPA-DD.	Revised DD is confirmed as appropriate. CL-28 is closed.
CL-29	It is required to add equation number and relevant methodology or tool to each calculation items raised in the section D.6.1 in the CPA-DD as well as the section B.6.1 in the PoA-DD to justify the applied equation.	D.6.1. D.6.2.	PP revised and added the equation number in series through the section D.6.1.	PP’s revised CPA-DD is confirmed as appropriate. CL-29 is closed.
CL-30	It is required to submit the documented budget estimation for “Water treatment system”, in which date, responsible person’s name and authorization are to be clarified.	D.5.	PP submitted evidences for ABR system for waste water treatment with cost estimation dated 2010/10/15 with figures and facilities specifications/quantities.	JCI confirmed needed submission is made. CL-30 is closed.

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-31	Analytic data of POME for Pinang Tinggi Mill ,in which date, responsible person’s name and authorization are to be clarified.	D.3.	PP described POME sampling and analysis of COD for continuous 10-days in Appendix 4 in CPA-DD. The analytical results were also submitted to DOE for the evidence, which was completed by the Laboratory of Local Government.	Analytic data was provided and it is acceptable. CL-31 is closed.
CL-32	Performance of PKS Pinang Tinggi (2008 – 2010) is submitted. It is required to submit Data source (Daftar Performance P.K.S prepared by PTPN6).	D.3.	PP submitted the Data Sources; DAFTOR PERFORMANCE P.K.S. ; i.e. List of Palm Oil Mills Performance, of 2008-2010, prepared by PT. Perkebunan Nusantara 6(Persero).	Performance data submitted is satisfactory. CL-32 is closed.
CL-33	General flow diagram for Pinang Tinggi is to be submitted. Only General flow diagram for Bunut has been provided.	D.3. D.5.	PP submitted a general flow diagram of POME treatment system to be applied for Pinang Tinggi Palm Oil Mill.	JCI confirmed the submission of the proper flow diagramfor the project. CL-33 is closed.
CL-34	It is required to submit Civil reference drawing for Pinang Tinggi is to be provided. (Only for Bunut has been submitted.)	D.5.	PP submitted the civil reference drawings , i.e. concrete work, slope protection and others related to the ABR system to be applied for Pinang Tinggi Palm Oil Mill.	Submitted drawing is confirmed as appropriate. CL-34 is closed.
CL-35	It is required to submit the formal employment cost estimation. In addition, source data is to be submitted for the justification of estimation so that DOE is able to validate properly. In doing so, justification of number of employees as well as unit cost for each category (manager, operator, guard) is requested to provide.	D.5.	PP submitted a table of salary for PTPN6 HQ staff and Mill staff in the Year 2011, which was compiled by inter-view survey in December 2011. Based on the table PP applied the figure of remuneration cost in operation of the system for IRR estimation, i.e. for manager, operator and guards.	Information submitted regarding operation cost is appropriate. CL-35 is closed.

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-36	It is required to justify each estimated cost of items included in the “Initial investment Cost”, which means why and how PP can judge that the initial investment cost is reasonable and acceptable. In doing it, it is requested to clarify how PP judged estimation provided by respective potential contractor is appropriate in cost level as well as quality with the provision of convincing evidences.	D.5.	PP submitted initial cost estimations of ABR system, Genset and civil works. PP recognized that the total investment cost and each portion of it is expensive in comparison with other CDM projects which were in same type of Pinang Tinggi and implemented already in Indonesia. However with a consideration of the long history of business activities of PP with contractors and manufacturer, these cost estimations were assessed for sufficient quality and guarantee in its initial operation. PP believed that the project activities could be led in safe and in longer life years of fifteen(15) for crediting period.	Justification by PP for the appropriateness of investment cost is acceptable. CL-36 is closed.
CL-37	It is required to clarify the background of tax exemption with submission of the official document stipulating the taxation system in Indonesia.	D.5.	PP submitted tax exemption scheme and incentives by Indonesian Government, especially by Ministry of Finance for renewable energy development. These advantages could be enjoyed by Pinang Tinggi Project.	Government regulation related tax exemption is provided. CL-37 is closed.
CL-38	In IRR spreadsheet, it is required to add full detail of calculation of IRR in the case of with CER. In relation to its clarification, it is required to clarify how income tax is incorporated in the calculation of IRR with CER.	D.5.	PP revised spreadsheet for IRR estimation with applying corporate tax exemption scheme not only for electric supply income but credit income; only first 30% of income could be exempted and further income would be in taxation.	IRR sheet is rightly revised. Therefore CL-38 is closed.
CL-39	In the table for cost financial table in the CPA-DD page 21, it is required to add civil work cost and gas engine cost.	D.5.	PP revised to put cost items and their value in a Table in page 21 of CPA-DD.	CPA-DD is rightly corrected. CL-39 is closed.

 JCI CDM Center	Appendix A	CDM Validation Protocol for “Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia”	JCI-CDM-VAL-12-003
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TABLE-2.2 Resolution of Corrective Actions and Clarification Requests(CPA)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-40	It is required to submit timeline table showing all of relevant works are included such as below items; <ul style="list-style-type: none"> - Price estimate of gas engine generator submitted - Price estimate of civil work - Financial analysis completed (When and who evaluated the total investment and total expense - Cost estimate of expenses after start of operation - The date of completion of IRR excel spread sheet - etc 	A.5. D.1. D.2. D.5. D.6.	PP submitted a timeline table with listing major activities for cost estimation and its evaluation.	Timeline table is properly added in the CPA-DD. CL-40 is closed.
CL-41	It is required to clarify the reason of revised increasing rate of FFB production rate and period.	D2 D5	PP has reviewed whole project plan when the revised DDR was worked out. In doing it, PP has taken the most recent relevant national and international economical environment into consideration of the planning of the proposed project. As part of it, the estimation of increasing rate (6%) has changed to 5% and as a result, FFB production has changed. In addition, the long term prediction has also been needed to revise to cover the crediting period as a CDM project to provide appropriate estimation of IRR and emission reductions.	JCI confirmed the PP’s response with reference to the provided revised DDR and the revised plan is appropriate. JCI also checked that CPA-DD is revised correctly. Therefore CL-41 is closed.
CL-42	Ex-ante calculation is based on the input parameters only derived from the estimate of the first year. All those values are to be estimated as average over the lifetime or crediting period accordingly.	D2 D5	PP has totally changed the ex-ante calculation so as being in line with UNFCCC’s requirement in the CPA-DD.	JCI confirmed revised CPA-DD and judged it is rightly revised and corrected. Therefore CL-42 is closed.
FAR	Forward Action Requests			
FAR-1				

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, Tbv:To be verified, PDD GL: PDD Guidelines, PA: Project Activities, PP: Project Participants

APPENDIX B**Certificate of Appointment of Validation Team**

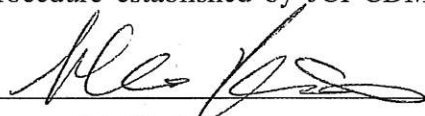
Project Title	Power generation using biogas from state-owned palm oil mills in the Republic of Indonesia
Applied Methodology	AMS-III.H, AMS-I.D Sectoral Scope 1, 13, TA 1.1, 13.1

Date: 30 May 2012

Designated Operational Entity: Japan Consulting Institute (JCI)

Reflecting the competence criteria of JCI in accordance with the latest "CDM Accreditation Standard for Operational Entities", this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, and Validation Procedure established by JCI CDM Center.

Signature



Akio Yoshida,

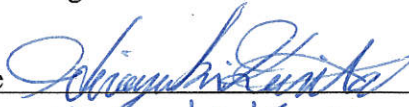
Executive Director, JCI CDM Center

Date: 30th May 2012**Client: Shimizu Corporation**

Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.

It is also agreed that Mr. **Mutsuo KATO** of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.

Signature



(Name)

Hiroyuki Kurita,

(Title)

General Manager,
GHG Project Dept., Shimizu Corporation**Validation Team**

Validation Team	Name	Qualified Technical Areas related to the Project
Leader	Shigeo AOKI	1.1, 13.1
Member	Mitsuo TAKANO	(Observation)

Technical Reviewer	Junji YOSHIZAWA	1.1, 13.1
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