



VALIDATION REPORT

PT. INDO RAYA KIMIA

UTILIZATION OF WASTE HEAT FROM SULPHUR
RECOVERY UNIT TO GENERATE ELECTRICITY

Report No: 53123908 – 08/142

Date: 2013-01-15

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Project:	Title:	Initial PDD Version:		Final PDDVersion
	Utilization of waste heat from Sulphur Recovery Unit to generate electricity	2008-02-25		2013-01-15
Client:	PT Indo Raya Kimia		Client ref:	Mr. Waris Jais, Plant Manager.
Project Participant(s):	Host Party:		Other involved parties:	
	Indonesia		N/A	
Applied methodology/ies:	Title:	No.:	Scope / TA:	
	“Waste Energy Recovery gas / heat / pressure) Projects“	AMS-III.Q ver. 4.0	F, J /4.5 Waste Heat Recovery	
Validation team / Technical Review and Final Approval	Validation Team:		Technical review:	Final approval:
	K. V. Sudarshan, Pankaj Mohan, B.J.M. Amarnath, Ellys Simamora		Martin Saalmann Rainer Winter	Martin Saalmann
Expected Emission reductions: [t CO₂e]	Expected emission reductions over the first crediting period:		Expected project starting date:	
	55,572 t CO ₂ e		2005-09-22	
Confidential content:	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
Summary of Validation Opinion:	<input checked="" type="checkbox"/> Positive validation opinion		<input type="checkbox"/> Negative validation opinion	
	<p>PT Indo Raya Kimia has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “Utilization of waste heat from Sulphur Recovery Unit to generate electricity” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board</p> <p>In the course of the pre-validation 21 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - The project is in line with all relevant host country criteria (Indonesia) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of Indonesia vide the Letter of Approval (HCA) dated 30/07/2008. - The project additionality is sufficiently justified in the PDD. - The monitoring plan is transparent and adequate. - The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 55,572tCO₂e are most likely to be achieved within the fixed crediting period. <p>The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p>			
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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual^{VVM}, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions. TÜV NORD JI/CDM CP cannot be held liable by any entity for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

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

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project title	Utilization of waste heat from Sulphur Recovery Unit to generate electricity		
Project size	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale		
Project Scope <i>(according to UNFCCC sectoral scope numbers for CDM)</i>	<input checked="" type="checkbox"/>	1	Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/>	2	Energy distribution
	<input type="checkbox"/>	3	Energy demand
	<input checked="" type="checkbox"/>	4	Manufacturing industries
	<input type="checkbox"/>	5	Chemical industry
	<input type="checkbox"/>	6	Construction
	<input type="checkbox"/>	7	Transport
	<input type="checkbox"/>	8	Mining/Mineral production
	<input type="checkbox"/>	9	Metal production
	<input type="checkbox"/>	10	Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/>	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/>	12	Solvents use
	<input type="checkbox"/>	13	Waste handling and disposal
	<input type="checkbox"/>	14	Afforestation and Reforestation
	<input type="checkbox"/>	15	Agriculture
Applied Methodology	AMS-III.Q ver. 4.0		
Technical Area(s)	4.5 Waste Heat Recovery		
Crediting period	<input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (10 y)		
Start of crediting period	01/03/2013 or date of registration whichever later.		

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Indonesia	PT. Indo Raya Kimia
Other involved party/ies	N/A	N/A

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Indonesia
Region:	West Java
Project location address:	Kujang Industrial Park, at Jenderal Ahmad Yani street No. 39, Kalihurip, Cikampek, Karawang – 41373 Indonesia
Latitude:	6°24'51" South
Longitude:	107°26' 28" East

2.4 Technical Project Description

PT Indo Raya Kimia is a leading producer of carbon disulfide in Asia Pacific which located in West Java, Indonesia. The design production capacity was 132 tons /day Carbon Disulphide (CS_2) with Akzo Nobel technology. Methane reacts with Sulphur to produce CS_2 and Hydrogen Sulphide (H_2S); CS_2 is purified and sold as product, while H_2S by catalytic oxidation/reduction in a Sulphur Recovery Unit (SRU) to recover Sulphur back to the process. Waste heat is generated in the form of steam due to exothermal process in the SRU and furnace.

During May 2006 the production capacity was enhanced to 132 to 145 tons /day by up grading SRU blower. Due to production increase, 11.93 t/h of steam is generated from the SRU and furnace. After internal consumption, 10.09 t/h of 24 bar of waste steam is released to the atmosphere. The steam is at 24 bar, saturated and it has been checked during the validation, the steam properties from Jan 05 onwards^{/DCS/} it was obvious that the steam properties did not change in the baseline and project scenario. The unutilized waste steam is used to generate power with the help of steam turbine generator of capacity of 1.2 MW. At present total power requirement of IRK is met from PLN Jamali grid. Power generated from the proposed project activity will cater total power requirement of IRK plant. Electricity import from the grid will be used in case of emergency, stoppage of turbine and annual shut down for maintenance. As a result, IRK has estimated to reduce the electricity consumption from PLN grid about 6446MWh in a year. This power from GHG free source will displace power from PLN grid and hence will effect reduced emissions in power generation from Jamali grid connected power stations.

The estimated amount of emission reductions over the chosen 10-year “nonrenewable crediting period” for the project activity is **55,560 tCO₂e**.

The technical key data are provided in table 2-4 below

Table 2-4: Technical data of the project activity

Parameter	Unit	Value
Turbine		

Parameter	Unit	Value
Manufacturer	-	Dresser Rand
Type	-	Murray T-5742
Rated Power	kW	1215
Lifetime	Years	30
Inlet Temperature	°C	244
Inlet Pressure	barg	24
Generator		
Manufacturer		Newage Stamford
Type		X05J390837
Installed Capacity	kW	1200
Voltage	Volt	380
Frequency	Hz	50
Speed	RPM	1500
Power factor		0.8
Lifetime	Years	30
Surface Condenser		
Manufacturer		New Field Industrial Equipment
Type		Shell & Tube
Installed capacity	kCal	5,544,000
Lifetime	Years	30

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Validation sequence

Topic	Time
Assignment of validation	2008-05-14
Submission of PDD for global stakeholder commenting process	2008-06-07 to 2008-07-06
On-site visit	2008-09-03 and 2008-09-04
Draft reporting finalised	2008-11-07
Final reporting finalised	2010-07-01
Technical review on final reporting finalised	2011-05-11
Incompleteness case finished	2012-09-19
Request for review finalized	2013-01-15

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the validation can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a validation team, consistent of one team leader and 3 additional team members, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ^{4), 5)}	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	B.J Mohinder Amarnath	TUV INDIA Pvt Ltd, Bangalore	TL	LA	<input checked="" type="checkbox"/>	F	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	K.V. Sudarshan	TUV INDIA Pvt Ltd, Bangalore	TM	LA	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Pankaj Mohan	TUV INDIA Pvt Ltd	TM	LA	<input checked="" type="checkbox"/>	F, J	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Ellys Simamora	PT TUV NORD	TM	A	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ^{4), 5)}	Host country Competence	Team Leading competence
		Indonesia						
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TN Cert	TR ³⁾	SA	<input checked="" type="checkbox"/>	4.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Saalman	TN Cert	TR ³⁾ /FA	SA	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR, FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ No team member

⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....), according to the Accreditation Standard (Version 01.1)

⁵⁾ As per S01-MU03 or S01-VA070 A2 (such as TA 1.1, TA 1.2 ...), according to the Accreditation Standard (Version 2)

Certificates of appointment for the above mentioned team members are enclosed in annex 6 of this report.

3.4 Consideration of Public Stakeholder Comments

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments are received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

3.5 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

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

The validation protocol is described in Figure 1.

Validation Protocol Table A-1: Requirement checklist				
Checklist Item	Validation Team Comment	Reference	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further subdivided as per the requirements of the topic and the individual project activity.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Gives reference to the information source on which the assessment is based on</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.</i>	<i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i>

Figure 1: Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

3.6 Review of Documents

The published PDD (version 1) and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
<p>Project proponent representatives: 1.Waris Jaiz 2. C. K. Dutta</p> <p>Project consultant: 1.Archittrandi Priambodo 2.Susy M. Simarangkir 3.Ratna Nawang Sari</p>	<ul style="list-style-type: none"> - Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Crediting period - Project activity starting date - Baseline study assumptions - Additionality - Sustainable development issues - Monitoring - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Environmental Policy - Quality and Environmental Management System - Details of emissions reduction calculation - Operational data - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section 7 'References'.

3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

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

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

Table 4-1: Summary of CARs, CLs and FARs issued

Validation topic ¹⁾	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	7	-	-
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	11	2	-
Duration of the Project / Crediting Period (C)	1	1	-
Environmental impacts (D)	1	-	-
Stakeholder Comments (E)	1	-	-
SUM	21	3	-

¹⁾ The letters in brackets refer to the validation protocol

* New CARs has been included based on incompleteness issues.

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

Finding	A1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In section A.3 of PDD mention whether the project participant is private or public (Cp. SSC-CDM-PDD guidelines)		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The participant involved in this project activity is private entity PT. Indo Raya Kimia		
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The participant involved in the project activity is private entity; the same is also verified from host country approval the same has been addressed in the revised PDD hence CAR is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding	A2		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>1. The view of the project participant on the contribution of the project activity to sustainable development as per National Commission for Clean Development Mechanism, Indonesia sustainable development indicators was not presented in the section A.2 of the PDD. (Cp http://dna-cdm.menlh.go.id/en/susdev/). Moreover proposed project must pass all individual indicators that are applicable in order to be approved. The “checklist” method is used in the evaluation of CDM projects. Project Proponent has to provide explanation and justification that the proposed project fulfils all the indicators. The check list has to be provided to the validation team.</p> <p>2. It is mentioned in section A.2 of PDD as “the project is indirectly contributing to reduction of local air pollution such as SOx, NOx”. Clarification is requested?</p>		

Finding	A2
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> 1. The indicators have been described in the revised PDD section A.2. Indonesian DNA has stipulated of four indicators contribution of the CDM project to the sustainable development which encompasses environment, social, economy and technology. IRK CDM project, Utilization of waste heat from Sulphur Recovery Unit to generate electricity, has fulfilled the indicators required by the Government by obtaining the DNA Approval Letter from the National Committee on CDM (Indonesian DNA) under Ministry of Environment of Republic of Indonesia on 31 July 2008. A summary of the brief description of the checklist has been submitted during the validation site visit on 3-4 September 2008. 2. Typing error. The description of the contribution the project activity to the sustainable development in environmental sector has been revised with the statement "The project activity will reduce the green house gasses that would have led higher emission in the absence of the project activity. The mitigation of emission will further contribute positively to the global climate change".
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> 1. The contribution of project activity to sustainable development as per the indicators by National Commission for Clean Development Mechanism is now addressed in the revised PDD. The summary of brief description which has been submitted to DNA for approval has been verified and found ok. 2. The argument has been modified and now it states that the project activity will reduce the green house gases same is addressed in the revised PDD hence CAR is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding	A3		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding	A3
<p>Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<ol style="list-style-type: none"> 1. The information on public funding is not filled Annex 2. 2. Latitude longitude information does not refer the exact location of the project activity, Source of coordinates of project location mentioned in section A.4.1.4 is missing. Clarification is requested. 3. The table presented in section A.4.3 of PDD is not in line with SSC-CDM-PDD guidelines. And the numbering of table is not mandated by the SSC-CDM-PDD form. 4. The table in section B.6.4 of PDD is not in line with SSC-CDM-PDD guidelines 5. The table in Annex I is incomplete 6. Indicate if the person/entity mentioned in section B.8 of PDD is also a project participant listed in Annex 1.
<p>Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> 1. No public funding will be involved in the project activity, please see Annex 2 of the PDD version 8_13.07.10 2. The project is located in 6° 24' 51" South latitude and 107° 26' 28" East longitudes. The source of coordinate location of the project activity is taken from the Google earth, printed on 22 August 2008 at 02.15 pm. Another supporting document is introduced; please see attachment 40, in which the coordinate location (6° 24' 835" South latitude and 107° 26' 447" East longitudes) is recorded by GPS recorder. 3. The table presented in section A.4.3 of the PDD version 03 has referred to SSC-CDM-PDD guidelines. 4. The table in section B.6.4 has referred to SSC-CDM-PDD guidelines. 5. The participant involved in this project activity is private entity PT. Indo Raya Kimia. The table in Annex I of PDD has been completed and an empty column is marked with a "-". Please see Annex 1 of the PDD version 8_13.07.10 6. The person/entity mentioned in section B.8 of PDD is not a project participant but the CDM consultant for IRK CDM project. Therefore the person/entity is not listed in Annex I. It has been mentioned in section B.8 of PDD

Finding	A3
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> 1. It has been confirmed by the PP during the onsite visit that there is no public funding involved and the same is not addressed in the hosted PDD and now it is addressed in Annex 2 of SSC CDM PDD, hence ok. 2. The latitude and longitude is now corrected in the revised PDD and the same is crosschecked with Google maps website, http://www.satsig.net/maps/lat-long-finder.htm and the photograph of gps instrument with latitude and longitude of the location and found ok. 3. The table in section A.4.3 of PDD is now in line with the SSC-CDM-PDD Guidelines. 4. The table in section B.6.4 of PDD is now inline with the SSC-CDM-PDD Guidelines. 5. The table in Annex 1 is filled. 6. The entity mentioned in the section B.8 of the PDD is not a project participant the same is clearly mentioned and hence the entity is not listed in the Annex 1. <p>Hence CAR is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	A4
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. The description of the project activity is not clear. Moreover the steam availability mentioned in section A.2 of PDD should be consistent with all the sections A.4.2, B.4, of PDD. 2. The Pre-project scenario is not clear. The usage of blower mentioned in section “.....8 t/h is used to run the blower back pressure turbine for the SRU” contradicts with the point number 6 of applicability criteria of AMS IIIQ. Clarification is requested. 3. The amount of emission reduction mentioned in section A.2 of PDD contradicts with the value in A.4.3 and B.6.4 4. It is stated that by installing 1.2 MW generator, IRK will avoid drawing of power from PLN to an extent of 10668.86 MWh. This amounts to running the generator for 8890.7 hours where as the maximum number of hours in a year are only 8760 hours. In this regard emission reductions in PDD excel spread sheet needs to be revised. 5. In section A.4.2 of PDD the description of the project activity is

Finding	A4
	<p>missing instead the process of the manufacturing is elaborated. Moreover does not describe the application of 'environmentally safe and sound technology' in the project activity as per the requirement of CDM-SSC-PDD Guidelines.</p>
<p>Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> 1. The clarification of the project activity has been described in the PDD version 03. Also the waste steam availability has been described in PDD section A.2, A.4.2 and B.4. After the expansion of CS₂ capacity from 132 ton/day to 145-150 ton/day from May 2006, the electric blower of 400 kW was operated. Steam-driven blower which was operated before was not sufficient for increased production capacity. In this scenario total steam released to the atmosphere is 10.10 t/h. In the CDM project, IRK utilizes this waste steam of 10.10 t/h to generate the electricity to meet their power demand. 2. According to AMS III.Q version 01, the applicability point 6 is "by-product gas/heat or pressure of machines and technical processes for which not useful is found in the absence of the project activity and for which it can be demonstrated that it has not been used prior to and would not be used in the absence of the project activity". In the absence of the IRK CDM project, the amount of waste steam released to the atmosphere was 10.10 t/h. The proven data of 10.10 t/h waste steam has been shown in the table of ER calculation spreadsheet for the 6 months data, which is supported by proven documents for baseline computation. Therefore, the baseline scenario is not contradicting with the applicability criteria of AMS III.Q, point 6. 3. The amount of emission reduction mentioned in the section A.2 of PDD Version 3 has been modified. After the revision in the ER calculation version 2 in the excel spreadsheet, then the emission reduction become 5557 tCO₂e/y. This value has been accommodated in the PDD version 04. 4. Revision of emission reduction calculation has been accommodated in the latest PDD of IRK version 04 and ER excel spreadsheet version 2 by considering the historical data for the last 6 months. The actual electricity consumption based on historical data for last 6 months when the CS₂ production in the range of 145 -150 TPD plus internal electricity consumption for the project activity are accounted as the total of electricity that would be generated from steam in the project activity. Total electricity which would be generated is 7603.20 MWh/y by considering 330 days per year and 80% PLF. By installing 1.2 MW generator, IRK will avoid drawing major portion of power from PLN.

Finding	A4
	<p>5. In Section A.4.2 of the revised PDD has described the proposed of the project activity which utilize 10.10 t/h of waste steam, which was previously released to the atmosphere, to generate electricity to meet the total electricity requirement of IRK plant. With regards to the technology to be employed for the project activity, additional information to demonstrate the technology used is environmentally safe and sound technology has been inserted in the PDD section A.4.2</p>
<p>DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>1. The description of the project activity is clearly addressed in the revised PDD. And also the capacity of the plant before and after expansion is clearly mentioned and the amount of available waste steam is clear and consistently mentioned in relevant sections of PDD the capacity before expansion is consistent with the Technical data sheet, the capacity after expansion and the amount of steam is verified through the monthly & daily reports.</p> <p>2. The description was not clear earlier and now the revised PDD clearly states that 10.10 after expansion 145-150 TPD the steam unutilized is 10.08 TPH. And now it clearly demonstrates that the steam was wasted in the absence of project activity the same is cross verified through the log sheets and moreover the steam does not fall under the category of Gases with intrinsic value hence the project activity fulfills the point number 6 of applicability criteria of AMS IIIQ.</p> <p>3. The amount of emission reductions is 5557 tons of CO₂e and the same is verified from the emission reduction calculation sheet and the same is now consistent in section A.4.3 and B.6.4 of PDD.</p> <p>4. The approach of calculation of emission reductions has been revised considering the load factor of 80% and the operating hours of 7920 hrs (320 days, 24 hours). The emission reduction is now revised and consistent with emission reduction calculation sheet and revised PDD.</p> <p>5. The section A.4.2 of PDD is revised to accommodate the description of technology of project activity and also how the project is environmentally safe and sound.</p> <p>Hence the CAR is closed.</p>
<p>Conclusion <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding	A5		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The PDD does not clearly indicate the nature of the steam generated i.e. saturated or super-heated? It is not clear whether the temperature and pressure of the waste heat steam remains stable prior to and during the implementation of the project activity. No information has been provided for the temperature and pressure of the steam, in this regard relevant sections of PDD needs revision		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ul style="list-style-type: none"> - The steam generated is saturated steam. PDD section A.2 has been updated. - The temperature and pressure remains stable prior and during implementation of the project activity as shown in file <i>IRK Data-081011</i> sheet <i>P&T steam</i>. PDD section A.2 has been updated. Kindly find in the file <i>IRK Data-081011</i> , worksheet <i>Temperature and Pressure</i> .		
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of nature of steam is clearly addressed in the revised PDD. The steam is saturated and the same has been cross verified in the daily and monthly log sheets. Also it has been verified that the temperature and the pressure of the steam has been stable before implementation after capacity expansion and after implementation. And also nature waste steam, temperature & pressure is clear and consistently mentioned in relevant sections of PDD.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding	A6		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The PDD lacks clarity for the scenarios prior to the start date of the project activity and scenario after the capacity expansion of CS2 plant for in the context of following: <ul style="list-style-type: none"> • The total energy demand of the industry facility and specific energy consumption of the CS2 production; • The quantity and energy content of the waste energy produced for the rated plant capacity/per unit of product produced • Use of the waste heat to meet the internal energy demand of CS2 plant. • Information regarding the steam-driven blower, its start date, the source of the steam used for the blower, quantity and energy content of the steam used. 		

Finding	A6																				
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<table border="1"> <thead> <tr> <th></th><th>BEFORE EXPANSION 132TPD</th><th colspan="2">AFTER EXPANSION 145 – 150 TPD</th></tr> <tr> <th></th><th></th><th>BASELINE</th><th>PROJECT ACTIVITY</th></tr> </thead> <tbody> <tr> <td>TOTAL POWER DEMAND (kW)</td><td>658.2</td><td>1058.2</td><td>1171.1</td></tr> <tr> <td>QUANTITY OF WASTE STEAM (TPH)</td><td>11.75</td><td>11.94</td><td>11.94</td></tr> <tr> <td>QUANTITY OF WASTE STEAM FOR CS2 SEPARATION (INTERNAL DEMAND) (TPH)</td><td>1.65</td><td>1.85</td><td>1.85</td></tr> </tbody> </table> <ol style="list-style-type: none"> 1. Start date of the steam blower was at the same time as starting of the operation of CS2 plant in 1999. 2. The source of the steam was from the CS2 plant and SRU. 3. Quantity and energy content for steam blower was 10.1TPH. <p>PDD section A.2 has been updated.</p>		BEFORE EXPANSION 132TPD	AFTER EXPANSION 145 – 150 TPD				BASELINE	PROJECT ACTIVITY	TOTAL POWER DEMAND (kW)	658.2	1058.2	1171.1	QUANTITY OF WASTE STEAM (TPH)	11.75	11.94	11.94	QUANTITY OF WASTE STEAM FOR CS2 SEPARATION (INTERNAL DEMAND) (TPH)	1.65	1.85	1.85
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DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The description of the project activity is clearly addressed in the revised PDD. The total energy demand of the industry facility and specific energy consumption of the CS2 production has been verified and found ok. The quantity and energy content of the waste energy produced for the rated plant capacity/per unit of product produced has been cross verified with monthly production data and the electricity bills and found ok. The use of the waste heat to meet the internal energy demand of CS2 plant has been verified in the daily & monthly log sheets has been verified and found that after capacity expansion the around 10.10 TPH of steam has been condensed and let to atmosphere. Also the information regarding the steam-driven blower, its start date, the source of the steam used for the blower, quantity and energy content of the steam used has been verified from daily and monthly log sheets and found that the after capacity expansion the steam is left to atmosphere and the electricity requirement is met through grid and the blower has been stopped and the same is deemed to be ok.</p>																				
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>																				

Finding	A7
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding	The average value for Steam Generation from CS2 Plant for

Finding	A7
Describe the finding in unambiguous style; address the context (e.g. section)	Resume year 2006 of FI-2007 in “FI-2007 monthly” sheet of 'ER Baseline Calculations' excel sheet is averaged inappropriately for months January-September while the data is available for May-December in this regard correction is required.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	PP submits the new spreadsheet with detailed data of steam from CS2 plant (FL-2007). The data for year 2006 available from January-December and the average is calculated correctly. Kindly find in file <i>IRK Data-081012</i> sheet: <i>Steam Generation from CS2 plant</i> row 110.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The spread sheet has been corrected with regards to the average value Baseline Calculations “ FI-2007 monthly ” spread sheet and found ok.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The applied version of methodology is no more valid for submitting for request for registration; hence revision is requested in relevant sections of PDD. Also reference of other methodologies/ Tools referred in the PDD with title and version is missing in section B.1 of PDD.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The baseline and monitoring methodologies applied to the project activity are the approved baseline and monitoring methodology : 1. AMS III.Q. , version 4, EB 60 “Waste energy recovery (gas/heat/pressure) projects”, 2. AMS I.D, version 17, EB 61 “Grid connected renewable electricity generation”.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The PDD has been revised to the latest valid version 4 of AMS III.Q and also other referred methodologies have been addressed in the revised PDD, hence the CAR is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B2		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The justification of the choice of the applied methodology tabulated in the section B.2 of the PDD is incomplete (Cp. AMS-III.Q)		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The justification of the each point to the choice of applied methodology in section B.2 of the PDD version 03 has been incorporated. Necessary correction is included in the PDD, please see PDD version 8_13.07.10 in section B.2.		
	Previously, in the PDD version 2_07.10.08, the justification of the project activity was compiled for criteria which have similar answer, for example criteria no.1&7 and criteria no.2&6.		
	Criteria of technology/measure under type III Q: Other project activities: waste gas based energy systems	project activity	
	<u>Paragraph 1</u> The category is for project activities that utilize waste gas and/or waste heat at existing facilities as an energy source for: <ul style="list-style-type: none"> • Cogeneration; or • Generation of electricity; or • Direct use as process heat; or • For generation of heat in elemental process¹ (e.g. steam, hot water, hot oil, hot air). 	This project activity uses waste heat at CS ₂ manufacturing facility to generate electricity. For this purpose, a new steam turbine generator is installed.	
	<u>Paragraph 7</u> For the purpose of this category waste gas/heat/pressure is defined as: by-product gas/heat or pressure of machines and technical processes for which no useful application is found in the absence of the project activity and for which it can be demonstrated that it has not been used prior to, and would not be used in absence of the CDM project activity (e.g. because of low pressure, heating value or quantity available). In the project scenario, this waste gas/heat/pressure is		

Finding	B2						
	<p data-bbox="539 407 932 434">recovered and conditioned for use.</p> <p data-bbox="539 474 1412 577">The revision on justification of criteria to the choice of applied methodology has been made and accommodated in PDD version 03_09.01.09.</p> <p data-bbox="539 591 1412 725">In the PDD version 8_09.01.09 justification has been described for each criteria of technology/measure to the choice of applied methodology under type III, Q: Other project activities “waste gas based energy systems”.</p> <table border="1" data-bbox="539 761 1412 1832"> <thead> <tr> <th data-bbox="539 761 967 949">Criteria of technology/measure under type III Q: Other project activities: waste gas based energy systems</th><th data-bbox="967 761 1412 949">project activity</th></tr> </thead> <tbody> <tr> <td data-bbox="539 949 967 1576"> <p data-bbox="539 949 715 981"><u>Paragraph 1</u></p> <p data-bbox="539 985 967 1164">The category is for project activities that utilize waste gas and/or waste heat at existing facilities as an energy source for:</p> <ul data-bbox="539 1169 967 1541" style="list-style-type: none"> • Cogeneration; or • Generation of electricity; or • Direct use as process heat; or • For generation of heat in elemental process¹ (e.g. steam, hot water, hot oil, hot air). • For generation of mechanical energy </td><td data-bbox="967 949 1412 1576"> <p data-bbox="979 985 1412 1240">This project activity uses waste heat at CS₂ manufacturing facility to generate electricity. For this purpose, a new steam turbine generator is installed.</p> </td></tr> <tr> <td data-bbox="539 1576 967 1832"> <p data-bbox="539 1576 715 1608"><u>Paragraph 2</u></p> <p data-bbox="539 1612 967 1832">The category is also applicable to the project activities that use waste pressure to generate electricity at existing facilities.</p> </td><td data-bbox="967 1576 1412 1832"> <p data-bbox="979 1612 1412 1792">This project activity utilizes the waste heat at CS₂ manufacturing facility to generate electricity instead of waste pressure.</p> </td></tr> </tbody> </table>	Criteria of technology/measure under type III Q: Other project activities: waste gas based energy systems	project activity	<p data-bbox="539 949 715 981"><u>Paragraph 1</u></p> <p data-bbox="539 985 967 1164">The category is for project activities that utilize waste gas and/or waste heat at existing facilities as an energy source for:</p> <ul data-bbox="539 1169 967 1541" style="list-style-type: none"> • Cogeneration; or • Generation of electricity; or • Direct use as process heat; or • For generation of heat in elemental process¹ (e.g. steam, hot water, hot oil, hot air). • For generation of mechanical energy 	<p data-bbox="979 985 1412 1240">This project activity uses waste heat at CS₂ manufacturing facility to generate electricity. For this purpose, a new steam turbine generator is installed.</p>	<p data-bbox="539 1576 715 1608"><u>Paragraph 2</u></p> <p data-bbox="539 1612 967 1832">The category is also applicable to the project activities that use waste pressure to generate electricity at existing facilities.</p>	<p data-bbox="979 1612 1412 1792">This project activity utilizes the waste heat at CS₂ manufacturing facility to generate electricity instead of waste pressure.</p>
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<p data-bbox="197 1841 485 1872">DOE Assessment #1</p> <p data-bbox="197 1877 517 2024"><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p data-bbox="539 1841 1412 2067">In the hosted PDD the description of all the applicability has not been justified individually and now the same is justified individually and the justification found to be adequately described, the project activity has installed a steam turbine for generation of steam utilizing the waste heat from the CS₂ manufacturing facility and the same is verified through purchase orders of steam turbine and also during the site visit and is has been verified the justification found to</p>						

Finding	B2
	be ok in the revised PDD, hence the CAR is closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B3
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. All documentary evidences need to be presented for arrival of baseline computations. 2. The variables, notations, values and units used in the PDD, spread sheet should be inline and consistent with the Annexure-I of guidelines for completing CDM-SSC-PDD form 3. The source of Emission factor used is missing.

Finding	B3												
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>1. All the documentary evidence for baseline computation, please find attachment No.2 – No.9, as listed in the following:</p> <ul style="list-style-type: none"> a. attachment no.2 : CS₂ production (TPM) b. attachment no. 3a and 3b : CS₂ production (TPD) c. attachment no.4 : Steam generation and history blower d. attachment no.5 : Basic Engineering Package e. attachment no.6 : Power nameplate CEP f. attachment no.7 : Power nameplate P-906 & P-907 g. attachment no.8 : Power nameplate P-908 <p>2. The variables, notations, values and units used in the PDD and spread sheet have been presented in line with SSC-CDM-PDD guidelines and approved methodology. Please see below summary of changes:</p> <table border="1"> <thead> <tr> <th>Existing</th><th>Revision PDD version 07</th></tr> </thead> <tbody> <tr> <td>E_{gy} (MWh/y)</td><td>E_{G,i,j,y} (MWh/y)</td></tr> <tr> <td>E_{F EL, grid, y} = 0.891</td><td>E_{F ELec, grid, j y} = 0.862</td></tr> <tr> <td>P_{CS₂, BL, y} (t/d)</td><td>Q_{BL, product} (t/d)</td></tr> <tr> <td>W_{G BL, y} (t/y)</td><td>Q_{WCM, BL} (t/h)</td></tr> <tr> <td>E_{G, y} = Power generated by the waste heat at IRK during the year y which represents the electricity which would have been imported from the PLN Jamali grid in the absence of the project activity</td><td>E_{G, y} = Quantity of Electricity which would be generated by the IRK power plant during the year y</td></tr> </tbody> </table> <p>3. The source of emission factor is the default value of emission coefficient from PLN Jamali grid which was calculated based on Approved methodology ACM0002 rev.07 and stipulated by Indonesian DNA and also the calculation of emission factor along with the excel sheet is submitted.</p>	Existing	Revision PDD version 07	E _{gy} (MWh/y)	E _{G,i,j,y} (MWh/y)	E _{F EL, grid, y} = 0.891	E _{F ELec, grid, j y} = 0.862	P _{CS₂, BL, y} (t/d)	Q _{BL, product} (t/d)	W _{G BL, y} (t/y)	Q _{WCM, BL} (t/h)	E _{G, y} = Power generated by the waste heat at IRK during the year y which represents the electricity which would have been imported from the PLN Jamali grid in the absence of the project activity	E _{G, y} = Quantity of Electricity which would be generated by the IRK power plant during the year y
Existing	Revision PDD version 07												
E _{gy} (MWh/y)	E _{G,i,j,y} (MWh/y)												
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E _{G, y} = Power generated by the waste heat at IRK during the year y which represents the electricity which would have been imported from the PLN Jamali grid in the absence of the project activity	E _{G, y} = Quantity of Electricity which would be generated by the IRK power plant during the year y												

Finding	B3
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> 1. All the necessary documentary evidence^{/BAS/} like CS₂ production, monthly report and daily report, which also shows the steam generation and the blower power consumption and the technical details of the steam turbine, CS₂ facility and also the same is cross verified during the site visit and the same has been provided. 2. All the variables, notations values and units are consistent and in line with the Annexure-I of guidelines for completing CDM-SSC-PDD form. 3. The emission factor calculation sheet is submitted. It is traceable and has been recalculated by the validation team. The value calculated is 0.862 tCO₂eq/MWh which is more conservative than the value 0.891 tCO₂eq/MWh published in the letter from Indonesian DNA^{/EF/}. Since the input data could be tracked through publicly available annual year book from grid operator and the calculation is correct, TÜV NORD assessed the value as appropriate.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B4
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Baseline is not clear in context of any fossil fuel usage and moreover explanation and justification of key assumptions and rationale related to baseline development in the section B.4 of the PDD is inadequate. All data used to determine the baseline emissions (variables, parameters, data sources etc.) is not neither presented in a tabular form (Cp SSC-CDM –PDD guidelines) nor referred to other section of the PDD.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>In baseline scenario, all the electricity demands at IRK facility is taken from PLN Jamali grid only. The evidence of import electricity from grid is substantiated by the PLN invoice.</p> <p>In accordance with paragraph 9 of the methodology AMS. III Q version 02, in the situation where the electricity is obtained from the grid, the calculation of the baseline emissions follows the procedure of paragraph 9 (a) of Approved baseline methodology which the baseline emissions is calculated from electricity (BE_{elec,y}) generated by waste energy multiply with the CO₂ emission factor from PLN Jamali grid. Therefore, the average technical distribution and transmission loss is taken out from the PDD (previously stated in the PDD version 02).</p> <p>Electricity generated by waste energy would replace the electricity</p>

Finding	B4
	<p>imported from PLN Jamali grid in the absence of the project activity.</p> <p>Justification of value in the baseline emissions is based on historical data of CS₂ plant operation for the 6 months (May–June 2006, January – April 2007) during the operational of electric blower of 400 kW in normal condition, which the steam produced was not utilized and emitted to the atmosphere.</p> <p>Data used for baseline calculation is taken from data recorded through Distributed Control System (DCS) such as steam generated in the Claus Unit/SRU (FI-5091) and steam produced from the CS₂ plant/furnace (FI-2007). Then the rationale steam used to CS₂ separation and Waste Water Stripper is 0.3 ton of steam/unit CS₂ production based on Basic Engineering Package from the technology provider.</p> <p>All data used to determine the baseline emissions (variable, parameters, data sources etc) has adopted SSC-CDM-PDD guidelines and approved methodology.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>It has been checked from the monthly reports and found that there is no usage of fossil fuel for the cross verified from the energy bills. Also the steam generated in the Claus Unit/SRU (FI-5091) and steam produced from the CS₂ plant/furnace (FI-2007) is verified from the DCS archived data. Then the Basic Engineering Package from the technology provider has been checked for steam used to CS₂ separation and Waste Water Stripper. Since there is no usage of fossil fuel, only the electricity consumption from grid by the project activity has been considered for calculating the project emissions and same is monitored through out the crediting period. Also the data used to determine the baseline parameters has been tabulated in table 6 in section B.4 of PDD. The argument found to be justified and hence CAR is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding	B5
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Additionality is not clear and the demonstration of additionality with the chosen barriers is to be proven. The financial implication is not touched upon and strong demonstration of CDM requirement is also not seen.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>In line with Attachment A to Appendix B of the Simplified Modalities and Procedures for Small Scale CDM project activities, demonstration of additionality focuses on the barriers facing the project. In showing that the project is additional, the project</p>

Finding	B5
	<p>participant provide explanation to show that the Project Activity would have not occurred anyway due to the following barrier :</p> <p>a. technological barrier</p> <p>Prior to the taken over of PT Akzo Nobel Satindo by PT Indo Bharat Rayon (IBR) under the name of PT Indo Raya Kimia (IRK), IBR did not have any experiences to operate gas bas SC2 plant. There was an offer for other CS2 plant in Thailand under Aditya Birla Group. In the offer from the technology manufacturer no provisions of power generation in the plant design. It is supported in the “Technical annex of Thai rayon 20,000 MT/A CS2 Plant” (attachment no.12). Lack of relevant engineering capacities, management of IRK considered to conduct training for introducing the operation and maintenance of new system and trouble shooting of waste heat based power generation</p> <p>b. barrier due to prevailing practice</p> <p>In Java Island, based on PLN statistics 2006 which is published by PT. Perusahaan Listrik Negara/PLN (State owned electricity company), a large amount of 93.69% of electricity exported from PLN Jamali grid is consumed by industrial facilities compared to others consumers such as households, business, social, government office and public facilities. The practice to import the electricity from PLN grid is well known and is a common practice in industries.</p> <p><i>In Indonesia, we have Bureau Central Statistic (BPS/Badan Pusat Statistik) of Indonesia, a Non-Departmental Government Institution that has the principal function of providing basic statistical data, both for government and for the general public, national and regional levels. Based on BPS document year 2007”Manufacturing Industry Directory, catalogue BPS: 6102 page 661, it is stated under the head of basic organic chemical of vegetables or animal origin, that IRK is the only CS2 plant in Indonesia. Therefore, to put up the power plant to utilize the waste heat in CS2 plant would be the first kind of its project activity and IRK is the first initiative taken to generate the electricity from waste heat in CS2 facility in Indonesia</i></p> <p>c. institutional barrier</p> <p>The project faces institutional barrier due to a lack of relevant experiences. To show that the project activity was the first initiative taken under Aditya Birla group, the explanation is given as follow :</p> <p>(i) PT. Akzo Nobel Satindo, a well known chemical product manufacturer, was taken over by PT Indo Bharat Rayon in year 2003 under the name of PT Indo Raya Kimia. Prior to this, PT Indo Bharat Rayon did</p>

Finding	B5
	<p>not have any experience of operating gas based CS₂ plant. Three CS₂ plants globally developed by Akzo Nobel, one in Cologne, Germany, one near Mobile, Alabama and other is IRK. There were no initiatives taken to utilize the waste heat to produce electricity.</p> <p>(ii) Other CS₂ plant supplier from China has given an offer to Thai Rayon Public limited under Aditya Birla Group. In the offer, there is not mentioned of utilization of waste heat from CS₂ plant for power generation. Technical annex of Thai rayon 20,000 MT/A CS₂ Plant is provided as proven document.</p> <p>(iii) In general the gas quality in Indonesia was expected to deteriorate due to increased dependency on natural gas as fuel. There are very few industries where natural gas is used as feed stock (like IRK, fertiliser industry etc.) In such industries Drop in methane content & increase in CO₂ content would adversely affect the production. Particularly in case of IRK, the CS₂ production and hence the waste heat recovery and power generation will be adversely affected.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The argument regarding technology barrier, prevailing practice and the institutional barrier has been demonstrated in the revised PDD. The CAR is asked why the PP has not considered Investment barrier as per Attachment A to Appendix B, PP has a option of demonstrating either one of the barriers listed and based on closure of subsequent CARs regarding individual barriers the arguments found to be justified hence CAR is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding	B6
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The additionality arguments under section B.5 are not in line with Attachment A of Appendix B of simplified Modalities and procedures. For an example, Technological barrier has to be justified that 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. In this context additionality section is weak and needs further explanation.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the cor-</i>	<p>For the technological barrier, it has been proven by the confirmation letter from Akzo Nobel, technology provider of CS₂ plant, which</p>

Finding	B6
<p><i>rective action taken in details.</i></p>	<p>mentioned that from the total CS₂ plants designed by Akzo Nobel so far no such initiative has been taken to utilize the waste heat to generate the electricity. It is also supported by the speech of Mr. Theo Van Hoek (Technical Service Manager Sulphur Derivatives, Akzo Nobel) during the Stakeholder Consultation Meeting which was held by IRK on 5 February 2008. (Proven document of Confirmation letter and Compact Disk/ CD of speech from technology provider have been given during validation site visit). Note: Akzo Nobel is not technology supplier for IRK but Akzo Nobel had built the CS₂ plant under the name Akzo Nobel Satindo. The plant was taken by Indo Raya Kimia in 2003. Mr. Theo is an expert technical advisor of CS₂ plant and he has designed this CS₂ plant. In addition to support the technological barrier in additionality arguments, it already described in the section B.4 of PDD that no technologically advanced alternative to the project activity involves lower risks instead the continuation of operation by purchasing the electricity from PLN Jamali grid. By purchasing the electricity from PLN which is generated by mix fuels, it would have led to higher emission. In the one of group units of IRK, similar technology is procured from China and turbine is not included in their engineering package. The details were shared with Mr. Mohinder during validation site visit.</p>
<p>DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The technological barrier is still not clear. Since the electricity is still available from the grid, even though the generator at the plant side is not operating, there is no risk of lack of electricity for the production process. Hence, the argument is not convincing.</p>
<p>Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>The power generation is dependent on the steam generation from the CS₂ production process. Any disturbance in the CS₂ manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is designed for minimum methane fraction of 91% and CO₂ content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO₂ content will directly impact the productivity of CS₂ process. The variation of methane content and CO₂ content for the CS₂ production process is described in the revised PDD. The value of methane and CO₂ content taken based on average data in monthly. The supporting document of sample methane content and CO₂ content in the gas is provided in attachment no.38 (Gas composition). It demonstrates that the project activity faces the technological barrier.</p>

Finding	B6
DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The argument of no option of power generation in the basic design of CS₂ plant has been checked in the Technical details of the plant provided by Akzo Nobel. And it was anticipated that there would be risk in introduction of power generation. Also it was checked the technical details of CS₂ plant in quotation from a Chinese supplier to PP for their company in Thailand. It is evident that there is no power generation option in the technical details from both the suppliers. Also the power generation in the project activity is dependent on the steam generation from the CS₂ production process. Any disturbance in the CS₂ manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is designed for minimum methane fraction of 91% and CO₂ content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO₂ content will directly impact the productivity of CS₂ process. The variation in composition of gas is checked with the test reports and the corresponding months steam generation and the CS₂ production were checked and found the variation in steam generation. Hence the project activity has the only alternative to let the waste steam to the atmosphere and continues to use the grid for meeting the electricity demand. Since the grid involves lower risks in terms of the performance uncertainty of the plant which in turn would have led higher emission. In this context the argument found to be justified and the revised PDD found to be ok.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B7
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The Barrier due to prevailing practice has to be justified that prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions. The prevailing practice analysis needs to be performed for the project and needs to be demonstrated on its uniqueness.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The common practice of electricity consumption to meet the power requirements in industrial facilities are supplied by fossil fuel based power plant or imported from PLN grid (please find attachment no.11). In the Cikampek Kujang Industrial Park / Kawasan Industri Kujang Cikampek (KIKC), (140 acres) the area where IRK facility is located, there is no other CS₂ plant. Akzo Nobel, CS₂ plant designer, confirms that among the CS₂ plants designed and / or operated by Akzo Nobel, only Indo Raya Kimia has realized the initiative for utilizing waste heat for generating electrical power. Other CS₂ plant supplier from China has given the offer to Thai</p>

Finding	B7
	<p>Rayon Public Company Limited under Aditya Birla Group. In the offer, there is not mentioned of utilization of waste heat from CS₂ plant for power generation.</p> <p>Therefore, IRK CDM project is the first initiative taken to generate the electricity.</p> <p>The electricity generated by the project activity which would be imported from PLN Jamali grid in the absence of the project activity is taken for the overall IRK facilities.</p> <p>The attachment which shows the electricity consumption only for industries in order to describe that the current practice of industries like IRK is imported from PLN grid. It is shown by the total amount of statistic which is larger than the other customers.</p> <p>In addition to that, IRK is the only CS₂ plant, either in the Cikampek Kujang Industrial Park / Kawasan Industri Kujang Cikampek (KIKC), the area where IRK facility is located, or in Indonesia. It is stated in "Manufacturing Industry Directory" (please find attached document no. 30). Therefore, IRK CDM project is the first initiative taken to generate the electricity.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The electricity consumption pattern of PLN Jamali Grid published by Electricity utility has been checked and found that the 93% of the total electricity is consumed by industries and the rest is consumed by households, commercial spaces and government offices. From this it is evident that industries are very much dependant on electricity from grid. Also in the Manufacturing Industry directory published by Bureau Central Statistic (BPS/Badan Pusat Statistik) of Indonesia, a Non-Departmental Government Institution for has been checked and found that IRK is the only CS₂ plant in Indonesia. Therefore, to put up the power plant to utilize the waste heat in CS₂ plant is the first of its kind to generate the electricity from waste heat in CS₂. The arguments found to be justified and the revised PDD found to be ok.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding	B8		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding	B8
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. The project emissions has to be determined using the Tool to calculate project or leakage CO₂ emissions from fuel combustion and the Tool to calculate project emissions from electricity consumption (Cp. Point 14 of AMS-IIIQ). In this regard clarity is missing in section B.6.1 and B.6.3 of PDD 2. On page 18, under “Project emissions“, it is stated that “emission reductions are calculated as an incremental gain of energy in the project activity as compared to baseline scenario“. Whereas on page 10, while justifying the applicability of the methodology, it is stated that “The IRK project activity is a new initiative, not an incremental gain project.” As is evident the two statements are contradictory and need to be reconciled. 3. The data parameter the average quantity of CS₂ production is irrelevant in section B.6.2 and B.7.1 of PDD without using the same in B.6.3 of PDD clarification is requested.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> 1. Referring to the approved methodology used for the project activity, project emissions include emissions due to combustion of auxiliary fuel to supplement waste gas and emissions due to consumption of electricity by the project activity. 2. In this project, no auxiliary fuels are combusted and only the internal electricity consumed by the project activity from grid has been considered for calculation of project emission. 3. The data parameter, the average quantity of CS₂ production, has eliminated from section B.7.1 instead of B.6.2 of PDD. The value is used to calculate the waste heat production which is utilized to generate electricity in the ex-ante baseline emissions calculation. It is described further in section B.6.3 of PDD.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> 1. The electricity consumption by the project activity from grid has been identified to estimate the project emissions in section B.6.1 and B.7.1 of PDD. The argument found to be justified and the revised PDD found to be ok 2. The project activity is a new initiative and the same is clearly mentioned and the argument under project emissions is modified accordingly, the revised PDD found to be ok 3. The parameter has been removed in section B.7.1 now it is present in section B.6.2 of PDD and further used in calculation of f_{cap} in the revised PDD. <p>Hence CAR is closed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<div> <input type="checkbox"/> To be checked during the first periodic verification </div> <div> <input checked="" type="checkbox"/> Appropriate action was taken </div> <div> <input checked="" type="checkbox"/> Project documentation was corrected correspondingly </div> <div> <input type="checkbox"/> Additional action should be taken </div> <div> <input checked="" type="checkbox"/> The project complies with the requirements </div>

Finding	B9
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Finding	B9		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. This section B.6.2 of PDD shall include a compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period and that are available when validation is undertaken like f_{cap} is missing. 2. Moreover estimation of capping factor for baseline emissions is not inline with the methodology AMS III Q Version 01. In this regard clarity is missing in section B.6.1 and B.6.3 of PDD 		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> 1. Additional 'Parameters Available at Validation' after site visit have been inserted in the PDD version 03 as follow: <ul style="list-style-type: none"> • amount of waste heat generated per unit CS₂ production ($r_{WG/CS2}$) • Operating days <p>Therefore, f_{cap} is already included in the table in section B.6.2 of PDD version 02 submitted to DOE on 07 Oct 08.</p> 2. As per requirement of AMS III Q version 01, the baseline emissions should be capped to introduce the element of conservativeness. Thus, the baseline emissions are capped based on the maximum quantity of waste heat released to the atmosphere under normal conditions in the last 3 years previous to the start of the project activity. In the PDD version 02 has been described the estimation of capping factor for baseline emissions in section B.6.1 and B.6.3 as below: Based on the discussion with Validator during site visit, since there are no available data for the last 3 years prior to the start date of the project activity, the capping of baseline emissions for the project activity is determined by adopting Method No. 2, equation (2) and (3), in the Approved Methodology AMS III.Q. In accordance to the method, the manufacturer's data for the facility, Basic Engineering Package, shall be used to estimate the amount of waste heat that IRK generates per unit of product generated by the process that generates waste heat. Under this method, the equations are used to estimate ex ante calculation for f_{cap}. Production by process that most logically relates to waste heat generation in baseline ($Q_{BL, product}$) which is the average of CS₂ production has been revised to 145 TPD, by considering 330 days; it equals to 47,850 t/y instead 40,000 t/y. Then, amount of waste heat the industrial facility generates per unit of CS productions ($q_{wg, product}$) is obtained from the manufacturer data with amount 1.74 t/ton CS₂. Quantity of steam from waste heat used for energy generation during year y ($Q_{WG, y}$) is determined by multiply electricity which would be generated by the IRK power plant during the year y with ratio of steam flow rate. Under this method, the value is used to estimate ex ante calculation for f_{cap}. 		

Finding	B9
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	1. Parameters available during the validation is now part of the revised PDD 2. The description regarding calculation of f_{cap} in section B.6.1 of revised PDD and calculation in excel sheet found to be ok.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B10
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the measurement interval not addressed adequately in section B.7.1 of PDD.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	PDD version 02 has accommodated CAR B7. The additional information inserted in the measurement methods and procedures in PDD section B.7.1 as follows : <ul style="list-style-type: none"> <u>Flow meter of CS₂ production</u> ($P_{CS2, PJ, y}$): The measurement of actual data will be recorded automatically through Bill of Material report and Year to Date summary with code FT-4052. All data will be monitored and recorded by Fields/DCS operator. The calibration is conducted once in a year and done by internal IRK. Calibration will be done by following the data configuration FT-Vortex from the technology provider. Flow meter accuracy level is $\pm 0.75\%$ of span. <ul style="list-style-type: none"> <u>kWh meter of electricity generated</u> ($EG_{tot, y}$): Actual measurement will be recorded automatically through DCS with code KW8570. All data will be monitored and recorded by Fields/DCS operator. Currently, IRK shall calibrate the kWh meter by third party in accordance to Ministerial Decree of Trade and Industry of Republic Indonesia No. 731/MPP/ Kep /10/2002 regarding Management of Metrology and Management of Metrology Laboratory. The calibration should be done at least once in two years. The accuracy level of kWh meter is $\pm 1\%$.

Finding	B10
	<ul style="list-style-type: none"> • <u>Clamp meter of electricity consumed for internal power plant</u> ($EC_{\text{internal}, y}$): The annual measurement will be conducted in monthly in terms of ampere and voltage measurements. All data will be monitored and recorded by Fields/DCS operator. <p>The calibration of Clamp meter is done by an accredited party, once in a year.</p> <ul style="list-style-type: none"> • <u>kWh meter of electricity consumed from PLN grid by the project activity</u> ($EC_{\text{PJ}, y}$): The actual data will be measured automatically through Distributed Control System (DCS) with code KW106 and / or PLN bill recorded in the finance department. All data will be monitored and recorded by Fields/DCS operator and / or finance officer. <p>The kWh meter of electricity consumption from PLN grid is belongs to PLN. The accuracy level of kWh meter is 0.5%.</p>
<p>DOE Assessment #1</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The above mentioned parameters have been addressed in the revised PDD. Nevertheless clarity is missing for some of the points mentioned below.</p> <ul style="list-style-type: none"> • The complete monitoring section should be revised. The parameters given in B.7.1. are not complete: <ul style="list-style-type: none"> ○ $Q_{\text{WG}, y}$: How will the waste heat be measured? It is indicated that it will be measured but afterwards it is indicated that it will be calculated. The description given is incomprehensible as it refers to “electricity”. What is “DP Cell Transmitters calibration procedure”? What happens in case the meter fails? No back-up procedures are indicated. ○ $EG_{\text{tot}, y}$: The description of this value is not clear. The calibration will be done once in two years, while the calibration for internal consumption will be done every year. Why is there a difference? No back-up procedures are indicated. ○ $EC_{\text{internal}, y}$: What is a “Clamp meter”? What is the accuracy of this meter? How is the back-up strategy? • Electricity imports from JAMALI grid are not monitored. Why? • In section B.7.2 it is indicated in the first paragraph that amount of Carbon disulphide production is monitored. This is not in compliance with section B.7.1. The amount of electricity used for power plant is also not indicated in section B.7.1. • The sentences after the headline “Parties involved in the monitoring” in section B.7.2 are not complete and do not reflect the monitoring situation as indicated in section B.7.1. It is recommended to include a figure clearly indicating the meters and the flow of electricity and heat. • Page 25: What does the abbreviation “GM” stands for?
<p>Corrective Action #2</p> <p><i>This section shall be filled by the PP. It shall address the cor-</i></p>	<ul style="list-style-type: none"> • The monitoring section has been revised as mentioned below <ul style="list-style-type: none"> ○ The waste heat will be measured. DP Cell Transmitters calibration procedure is the standard procedure to calibrate

Finding	B10
<p><i>rective action taken in details.</i></p>	<p>differential pressure of flow meter. In case the meter fails in the measurement, then the value input during an error measurement would be based on average trend of record on that respective day.</p> <ul style="list-style-type: none"> ○ The description of EGy is quantity of electricity generated by IRK power plant during the year y. The calibration for internal consumption will be done once in two years. In case the meter fails in the measurement, then the value input during an error measurement would be based on average trend of record on that respective day. ○ Clamp meter is a portable device to measure instant current and voltage. The accuracy of clamp meter is 1%. • The project emission is determined from the electricity consumption by the project activity due to power requirement by the power plant taken from PLN grid. Therefore, the electricity consumption from PLN grid will be included in the parameter to be monitored.
<p>DOE Assessment #2</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<ul style="list-style-type: none"> • The description under Project emission is not clear in page number 23 of revised PDD please provide explanation what this means and also it is not clear how the energy consumed by the project activity from grid during startup, shutdown and during maintenance is accounted. • The formula in section B.6.3 for Emission reduction is not clear according to our understanding project emissions are based on electricity consumed from PLN associated to the proposed project during startup, shutdown and during maintenance and electricity produced by the project which is utilized by the project. This is still not clearly indicated. A formula shall be provided as well. • Also the description under source of parameter $EC_{\text{internal}, y}$ is not clear whether the measurement is continuously or not. • Also the description under source of parameter $EC_{\text{grid}, y}$ is not clear. Please provide explanation what this means. <p>Hence CAR is open</p>
<p>Corrective Action #3</p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ul style="list-style-type: none"> • The description under project emission in page 23 of PDD is explained as follow : <p>Refer to the approved methodology applied for this project; project emissions include emissions due to combustion of auxiliary fuel to supplement waste gas and emission due to consumption of electricity by the project activity.</p> <p>There is no auxiliary fuel are combusted by the project activity, therefore no project emission from fuel combustion. The project emission is accounted from the electricity consumed for internal power plant and electricity consumed from PLN grid by the project during the shut down, maintenance and start up.</p>

Finding	B10
	<p>The internal power plant encompasses condensate extraction pump, cooling water pump and cooling tower fan. The electricity consumption for internal power plant is calculated based on the quantity of electricity consumed associated by the internal power plant.</p> <p>To guard the conservativeness in the PDD, project emission from internal power plant is determined based on its power name plate multiplied by the operational hours and operational days. However, in the PDD development, the amount of electricity consumed from PLN grid by the project activity during shut down, maintenance and start up is considered zero but it will be measured and monitored during the crediting period.</p> <p>The electricity consumed for internal power plant and electricity from PLN grid by the project activity ($EC_{internal,y}$) will be measured by the installed kWh meter.</p> <p>As conclusion, the project emission by the project activity will be calculated as follow :</p> $PE_y = EC_{internal,y} \times EF_{Elec,I,j,y}$ <p>PE_y = Project emission in year y (tCO₂e/y)</p> <p>$EC_{internal,y}$ = Quantity of electricity consumed for internal power plant and the electricity consumed from PLN grid by the project activity during the shut down, maintenance and start up period during year y (kWh/y)</p> <p>$EF_{Elec,I,j,y}$ = The CO₂ emission factor for the electricity source I during the year y in tons of CO₂/MWh (0.862 tCO₂e/MWh).</p> <ul style="list-style-type: none"> The formula to estimate the emission reduction in the PDD will be : $ER_y = BE_y - PE_y$ <p>The emission reduction is calculated based on the net electricity generated by the project activity which would have been sourced from PLN grid in the absence of the project activity.</p> The measurement method for internal power plant $EC_{internal,y}$ has been clearly stated in the Parameter to be monitored, section B.7.1 of PDD, that it would be measured continuously by kWh meter. The actual energy consumption will be recorded through DCS. All data will be monitored continuously and registered in monthly reports by Filed/DCS operator and will be kept for the crediting period plus two years. Parameter $EC_{grid,y}$ in the section B.71, Parameter to be monitored, is removed. The emission from electricity consumption from PLN grid has been considered under the

Finding	B10
	<p>source of parameter $EC_{\text{internal}, y}$.</p> <p>Based on the explanation above, the necessary changes have been made in the revised PDD.</p>
<p>DOE Assessment #3</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>Based on the clarifications requested and the responses now the revised PDD contains the following parameters to be monitored which are in line with the methodology.</p> <ol style="list-style-type: none"> 1. $Q_{\text{WCM}, y}$ - Quantity of waste energy used for electricity generation in year y: - The waste heat (steam) will be measured using differential pressure flow meter and the accuracy class is of ± 0.5 % the mode of monitoring is continuous through DCS and stored in the form of monthly reports and the same is clearly defined in the section B.7.1 of PDD. 2. $EG_{i,j,y}$ - Quantity of Electricity supplied by the project activity, which would have been sourced from PLN grid in the absence of the project activity, during the year y: - The electricity supplied to the recipient is measured using kWh meter and the accuracy class is of ± 1.0 % the mode of monitoring is continuous through DCS and stored in the form of monthly reports. The calibration is done atleast once in two years and the same is clearly defined in the section B.7.1 of PDD. 3. $EC_{\text{internal}, y}$ - Electricity which is consumed for internal power plant:- The electricity consumed by the project activity during the operation (consumed internally), startup, shutdown and maintenance (From grid) is measured using kWh meter and the accuracy class is of ± 1.0 % the mode of monitoring is continuous through DCS and stored in the form of monthly reports. The calibration is done atleast once in two years and the same is clearly defined in the section B.7.1 of PDD.
<p>Conclusion</p> <p><i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding	B 10.1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<p>Description of finding</p> <p><i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>The justification for applicability condition para 6(a) of Methodology AMS-IIIQ_ver 03 requires "The energy produced with the recovered waste gas/heat or waste pressure should be measurable" is not clear, as the monitored parameter, $Q_{\text{wcm},y}$ measures only the mass of the steam and not energy of the steam. In absence of measurement of saturation pressure for saturated steam; and temperature and temperature for super heated steam (to determine specific enthalpy); the monitored valued cannot be converted to</p>

Finding	B 10.1																																
	energy of the waste heat. Also in this regard completeness of monitoring parameters for complete compliance with the methodology with respect to Temperature and pressure is missing.																																
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>PDD section B.7.1 has been updated with the Temperature and Pressure of the waste steam to be included in the monitored parameters.</p> <table border="1" data-bbox="523 636 1409 1240"> <tr> <td>Data / Parameter:</td><td>$t_{WCM, y}$</td></tr> <tr> <td>Data unit:</td><td>°C</td></tr> <tr> <td>Description:</td><td>The temperature of steam used in year y</td></tr> <tr> <td>Source of data to be used:</td><td>Temperature measuring instrument</td></tr> <tr> <td>Value of data</td><td>-</td></tr> <tr> <td>Description of measurement methods and procedures to be applied:</td><td>Data taken from field and automatic record in TPSDDE (Total Plant Solution Dynamic Data Exchange) Measured continuously, averaged daily.</td></tr> <tr> <td>QA/QC procedures to be applied:</td><td>The flow meter will be calibrated based on national standard annually by accredited third party.</td></tr> <tr> <td>Any comment:</td><td>- Data will be archived and be kept at least for 2 years after the end of the last crediting period.</td></tr> </table> <table border="1" data-bbox="523 1272 1409 1877"> <tr> <td>Data / Parameter:</td><td>$P_{WCM, d}$</td></tr> <tr> <td>Data unit:</td><td>barg</td></tr> <tr> <td>Description:</td><td>Average Pressure of waste steam in year y</td></tr> <tr> <td>Source of data to be used:</td><td>Pressure measuring instrument (e.g. Pressure gauge, Manometer etc)</td></tr> <tr> <td>Value of data</td><td>-</td></tr> <tr> <td>Description of measurement methods and procedures to be applied:</td><td>Data taken from field and automatic record in TPSDDE (Total Plant Solution Dynamic Data Exchange) Measured daily, averaged daily.</td></tr> <tr> <td>QA/QC procedures to be applied:</td><td>The flow meter will be calibrated based on national standard annually by accredited third party.</td></tr> <tr> <td>Any comment:</td><td>- Data will be archived and be kept at least for 2 years after the end of the last crediting period.</td></tr> </table>	Data / Parameter:	$t_{WCM, y}$	Data unit:	°C	Description:	The temperature of steam used in year y	Source of data to be used:	Temperature measuring instrument	Value of data	-	Description of measurement methods and procedures to be applied:	Data taken from field and automatic record in TPSDDE (Total Plant Solution Dynamic Data Exchange) Measured continuously, averaged daily.	QA/QC procedures to be applied:	The flow meter will be calibrated based on national standard annually by accredited third party.	Any comment:	- Data will be archived and be kept at least for 2 years after the end of the last crediting period.	Data / Parameter:	$P_{WCM, d}$	Data unit:	barg	Description:	Average Pressure of waste steam in year y	Source of data to be used:	Pressure measuring instrument (e.g. Pressure gauge, Manometer etc)	Value of data	-	Description of measurement methods and procedures to be applied:	Data taken from field and automatic record in TPSDDE (Total Plant Solution Dynamic Data Exchange) Measured daily, averaged daily.	QA/QC procedures to be applied:	The flow meter will be calibrated based on national standard annually by accredited third party.	Any comment:	- Data will be archived and be kept at least for 2 years after the end of the last crediting period.
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DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure,</i>	<p>Steam is considered as the Waste Energy Carrier Medium. The energy produced with the recovered waste gas/heat or waste pressure in the project activity is electricity. The generated electricity is monitored via electricity meters. Therefore the VT has considered the applicability criterion as per para 5(a) of AMS-III.Q as fulfilled. Nevertheless based on para 17d) of AMS-III.Q version 4</p>																																

Finding	B 10.1
<i>additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	the metering of the steam temperature and pressure has been incorporated appropriately in the revised PDD and found ok.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	C1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Crediting period start date stated as 01/10/2008 and the validation process is the intermediate stage. Hence the PDD needs appropriate modification in the relevant sections.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The changes have been accommodated in the PDD
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The same is corrected in the revised PDD. Starting date of crediting period is revised to 01/03/2013 which is assessed to be reasonable.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	D1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The section D.2 of PDD is not filled.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The project activity requires no AMDAL and will not result in significant impacts to the environment.

Finding	D1
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The same is included in the revised PDD. Information provided has been checked and could be confirmed.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	E1
Classification	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The process and via media for inviting the stakeholders is missing in section E.1 of PDD.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The additional information has been inserted in the section E.1 of PDD as below "IRK has informed the Stakeholder Consultation Meeting to the participants by invitation letter dated 31 January 2008".</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The process and via media for inviting the stakeholders is now part of the revised PDD.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B1
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>In section B.2 of PDD, it is mentioned as "In the absence of project activity, waste heat is released to the atmosphere". But in section A.2 it is mentioned as "From the total waste heat, 1.25 t/h of steam used for CS2 separation and 8 t/h is used to run the blower back pressure turbine for the SRU". Further in section B.4 under baseline scenario head, it is mentioned as "steam is used only for CS2 separation and to run the blower" Clarification is requested.</p>

Finding	B1
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>After the expansion of CS₂ capacity from 132 ton/day to 145-150 ton/day from May 2006, the electric blower of 400 kW was operated. Steam-driven blower which was operated before was not sufficient for increased production capacity. In this scenario total steam released to the atmosphere is 10.10 t/h. In the CDM project, IRK utilizes this waste steam of 10.10 t/h to generate the electricity to meet their power demand.</p>
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The description of usage of steam during pre-project scenario is clear in section A.2 and B.4 of PDD and also the arguments found to be justified.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding	B2
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<ol style="list-style-type: none"> 1. Serious prior consideration of CDM has to be demonstrated inline with the guidance on the demonstration and assessment of prior consideration of the CDM (EB 41 Annex 46). 2. Clarification is requested in delay of approaching the DOE from the start date; moreover substantiate the same with implementation steps along with CDM milestones in PDD.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> 1. Refer to the guidance on the demonstration and assessment of prior consideration of the CDM (EB 41 Annex 46), for the existing project activities require the elements to be satisfied as follows : <ul style="list-style-type: none"> • The CDM consideration of the decision by the Board of Directors (the proven documents has been submitted during the validation site visit – please refer to document no. 15) • Indicator that continuing and real actions were taken to secure CDM Status for the project in parallel with its implementation. (please find attached document no.16 – Authorization to Proceed the CDM consultancy services for IRK project) 2. To substantiate the CDM consideration, the chronological of the CDM consideration for the IRK CDM Project are described as follows: <ul style="list-style-type: none"> • Decision of Board Management to go a head for the proposed project activity with CDM project was on 21/02/2005.

Finding	B2
	<ul style="list-style-type: none"> • PO for turbine –generator on 22/09/2005 • Filled Project inquiry Note by IRK on 7 Dec 2005 (attachment no.17) • Proposal submission to IRK for the CDM consultancy services dated 9 Jan 2006 (attachment no.18) • Authorization to proceed the CDM consultancy services dated 15 March 2006 (attachment no.16) • Technical Feasibility Study report for increasing CS2 product from 132 TPD to 145 TPD ON April 2006 • Process Engineering Report subjected to calculation of minimum flow new blower K-504 to prevent surging on 05/05/2006 • Work order for civil work of turbine package on 02/06/2006 • Contract for various pipe work for turbine genset structure on 12/07/2006 • Contact for fabrication and erection of turbine genset structure on 14/07/2006 • Process Engineering Report subjected to commissioning of electrical blower K-504 on August 2006 • Payment for the purchase main equipment is on 30/08/2006. • Synchronization system of turbine with PLN which is located at IRK on 06/12/2006 • Alignment gearbox with steam turbine and generator on 28/04/2007 • Commissioning of IRK vacuum system – surface condenser & ejector on 25-26/01/2007 • Notification letter dated 15 March 2007 (attachment no.19) • The date of commissioning for the operational of the project activity is on May 2007. • Stakeholder Consultation Meeting on 5 Feb 2008 • First communication with DOEs occurred on March 2008. • The PDD completion and submission to be hosted for GSP on 14/05/2008.
<p>DOE Assessment #1</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The mentioned documents were verified and the justification is found to be ok nevertheless clarity is still missing.</p> <ol style="list-style-type: none"> 1. In EB 41, Annex 46, paragraph 5 (a) it is indicated that CDM is considered to be a decisive factor to implement the project. No description about this is given in this table. It is not indicated why CDM is decisive. 2. In EB 41, Annex 46, paragraph 5 (b) it is indicated that “reliable evidences should be provided to show that continuing and real action were taken to secure CDM status”. However, instead of

Finding	B2
	No. 1 – 6 and No. 17 all other actions are related to the project implementation. So provision from EB cannot be seen as fulfilled. Further evidences must be listed and provided, especially to fill the gap from March 2006 to March 2007.
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	As described in the section B.5 of PDD due to implementation of the project, there are several barriers due to implementation of the project activity and it would faces the risks compare to if IRK continue the current practice. In board resolution of IRK indicates the Carbon Credit under CDM of Kyoto Protocol is used to minimize the risks associated with the project activity. The explanation of decisive factor of CDM to implement the project has been accommodated in the CDM chronology section B.5. Also the chronology has been elaborated further in the revised PDD.
DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The description of CDM considered as decisive factor has been included in revised PDD and it is in line with EB 41, Annex 46, paragraph 5 (a). And also documents of for demonstrating continuing and real action to attain CDM status has been verified and found in line with EB 41, Annex 46, paragraph 5 (b) hence the CL has been closed.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	C1
Classification	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	1. Proof of start date mentioned in C.1 of PDD against what real action clarification is requested. 2. Proof of operational life time of the project activity
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1. The starting date of the project activity is on 22/09/2005, real decision of project activity. The proven document of the starting date has been submitted during the validation site visit. 2. The operational life time of the project activity is between 20-30 years (please find attachment No.10). The evidence of life time information obtained from the technology provider by e-mail has been submitted during validation site visit.
DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The starting date of the project activity has been revised based on the purchase order placement date of the turbine and generator which is assessed to be the earliest date where the PO committed to expenditures. And the operational lifetime of the project activity has been substantiated with email communication from technology provider and the documents found ok hence CL has been closed

Finding	C1
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

5 VALIDATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA

Indonesia as a non Annex-I party meets all relevant participation requirements. In the Letter of Approval^{/HGA/} dated 31/07/2008, the Indonesia DNA confirms that Indonesia is a Party to the Kyoto Protocol and has ratified the Protocol on 28 July 2004 and the project activity contributes to sustainable development in Indonesia. As per the Approval the project title is "Utilization of waste heat from Sulphur Recovery Unit to generate electricity".

Project Participants

The project is a unilateral in kind and Indonesia is a host party. The Letter of Approval from National Committee on CDM confirms the voluntary participation of PT Indo Raya Kimia as Project Participant in the CDM project activity. The project participant name is consistent throughout the PDD and the LOA.

5.1.2 Contribution to Sustainable Development

This type of project activity is in line with sustainable development policies of the country and national regulation / policy on Environmental Protection, Electricity and Non Conventional Energy.^{/HGA/} In the Host Government Approval it is stated that project will contribute to sustainable development in Indonesia.

5.1.3 PDD editorial Aspects

The PDD has been duly filled as per the latest PDD template (CDM-SSC-PDD) Version 3 in effect as on 22nd December 2006 and the PDD has been duly filled in accordance with the "Guidelines for completing the simplified project design document (CDM-SSC-PDD), Version 05.

Nevertheless, CAR A3 has to be raised in the course of the validation and was successfully closed (ref Annex1: Validation Protocol and CAR A3 in Validation findings in chapter4).

5.1.4 Technology to be employed

PT. Indo Raya Kimia is a leading producer of carbon disulphide in Asia Pacific, using the state-of-the-art and environment friendly technology from Akzo Nobel. The

project activity is generating electricity of 1.2 MW by utilizing waste heat (steam) from sulphur recovery unit and furnace of CS₂ plant. The electricity generated from the project activity is utilized for power requirement of IRK plant otherwise would have been imported from PLN grid. The waste heat (steam) of 10.10 t/h at 24 bar coming out from sulphur recovery unit and furnace, by utilizing the available waste steam in turbine electricity of 1.2 MW is generated. Due to the project activity approximately 7603.20 MWh per year would be replaced, the same is arrived based of the past generation data. This power from GHG free source will displace power from grid which is primarily fossil fuel based and hence will effect reduced emissions in power generation from grid connected power stations. The project activity has started generation since 21st August 2008^{/CR/}. In the baseline, the waste heat is released to the atmosphere and the power requirement is met by importing from grid.

As described in PDD the project activity utilizes environmentally safe and sound technology. The operation of the turbine is also subjected to periodical monitoring and assessments based on the local laws. Report^{/TIR/} of the inspection by the third party mentioned that installation of electricity at IRK facility meets the requirement of work safety stipulated by the Government of Indonesia. Small Scale Projects

Nevertheless, CARs and CLs have to be raised in the course of the validation and were successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4).

5.1.5 Small Scale Projects

The project qualify as a small scale CDM project activity as defined in paragraph 28 of Decision 1 / CMP.2 for Type III project activities that result in emission reductions of less than or equal to 60 kt CO₂ equivalent annually. The estimated emission reduction is 5,564 kt CO₂ which is less than as prescribed in Decision 1 / CMP.2. The project apply small scale methodology i.e., AMS III.Q “Waste energy recovery (gas/heat/pressure) projects” version 4 and also “Tool to calculate the emission factor for an electricity system” for baseline calculation. Both the methodology and tools referred for this project activity is latest version. It is confirmed that the small scale project activity is not a debundled component of a larger project activity.

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The project falls under Type III: Other Protect Activities and the selected baseline methodology is approved methodology for small scale “Waste energy recovery (gas/heat/pressure) projects” (AMS-III.Q: Version 4: EB 60) which is valid from 29th April 2011. The methodology also refers to the latest version of “Tool to calculate the emission factor for an electricity system“. The project activity satisfies all the applicability criteria mentioned in the approved methodology and the assessment is

presented below. The project is a new initiative and there will not be any significant emissions related to project and leakage.

Assessment for Applicability conditions:

1. The project activity generates power utilizing the waste heat at the existing facility with the help of newly installed steam turbine generator. The facility was initially with 132 TPD from 1999 designed and operated by Akzo Nobel and the same has been taken over by Aditya Birla Group in 2003 in the name of PT Indo Raya Kimia the same has been confirmed during onsite interviews and cross verified from the website. Hence, the DOE assessed that the project is implemented at an existing facility. Based on board note Feb 2005 capacity expansion from 132TPD to 145 TPD has been planned from May 2006 and installation power plant to generate power utilizing the waste heat after expansion the same has been verified through DCS logs of plant production and electricity bills. The one of the major bottle neck for expansion is blower capacity these kind of blowers are readily available however considering the turbine capacity, availability and time taken for delivery of the same the purchase order for turbine has been placed upfront on 22nd September 2005 and it has to be noted that after capacity expansion from May 2006 till the installation of turbine it has been let to atmosphere. From the above it can be inferred that without the project activity the waste heat in the form of steam would have let to atmosphere hence the justification of applicability condition deemed appropriate..
2. As described above the project activity utilizes the waste heat at CS₂ manufacturing facility to generate electricity instead of waste pressure hence the condition is not applicable.
3. The project activity has been conceived only based on the expanded capacity (May 2006) and after expansion the recovery of waste heat to generate power is a new initiative and in absence of the project activity the existing CS₂ manufacturing facility was importing entire power required from grid and waste heat in form of steam is left to atmosphere. The same has been verified from DCS/ log sheets and the electricity bills hence the justification of applicability condition deemed appropriate.
4. On verification of the estimated emission reduction^{/XLS/} it is found that the emission reduction from the proposed project activity is about 5,557 tCO₂ e /y, which is less than 60 kt CO₂ e /y hence the justification of applicability condition deemed appropriate.
5. The category is applicable under the following conditions:
 - a. The energy produced with the recovered waste heat is measured in terms of electricity generated the same is measured through energy meter and

the same has been evidenced during on site visit further to know the quantity of waste heat the pressure and temperature is monitored, hence the justification of applicability condition deemed appropriate.

- b. The electricity generated in the project activity is utilized in the facility as electricity required for the process prior to the project activity is imported from grid this has been evidenced by verifying the electricity bills hence the justification of applicability condition deemed appropriate.
 - c. The electricity generated from the waste heat is utilized for captive purposes and the steam generated from waste heat is also utilized in CS2 separator and Waste Water Stripper in the plant the same has been cross checked by energy bills and the log sheets hence the justification deemed to be appropriate.
 - d. The project activity is not conversion of existing single cycle gas turbine(s) or internal combustion engine (s) with or without cogeneration system to a combined cycle system with or without cogeneration hence AMS III AL is not applicable the same is confirmed during onsite visit & interviews and the condition is not applicable to this project activity.
 - e. The emission reductions are claimed by the IRK the same is verified in the PDD confirmed through onsite interviews hence the justification deemed to be appropriate.
 - f. As discussed for the above points the electricity generated from waste heat is used by IRK without any export hence the condition and the sub bullets are not applicable and the justification deemed to be appropriate.
 - g. The life time as mentioned in PDD is 30 years and the same has been verified from supplier letter hence the choice of fixed crediting period for the project activity deemed to be appropriate hence the justification deemed to be appropriate.
 - h. In the absence of project activity before (May 2007) and after (May 2006) capacity expansion it has been demonstrated through the energy bills showing the import of electricity for the process procured from grid and waste heat in form of steam is left to atmosphere has been verified from DCS/ log sheets hence the justification deemed to be appropriate.
6. The waste heat from the exothermic reaction in the form of steam doesn't have intrinsic value in a spot market as energy carrier or chemical (e.g. natural gas, hydrogen, liquefied petroleum gas, or their substitutes) this has been verified from log sheets during onsite visit hence the justification deemed to be appropriate.

5.2.2 Project Boundary

The unique identification of the project activity is clearly defined in the PDD. The project boundary encompasses the physical, geographical site of the CS₂ manufacturing facility of IRK where the waste heat is produced. This was verified during site visit. The project boundary is applied as per the methodology.

Nevertheless, CAR has to be raised in the course of the validation and was successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4)

5.2.3 Baseline Identification

The project activity is utilization of waste heat (steam) and generates power for the plant's power requirements. The purpose of the project activity is to generate electricity through available waste heat and displace equivalent amount of electricity in the grid which is predominantly fossil fuel based. The selected baseline methodology is approved methodology for small scale "Waste Energy Recovery (gas/heat/pressure) Projects" (AMS III.Q. / Version 04).

The project activity has been conceived only after the decision of capacity expansion, one of the major bottle neck for capacity expansion is the blower hence the electrical blower has been upgraded and the steam has been let to atmosphere from May 2006 till the project activity started power generation (May 2007) using the steam. The same has been checked from the log sheets for the steam let to atmosphere during the site visit. The project activity is utilization of waste heat (steam) and generates power for the plant's power requirements. The purpose of the project activity is to generate electricity through available waste heat and displace equivalent amount of electricity in the grid. The baseline under the adopted methodology has been correctly calculated based on the point 8 a. Baseline emissions from electricity ($BE_{elec,y}$) generated by waste energy can be calculated as the product of net quantity of electricity supplied to the recipient by generator, that in the absence of the project activity would have been sourced from grid during the year, with the CO₂ emission factor for the grid, Fraction of total electricity generated by the project activity using waste energy and Capping factor to exclude increased waste energy utilization in the project year y due to increased level of activity of the plant, relative to the level of activity in the base years before project start. In line with para 84 of VVM version 1.2 by validating the documents, assumptions as described in the PDD the baseline scenario identified is reasonable.

5.2.4 Calculation of GHG Emission Reductions

Methodologies for calculating emission reductions are documented. The project intends to reduce carbon dioxide (CO₂) emissions by generating electricity utilizing the available waste heat from sulphur recovery unit which other wise would have been imported from grid and the waste heat would have been let to atmosphere. Emissions by sources of GHGs due to the project activity within the project boundary

are only through consumption of electricity by the project activity, since no combustion of auxiliary fuel to supplement waste gas by the project activity. As per the methodology AMS III.Q, there are no emissions related to leakage in this project. The baseline under the adopted methodology is calculated based on the point 9 a. Baseline emissions from electricity ($BE_{elec,y}$) generated by waste energy can be calculated as the product of net quantity of electricity supplied to the recipient by generator, that in the absence of the project activity would have been sourced from grid during the year, with the CO₂ emission factor for the grid, Fraction of total electricity generated by the project activity using waste energy and Capping factor to exclude increased waste energy utilization in the project year y due to increased level of activity of the plant, relative to the level of activity in the base years before project start. The value of fcap for the project activity is taken as the ratio of quantity of waste energy generated prior to the start of the project activity and quantity of WECM used for energy generation during year. As per ACM0012 version 4 the cap has to be estimated using the three methods described below, following this hierarchy: (i) Method-1 can be used to estimate the capping factor if required data is available; (ii) if the project activities implemented in a Greenfield facility, or in existing facilities where the required data is unavailable Method-2 shall be used; (iii) If the project proponents demonstrate technical infeasibility in direct monitoring of waste heat / pressure of waste energy carrying medium (WECM), then Method-3 can be used. As per the ACM0012 Method 1 requires three year historical values. The project activity has been conceived only after the decision of capacity expansion as the capacity has been expanded from May 2006 and the project activity started power generation (May 2007) using the steam as the only one year data is available after capacity expansion method 1 is not applicable. As per Method 2 since three-year historical data is not available, the manufacturer's data for the facility has been used to estimate the amount of waste energy the facility generates per unit of product. The product is produced by the process that generates waste energy. As modification is carried out by the project proponent to increase the production the quantity of waste energy generated prior to the start of the project activity the minimum of the following two figures has been used: (1) average annual historical production data from start-up, if the plant's operational history is less than three years, of the plant, or (2) the most relevant manufacturer's data for normal operating conditions. Out of those, option 1 was identified to be the minimum and the same has been used. The capping of baseline emissions has been applied in accordance with the approved consolidated methodology, following the method 2, by the project participant as the project caters to implementation in a existing facility with annual production data has been utilized. The selection of method 2 for capping of baseline emissions and adopting the annual production data for calculation of the same is in line with the requirement of the methodology hence the approach deemed to be appropriate.

The project participant used the "Tool to calculate the emission factor for an electricity system" to determine the emission coefficient as per the approved methodology. "Tool to calculate the emission factor for an electricity system" states that electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations. In

this case the Combined Margin (weighted average of Average Operating Margin and Build Margin) is estimated based on three years average (2004, 2005 & 2006) of Average Operating Margin and 20 % Build Margin of current year (2006) is in line with steps of "Tool to calculate the emission factor for an electricity system". Both the value of Average Operating Margin and Build Margin are selected under ex-ante approach. The grid boundary w.r.t the project activity is Jamali Grid of Indonesia.

In accordance with "Tool to calculate the emission factor for an electricity system", 'Dispatch Data Analysis' is the first methodological choice out of four options of calculating OM emission factor. Nevertheless the "Dispatch data analysis operating margin" is ruled out due to lack of necessary dispatch data of the grids.

Out of other 3 options of calculating OM Project Participant has selected average OM emission factor. As per the, "Tool to calculate the emission factor for an electricity system" allows the usage of the default weights are as follows: wOM = 0.5 and wBM = 0.5. Using the above values the combined margin emission factor is valued at 0.862 kgCO₂/kWh, which is conservative than the value 0.891 tCO₂equ/MWh in letter from Indonesian DNA^{/EF/}. Since the calculated values is conservative that the DNA It is deemed to be conservative, adequate and transparent. The calculations of the project emission as well as baseline emission are documented in section B.6.3 of PDD. Altogether the project activity reduces emissions of 55,570 tCO₂e over the 10 year fixed crediting period.

Nevertheless, CARs and CLs had to be raised in the course of the validation and were successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4).

5.2.5 Additionality Determination

Consideration of CDM in decision making (if project start before validation)

The extract of resolution passed by the board of directors^{/MD/} of PT Indo Raya Kimia, dated 21/2/2005 (prior to starting date^{/SD/}) based on preliminary energy balance of the facility, which was evidenced by the validation team. The analysis of the same and further implementation steps as described in section B.5 of revised PDD revealed that the proposed project was decided for implementation with serious consideration of CDM benefits. The same declares that the company intends to invest in the project generating power utilizing the available waste heat under clean development mechanism "CDM" activity and resolves to avail benefits from CDM to minimize the risks of uncertainties involved in project installation. The analysis of the same revealed that the proposed project was decided for implementation with serious consideration of CDM benefits.

The project start date is given as 22 September 2005 which is the date of Purchase order^{/PO/} As this document signifies the commitment of the PP to meet major project

related expenditure, considering this as the start date is in accordance with the CDM glossary of terms. So the project start date is before the commencing of validation.

As per Annex 13 of EB 62 “GUIDELINES ON THE DEMONSTRATION AND ASSESSMENT OF PRIOR CONSIDERATION OF THE CDM”, the serious consideration of CDM is mentioned in the PDD (refer CL B2 & C1 in this regard). The documents verified regarding serious consideration of CDM are as follows;

No	Scenario	Date
1	Board resolution of IRK In the minutes of meeting, board decided to implement the project activity under the CDM program and the credits may be used to minimize the risk associated with the project activity based on preliminary energy balance of the facility.	21/02/2005
2	<u>PO for turbine – generator (Starting date of project activity)</u>	22/09/2005
3	Filled Project Inquiry Note (PIN) submitted by IRK	07/12/2005
4	<u>Proposal submission to IRK for CDM consultancy services</u>	09/01/2006
5	<u>Authorization to Proceed the CDM consultancy services</u>	15/03/2006
6	Technical Feasibility Study report for increasing CS2 product from 132 TPD to 145 TPD is a trail report for capacity expansion to identify the bottlenecks.	April 2006
7	Process Engineering Report subjected to calculation of minimum flow new blower K-504 to prevent surging	05/05/2006
8	Work order for civil work of turbine package	02/06/2006
9	Contract for various pipe work for turbine genset	12/07/2006
10	Contract for fabrication and erection of turbine genset structure	14/07/2006
11	Process Engineering Report subjected to commissioning of electrical blower K-504	August 2006
12	Payment for the purchase main equipment	30/08/2006
13	Announcement of new EF 0.754 by Indonesian DNA to the CDM developer participants	12/09/2006
14	Synchronization system of turbine with PLN which is located at IRK	06/12/2006
15	Commissioning of IRK vacuum system–surface condenser & ejector	January 25-26, 2007
16	<u>Notification letter of the changing name of the CDM consultant company to IRK</u>	15/03/2007
17	Alignment gearbox with steam turbine and generator	28/04/2007
18	The date of commissioning for the operational of the project activity	May 2007
19	Contract with PT. Asia Carbon Indonesia (CDM consultant) after the name change	09/10/2007

20	<u>Stakeholder Consultation Meeting</u>	05/02/2008
21	Approached with DOEs for validation services	25 February 2008
22	Contract with the DOE for validation services	14 May 2008
23	PDD to be hosted for GSP	07 June - 06 July 2008

Since the gap between two documented evidences for continuous and real action is not greater than 2 years. It is evident from the above table that TÜV-NORD assessed all above mentioned documents as a proof for continuing and real actions taken to secure CDM status for the project activity. Thus, as per EB 62, Annex 13, paragraph 8, CDM Status for the project activity was seriously considered and attempts were made to secure the same.

All the above mentioned documents are submitted by the project proponent to prove that serious consideration was exercised to take the project as a CDM project activity. Thus, it is confirmed that all the submitted documents are valid and appropriate for serious consideration of CDM as per Annex 13 of EB 62. After having decided to obtain CDM registration for the project, without which, the project would not be financially viable, the PP has taken continuous and parallel steps to achieve CDM registration as evidenced by the above documents. Thus, it has been validated based on paragraphs 100 & 102 of VVM and found to be OK.

Application of methodology / methodological tools

The additionality was demonstrated acc. to § 28 of the simplified modalities and procedures for small-scale CDM project activities in connection with attachment A of appendix B as a barrier analysis.^{/SMP/}

Alternatives

In the absence of the project, the baseline scenario selected is the continuous operation by purchasing electricity from PLN JAMALI Grid and letting the waste heat to atmosphere.

Investment analysis

Not applied

Barrier analysis

Technological Barrier

The design of CS₂ plant involves the application of complex chemical and thermodynamics. The argument of no option of power generation in the basic design of CS₂ plant has been checked in the Technical details of the plant provided by Akzo Nobel. And it was anticipated that there would be risk in introduction of power generation. Also it was checked the technical details of CS₂ plant in quotation from a Chinese supplier to PP for their company in Thailand. It is evident that there is no power generation option in the technical details from both the suppliers. Also the

power generation in the project activity is dependent on the steam generation from the CS₂ production process. Any disturbance in the CS₂ manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is designed for minimum methane fraction of 91% and CO₂ content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO₂ content will directly impact the productivity of CS₂ process. The variation in composition of gas is checked with the test reports and the corresponding months steam generation and the CS₂ production were checked and found the variation in steam generation. Hence the project activity has the only alternative to let the waste steam to the atmosphere and continues to use the grid for meeting the electricity demand. Since the grid involves lower risks in terms of the performance uncertainty of the plant, which in turn would have led to higher emission. In this context the argument found to be justified as decisive barrier.

Barrier due to prevailing practice

The prevailing practice taken in industrial facility in Indonesia for electricity consumption to fulfil the power demand is supplied from fossil fuel based power plant or imported from PLN grid. Also in Java Island, based on PLN statistics 2006 which is published by PT. Perusahaan Listrik Negara/PLN (State owned electricity company), a large amount of 93.69% of electricity exported from PLN Jamali grid is consumed by industrial facilities compared to others consumers such as households, business, social, government office and public facilities. Moreover, to fulfil the dependency of electricity consumption from PLN grid in the industrial facility, a step was initiated by the government through the acceleration of 10,000 MW coal power plants stipulated in regulation PP. No.71/2006. Based on the BPS-Statistics Indonesia, a Non-Departmental Government Institution, IRK is the only CS₂ plant in Indonesia. Therefore, IRK is the first initiative taken to generate the electricity from waste heat in CS₂ facility.

Barriers due to prevailing practice has been justified that the around 93% of electricity from PLN Jamali grid was consumed by the industries compared with other consumers and also it can be inferred from the BPS-Statistics Indonesia, a Non-Departmental Government Institution that the only CS₂ manufacturing facility in Indonesia the argument found to be justified and also a significant barrier.

Other Barriers

Institutional Barrier

PT. Akzo Nobel Satindo was taken over by PT. Indo Bharat Rayon (Aditya Birla Group) in the year 2003 in the name of PT. Indo Raya Kimia. Prior to this, the group did not have any experience of operating gas based CS₂ plant. Even operation of gas based power plant itself is new and also power generation utilizing waste heat in gas based CS₂ Plant. The institutional barrier argument based on lack of experience in operating gas based plants were justified and not a decisive barrier.

Common practice analysis

Not applied

Summary

All the above mentioned barriers has been verified based on the actual source, references and supporting documents provided by the PP and also interview, data collected during the site visit. It is finally concluded that the project meet all the criterion of UNFCCC and Kyoto protocol. Moreover the detailed assessment of barrier analysis and is given Annex 3 (Table A.3) and Annex 4 (Table A.4)

The argument relating to Technology barrier and Barrier due to prevailing practice can be considered to be significant barriers preventing the implementation of the CDM project activity without claiming additional benefits from CDM. Thus the validation team arrived at the opinion that the project activity can be assessed to be additional and is not a BAU case.

Nevertheless, some CARs and CLs had to be raised in the course of the validation and were successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4).

5.2.6 Monitoring Methodology

The project applies the monitoring methodology AMS III Q: “Waste energy recovery (gas/heat/pressure) projects” Version 4 (EB 60) and the latest version of Appendix B to the simplified M & P for Small Scale CDM project activities.

5.2.7 Monitoring Plan

The monitoring plan is documented according to the applied methodology. It provides for the collection and archiving of all relevant data as per AMS III Q. The measurement equipment and the measurement methods are described in the monitoring plan and presented under section B.7 of the PDD.

The revised monitoring plan provides detailed information related to the collection and archiving of all relevant data needed to:

- Metering the electrical energy produced
- Metering the amount of waste heat, i.e. steam
- Metering of Internal consumption
- Metering of import from grid to the project activity

The monitoring plan takes into account the baseline emissions and project emissions. The monitoring plan is in line with requirements of AMS III Q and PDD has

made provisions for monitoring the GHG emission reduction due to the project activity. All the data necessary for the estimation or measuring the GHG emissions within the project boundary in the project scenario as well as baseline scenario have been included in the monitoring plan of PDD. The roles, responsibilities and authority for the project activity management, reporting and monitoring procedure and quality control /quality assurance procedure are explained in PD.

The monitoring of all baseline parameters is sufficiently addressed in the PD. Net electricity supplied by the project will be measured by the energy meters. The monitoring shall consist of metering the total electricity generated, Auxiliary consumption of electricity by the project activity from its own generation and the import from grid. The baseline emission factor for grid has been estimated ex-ante, according to the methods described in "Tool to calculate the emission factor for and electricity system". The net quantity of electricity supplied to the grid would be calculated ex-post from the recorded readings from the meter that is the difference between total electricity generated and auxiliary consumption of the project activity. Since there is no usage of fossil fuel in the project activity leakage has been considered as zero.

Validation team has checked monitoring methods of key parameters these include energy meters, waste heat at project site. The system is proposed to compile data, generate reports and provide flexibility for data usage. Data are proposed to be recorded electronically in DCS system and manually in logbooks by technicians.

PDD states that the CDM team is responsible for the correctness and completeness for the different proposed monitoring data with procedure for monitoring the instrument, traceability of instrument calibration, location of instrument, calibration method, uncertainty, and linkage with system management. Monitoring instruments are proposed to be used in the project activity for monitoring, display, control, collection and storage of data related to key parameters of monitoring plan and for generating reports.

Validation team has discussed with monitoring personnel during site visit regarding to cross check their roles & responsibilities, competency and training of the staff members w.r.t project management, monitoring and reporting, operation and maintenance scheduled, monitoring plan, Calibration procedures /frequency for the meters were found to be satisfactory Data are monitored continuously. The monitoring procedures mentioned in the PDD have been accessed by the validation team and found in line with the current practice.

Nevertheless, CARs had to be raised in the course of the validation and were successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4).

5.2.8 Project Management Planning

The individual roles and responsibilities related to CDM activity is clearly mentioned in the PDD. Please refer section B.7.2 of the PDD

5.2.9 Crediting Period

The intended crediting period of the project is fixed for 10 years. The starting date of the crediting period is 01/03/2013 or date of registration of PDD in accordance with § 12 of CDM Modalities and procedures.

Nevertheless, CAR C1 has to be raised in the course of the validation and was successfully closed (ref Annex1: Validation Protocol and Validation findings chapter4)

5.2.10 Environmental Impacts

Social & environmental impacts of the project have been sufficiently addressed. No adverse environmental impacts as well as trans-boundary impacts have been envisaged from this project activity.

5.2.11 Comments by Local Stakeholders

Stakeholder Consultation meet was intimated in advance through invitations for the identified stakeholders (representatives from local environmental agency, neighboring industries around IRK, local community, State-own electricity company (PLN), DNA, and technology provider). During meeting among local stakeholders and project proponent held on 05/02/2008^{LSC/} at IRK office stakeholders have been asked to share there views on the project activity.

A summary of the comments received is included in the PDD. All comments were positive in nature.

6 VALIDATION OPINION

PT Indo Raya Kimia has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “Utilization of waste heat from Sulphur Recovery Unit to generate electricity” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the pre-validation 17 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed.

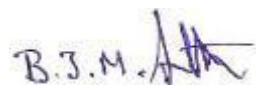
The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Indonesia) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of Indonesia vide the Letter of Approval (HCA) dated 30/07/2008.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 55,572tCO₂e are most likely to be achieved within the fixed crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Chennai, 15/01/2013



B.J.M. Amarnath
TÜV NORD JI/CDM CP
Validation Team Leader

Essen, 15/01/2013



Martin Saalman
TÜV NORD JI/CDM CP
Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
/ADD/	<ol style="list-style-type: none"> 1. PLN statistics 2006 for electricity consumption 2. BPS-Statistics Indonesia, a Non-Departmental Government Institution 3. Technical details annex of Thai Rayon 20,000 MT/A CS₂ Plant 4. Gas composition of different months.
/BAS/	<ol style="list-style-type: none"> 1. CS₂ production TPM monthly report 2. CS₂ production TPD year to date report 3. Steam generation and the blower running sample log sheet. 4. Basic engineering package 5. Name plate details of condensate extraction pump 6. Name plate details of cooling water pump 7. Name plate details of cooling tower fan 8. Proof for transmission and distribution losses.
/CAL/	<ul style="list-style-type: none"> • Calibration Report of flow meter of CS₂ production (FT-4052) • Calibration Report of steam flow meter to inlet to turbine (FT-8519) • Accuracy level of energy meter • Procedure and calibration schedule of all Monitoring equipments <p>Calibration schedule on August 2008</p>
/CR/	Commissioning report for major equipments related to the project activity Monitoring and Inspection of electrical steam power plant on 21.08.2008 by Indonesian Government Authorized
/DCS/	<ul style="list-style-type: none"> • Steam generated from Claus Unit/SRU (F15091) • Steam generated from CS₂ plant/furnace (F12007) • Steam inlet to turbine (F18519)
/EF/	<ul style="list-style-type: none"> • Letter from DNA due to the default value of emission factor for Jamali grid. Dated 12th September 2006 • Letter from DNA due to the default value of emission factor for Jamali grid. Dated 31st July 2008 • Spread sheet for Emission factor calculation along with the supporting documents.
/EP/	<ul style="list-style-type: none"> • Emergency Action Plan • Plant Emergency Action Plan
/HCA/	<ul style="list-style-type: none"> • Host country Approval letter no E 284/Dep.111/LH/07/08 dated 31/07/2008

Reference	Document
	<ul style="list-style-type: none"> Brief description of Host country Approval application form
/ISO/	<ul style="list-style-type: none"> Latest ISO 14001:2004 Latest OSHAS 18001:1999
/LOC/	Location map for Latitude and longitude details
/LSHC/	<ul style="list-style-type: none"> Minutes of Meeting (in bahasa) Berita Acara (in bahasa) List of attendance Invitation letter Filled questionnaire samples Video of stakeholder consultation meeting and speech of Mr. Theo, Technology provider Presentation material (in bahasa)
/MD/	<ul style="list-style-type: none"> Management decision in taking forward the project for CDM Sanction letter
/MOC/	Modalities of Communication
/OLT/	Letter from equipment supplier PT. Ometiaco Arya Samant stating the operational life time as 20 to 30 years.
/ORG/	CDM team organisation chart
/PDD/	<ol style="list-style-type: none"> Draft Project Design Document entitled “Utilization of waste heat from Sulphur Recovery Unit to generate electricity” Version 1 hosted for stakeholder commenting during 07/06/2008 to 07/07/2008. Final Project Design Document entitled “Utilization of waste heat from Sulphur Recovery Unit to generate electricity” Version11.
/PO/	Payment letter for the main equipment dated 30 th August 2006
/SC/	Legal permit for power plant operation
/SD/	Proof for project activity starting date - payment letter for the main equipment dated 30 th August 2006
/TD/	List of equipments by Akzo Nobel
/XCS/	Baseline and Emission Reduction Calculations (Excel Sheets)

Table 7-2: Background investigation and assessment documents

Reference	Document
/AMS-III.Q/	AMS-III.Q: "Waste Energy Recovery (gas/heat/pressure) Projects" (Version 4 EB60)
/ACM0012/	ACM0012: "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects" (Version no 4.0.0)
/AMS I.D/	AMS-I.D: "Grid connected renewable electricity generation" (Version no 17.)
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GCP/	UNFCCC: Guidelines for completing CDM-SSC-PDD and CDM-SSC-NM (Version 5)
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPCC-RM/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual.
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP. 7 (Marrakesh – Accords & Annex to decision 17/CP.7)
/TA/	Tool for the demonstration and assessment of additionality (Ver. 5.2).
/VVM/	Validation and Verification Manual (Version 1.2, Annex 1; EB 55)

Table 7-3: Websites used

Reference	Link	Organisation
/dna/	http://dna-cdm.menlh.go.id/en/	National commission for CDM-Indonesia
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC
/cd4cdm/	www.cd4cdm.org	UNEP Riso Centre
/dna/	http://dna-cdm.menlh.go.id/en/	National commission for CDM-Indonesia
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Waris Jaiz	Plant Manager PT.Indo Raya Kimia
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	C. K. Dutta	PT.Indo Raya Kimia
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Archittrandi Priambodo	Country Director PT Asia Carbon Indonesia
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Susy M. Simarangkir	General Manager PT Asia Carbon Indonesia
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Ratna Nawang Sari	Technical Officer PT Asia Carbon Indonesia

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Validation Protocol
- A2:** Assessment of Baseline Identification
- A3:** Assessment of Financial Parameters
- A4:** Assessment of Barrier analysis
- A5:** Outcome of the GSCP
- A6:** Appointment certificates of the team members

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
A. General Description of Project Activity				
A.1. Approval <i>The written approval of the parties involved is a mandatory requirement</i>				
A.1.1. Has the project provided written approvals of all parties involved? (EB 55 Annex 1, § 44) <i>Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.</i> <i>Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA</i>	<p><i>Description:</i></p> <p>The National Committee on CDM, Republic of Indonesia, is the DNA. The PP has submitted a letter of approval issued by DNA.</p> <p><i>Justification of evidences:</i></p> <p>The letter of approval for the project “Utilization of waste heat from Sulphur Recovery Unit to generate electricity” was provided by the PP. This was subsequently verified by visit to the website¹.</p>	/HCA/	OK	

¹ <http://dna-cdm.menlh.go.id/Downloads/LoA%20Juli08/LoA%20July08%20PT%20Indo%20Raya%20Kimia.PDF>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Conclusion:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, and the Host country approval has been submitted and verified.</p>			
<p>A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website?</p> <p>(EB 55 Annex 1, §§ 44, 47, 48, 49 (b), 49 (c), 53)</p> <p><i>Indicate the means of validation employed to assess the authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity submitted the LoA for validation.</i></p>	<p><i>Description:</i></p> <p>The letter of approval is issued by the National Committee on CDM, DNA for Republic of Indonesia.</p> <p><i>Justification of evidences:</i></p> <p>The letter of approval is issued by the National Committee on CDM, DNA for Republic of Indonesia, which as listed as the DNA on http://cdm.unfccc.int/DNA/index.html</p> <p><i>Conclusion:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, the Host country approval has been submitted and verified by visit to the website².</p>	/HCA/	OK	
<p>A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol?</p>	<p><i>Description:</i></p> <p>Yes, The letter confirms that Indonesia ratified the Kyoto Protocol on 28th July 2004.</p>	/HCA/	OK	

² <http://dna-cdm.menlh.go.id/Downloads/LoA%20Juli08/LoA%20July08%20PT%20Indo%20Raya%20Kimia.PDF>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 45(a))	<p><i>Justification of evidences:</i></p> <p>The letter of approval is issued by the National Committee on CDM, DNA for Republic of Indonesia, which as listed as the DNA on http://cdm.unfccc.int/DNA/index.html</p> <p><i>Conclusion:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, the Host country approval has been submitted and verified by visit to the website³.</p>			
<p>A.1.4. Do the written approvals confirm that the participation is voluntary?</p> <p>(EB 55 Annex 1, § 45(b))</p>	<p><i>Description:</i></p> <p>Yes, The letter confirms the voluntary participation.</p> <p><i>Justification of evidences:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, confirms the voluntary participation.</p> <p><i>Conclusion:</i></p> <p>The Host country approval has been submitted and verified.</p>	/HCA/	OK	
A.1.5. Does the written approval from the host country confirm that the project contributes to	<p><i>Description:</i></p>	/HCA/	OK	

³ <http://dna-cdm.menlh.go.id/Downloads/LoA%20Juli08/LoA%20July08%20PT%20Indo%20Raya%20Kimia.PDF>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
the sustainable development in the country? (EB 55 Annex 1, § 45(c))	<p>Yes, The letter confirms that the project will contribute to the sustainable development in Indonesia</p> <p><i>Justification of evidences:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, confirms the contribution towards sustainable development.</p> <p><i>Conclusion:</i></p> <p>The Host country approval has been submitted and verified.</p>			
A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration or an additional specification of the project activity, e.g. PDD version number? (EB 55 Annex 1, §§ 45(d), 50)	<p><i>Description:</i> Yes, the Host Country Approval clearly states the project title as “Utilization of waste heat from Sulphur Recovery Unit to generate electricity”. This was subsequently verified by visit to the website⁴.</p> <p><i>Justification of evidences:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, confirms the precise project title.</p> <p><i>Conclusion:</i></p> <p>The Host country approval has been submitted and verified.</p>	/HCA/	OK	
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6?	<i>Description:</i>	/HCA/	OK	

⁴ <http://dna-cdm.menlh.go.id/Downloads/LoA%20Juli08/LoA%20July08%20PT%20Indo%20Raya%20Kimia.PDF>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 46)	<p>Yes, the Host Country Approval is unconditional with regard to the A.1.3 to A.1.6.</p> <p><i>Justification of evidences:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, is unconditional with regard to the A.1.3 to A.1.6.</p> <p><i>Conclusion:</i></p> <p>The Host country approval has been submitted and verified.</p>			
<p>A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other?</p> <p>(EB 55 Annex 1, § 51)</p>	<p><i>Description:</i></p> <p>Yes, the information regarding the project participants listed in section A3 and in Annex 1 of the PDD is internally consistent to each other.</p> <p><i>Justification of evidences:</i></p> <p>Project participants listed in section A3 and in Annex 1 of the revised PDD is consistent</p> <p><i>Conclusion:</i></p> <p>The revised PDD is verified and found consistent:</p>	/PDD/	OK	
<p>A.1.9. Are all project participants listed in the PDD approved at least by one Party involved?</p> <p>(EB 55 Annex 1, § 51)</p> <p><i>Indicate whether the participation of the project participant(s)</i></p>	<p><i>Description:</i></p> <p>The only project participant listed in PDD is PT Indo Raya Kimia and the same is approved by Indonesia the only party involved.</p> <p><i>Justification of evidences:</i></p>	/HCA/		

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p><i>has been approved by a Party to the Kyoto Protocol.</i></p> <p><i>Describe the means of validation employed to draw this conclusion.</i></p>	<p>Yes, as per the Letter of Approval from the Indonesian government^{/HGA/} the only project participant is PT Indo Raya Kimia.</p> <p><i>Conclusion:</i></p> <p>The project participant listed in PDD has been verified.</p> <p>In section A.3 of PDD mention whether the project participant is private or public (Cp. SSC-CDM-PDD guidelines)</p>		CAR A1	OK
<p>A.1.10. Are any other project participants approved but not listed in the PDD?</p> <p>(EB 55 Annex 1, § 52)</p>	<p><i>Description:</i> Only the project owner from Indonesia is identified as project participant.</p> <p><i>Justification of evidences:</i> By means of interview it has been confirmed that a party from Annex 1 has not been identified and HCA from Indonesia only identifies project owner as participant.</p> <p><i>Conclusion:</i> It could not be observed that a PP is not approved.</p>	/HCA/ /PDD/	OK	
<p>A.1.11. Does the DoE have a direct contractual relationship with the PP?</p> <p>(EB 55 Annex 1, § 51; EB 50 Annex 48, §§ 7–9)</p>	<p><i>Description:</i></p> <p>The contractual relationship established between DOE with project participant is available.</p>	PDD	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.</i>	<p><i>Justification of evidences:</i></p> <p>Contract can be provided upon request of CDM EB.</p> <p><i>Conclusion:</i></p> <p>Yes DOE and the PP has direct contractual relationship</p>			
<p>A.2. Contribution to Sustainable Development</p> <p><i>The project's contribution to sustainable development is assessed.</i></p>				
<p>A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development?</p> <p>(EB 55 Annex 1, §§ 125–127)</p> <p><i>Contains a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.</i></p>	<p><i>Description:</i></p> <p>Yes, HGA confirms that the project assists achieving sustainable development in Indonesia.</p> <p><i>Justification of evidences:</i></p> <p>The Host Country (Indonesia) approval No E 284/Dep.111/LH/07/08 dated 31/07/2008 from National Committee on CDM, Republic of Indonesia, confirms the contribution towards sustainable development.</p> <p><i>Conclusion:</i></p> <p>The Host country approval has been submitted and verified</p>	/HCA/	OK	
<p>A.2.2. Will the project create other environmental or social benefits than GHG emission reductions?</p> <p>(EB 55 Annex 1, §§ 125–127)</p> <p><i>Describe the other positive aspects not related to GHG</i></p>	<p><i>Description:</i> The project creates Technological, economic benefits in addition to environmental, social benefits and GHG emission reductions. Nevertheless CAR has been raised and successfully closed.</p>	/PDD/ A.2	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>emission reduction on the environment.</i>	<ul style="list-style-type: none"> The view of the project participant on the contribution of the project activity to sustainable development as per National Commission for Clean Development Mechanism, Indonesia sustainable development indicators was not presented in the section A.2 of the PDD. (Cp http://dna-cdm.menlh.go.id/en/susdev/). Moreover proposed project must pass all individual indicators that are applicable in order to be approved. The “checklist” method is used in the evaluation of CDM projects. Project Proponent has to provide explanation and justification that the proposed project fulfils all the indicators. The check list has to be provided to the validation team. It is mentioned in section A.2 of PDD as “the project is indirectly contributing to reduction of local air pollution such as SO_x, NO_x”. Clarification is requested. <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> The contribution of project activity to sustainable development as per the indicators by National Commission for Clean Development Mechanism is now addressed in the revised PDD. The summary of brief description which has been submitted to DNA for approval has been verified and found ok. The argument has been modified and now it states that the project activity will reduce the green house gases same is addressed in the revised PDD. 			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>Conclusion:</p> <p>The description of the sustainable development is addressed in the revised PDD and the argument in A.2 of PDD as “the project is indirectly contribute to reduction of local air pollution such as Sox, Nox” has been revised and found ok hence CAR is closed.</p>			
<p>A.3. PDD editorial aspects</p> <p><i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i></p>				
<p>A.3.1. Has the latest version of the PDD form been applied? (EB 55 Annex 1, § 55)</p>	<p><i>Description:</i> The PDD has been prepared in the approved format (CDM –SSC-PDD) Version 03 in effect as on 22 December 2006.</p> <p><i>Justification of evidences:</i></p> <p>The following web link can be referred to check the latest version of the PDD format uploaded in the UNFCCC website. http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/PDD_for_m02_v03.pdf</p> <p><i>Conclusion:</i></p> <p>The project description is presented in the latest template available in the UNFCCC website. It is verified and found to be valid.</p>	<p>/PDD/ /unfccc/</p>	<p>OK</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)</p>	<p><i>Description:</i> The PDD has been filled in accordance with latest guidance “Simplified Project Design document (CDM-SSC-PDD) and the form for proposed new Small Scale Methodologies (CDM-SSC-NM)” version 5, nevertheless the following CAR and CLs had to be raised</p> <ol style="list-style-type: none"> 1. The information on public funding is not filled Annex 2. 2. Latitude longitude information does not refer the exact location of the project activity, Source of coordinates of project location mentioned in section A.4.1.4 is missing. Clarification is requested. 3. The table presented in section A.4.3 of PDD is not in line with SSC-CDM-PDD guidelines. And the numbering of table is not mandated by the SSC-CDM-PDD form. 4. The table in section B.6.4 of PDD is not in line with SSC-CDM-PDD guidelines 5. The table in Annex I is incomplete 6. Indicate if the person/entity mentioned in section B.8 of PDD is also a project participant listed in Annex 1. <p><i>Justification of evidences:</i></p> <ol style="list-style-type: none"> 1. It has been confirmed by the PP during the onsite visit that there is no public funding involved and the same is not addressed in the hosted PDD and now it is addressed in Annex 2 of SSC CDM PDD, hence ok. 2. The latitude and longitude is now corrected in the revised 	<p>/PDD/ /unfccc/</p>	<p>CAR A3</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>PDD and the same is crosschecked with Google maps website, http://www.satsig.net/maps/lat-long-finder.htm and found ok.</p> <p>3. The table in section A.4.3 of PDD is now in line with the SSC-CDM-PDD Guidelines.</p> <p>4. The table in section B.6.4 of PDD is now inline with the SSC-CDM-PDD Guidelines.</p> <p>5. The table in Annex 1 is filled.</p> <p>6. The entity mentioned in the section B.8 of the PDD is not a project participant the same is clearly mentioned and hence the entity is not listed in the Annex 1.</p> <p><i>Conclusion:</i></p> <p>The information regarding the public funding in Annex 2 is filled, the latitude and longitude has been revised.and the PDD is revised with respect to SSC-CDM-PDD Guidelines.</p>			
A.4. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i>				
A.4.1. Does the PDD contain a clear, accurate and complete project description?	<i>Description:</i> There was clear description in the PDD however the following	/PDD/ A.2,		

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, §§ 58–59)</p> <p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i></p> <p><i>Describe the process undertaken to validate the accuracy and completeness of the project description.</i></p> <p><i>Contain the DOE's opinion on the accuracy and completeness of the project description.</i></p>	<p>CAR has been raised.</p> <ol style="list-style-type: none"> 1. The description of the project activity is not clear. Moreover the steam availability mentioned in section A.2 of PDD should be consistent with all the sections A.4.2, B.4, of PDD. 2. The Pre-project scenario is not clear. The usage of blower mentioned in section “.....8 t/h is used to run the blower back pressure turbine for the SRU” contradicts with the point number 7 of applicability criteria of AMS IIIQ. Clarification is requested. 3. The amount of emission reduction mentioned in section A.2 of PDD contradicts with the value in A.4.3 and B.6.4 4. It is stated that by installing 1.2 MW generator, IRK will avoid drawing of power from PLN to an extent of 10668.86 MWh. This amounts to running the generator for 8890.7 hours where as the maximum number of hours in a year are only 8760 hours. In this regard emission reductions in PDD excel spread sheet needs to be revised. 5. In section A.4.2 of PDD the description of the project activity is missing instead the process of the manufacturing is elaborated. Moreover does not describe the application of ‘environmentally safe and sound technology’ in the project activity as per the requirement of CDM-SSC-PDD Guidelines. 	<p>A.4.2</p>	<p>CAR A4, CAR A5 & CAR A6</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Justification of evidences:</i></p> <ol style="list-style-type: none"> 1. The description of the project activity is clearly addressed in the revised PDD. And also the capacity of the plant before and after expansion is clearly mentioned and the amount of available waste steam is clear and consistently mentioned in relevant sections of PDD the capacity before expansion is consistent with the Technical data sheet, the capacity after expansion and the amount of steam is verified through the monthly & daily reports. 2. The description was not clear earlier and now the revised PDD clearly states that after expansion 145-150 TPD the steam unutilized is 10.08 TPH. And now it clearly demonstrates that the steam was wasted in the absence of project activity the same is cross verified through the log sheets and moreover the steam does not fall under the category of Gases with intrinsic value hence the project activity fulfills the point number 6 of applicability criteria of AMS IIIQ. 3. The amount of emission reductions is 5557 tons of CO₂e and the same is verified from the emission reduction calculation sheet and the same is now consistent in section A.4.3 and B.6.4 of PDD. 4. The approach of calculation of emission reductions has been revised considering the load factor of 80% and the operating hours of 7920 hrs (320 days, 24 hours). The emission reduction is now revised and consistent with 			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>emission reduction calculation sheet and revised PDD.</p> <p>5. The section A.4.2 of PDD is revised to accommodate the description of technology of project activity and also how the project is environmentally safe and sound.</p> <p><i>Conclusion:</i></p> <p>Based on the above assessment and the revised PDD with a clear, accurate and complete project description the CAR is closed.</p>			
<p>A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description?</p>	<p><i>Description:</i> The description is real in accordance with the actual implementation nevertheless CAR A4 has been raised also refer A.4.2</p> <p><i>Justification of evidences:</i></p> <p>The description is real and it was verified during the site visit</p> <p><i>Conclusion:</i> based on the verification of implementation and the review of documentation during the site visit the CAR is closed.</p>	<p>/PDD/ A.2, A.4.2</p>	<p>CAR A4, CAR A5 & CAR A6</p>	<p>OK</p>
<p>A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation?</p> <p>(EB 55 Annex 1, §§ 63–64)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p><i>Description:</i> Refer A.4.1</p> <p><i>Justification of evidences:</i></p> <p><i>Conclusion:</i></p>	<p>/PDD/ A.2, A.4.2</p>	<p>CAR A4, CAR A5 & CAR A6</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>A.4.4. Does the project design engineering reflect current good practices?</p> <p><i>Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i></p>	<p><i>Description:</i> Refer A.4.1</p> <p><i>Justification of evidences:</i></p> <p><i>Conclusion:</i></p>	/PDD/ A.2, A.4.2	CAR A4, CAR A5 & CAR A6	OK
<p>A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?</p> <p><i>Describe the process undertaken to assess the state of the art technology.</i></p>	<p><i>Description:</i> Refer A.4.1</p> <p><i>Justification of evidences:</i></p> <p><i>Conclusion:</i></p>	/PDD/ A.2, A.4.2	CAR A4, CAR A5 & CAR A6	OK
<p>A.4.6. Does the project make provisions for meeting training and maintenance needs?</p> <p><i>Describe the process undertaken to assess the maintenance and training needs.</i></p>	<p><i>Description:</i> The company is certified to ISO 9001:2000. Hence the company follows the systematic training and maintenance plan.</p> <p><i>Justification of evidences:</i></p> <p>The ISO certificate has been verified and the procedures cover the training of personnel involved in operation and monitoring of project activity</p> <p><i>Conclusion:</i></p> <p>The PP has provision of meeting the training and</p>	/IM01/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	maintenance needs the same is verified during the site visit			
A.5. Small scale project activity <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? (EB 55 Annex 1, §§ 135–136 (a))	<p><i>Description:</i> Yes the project has demonstrated in section B.2 that the project qualify as a small scale CDM project activity</p> <p><i>Justification of evidences:</i></p> <p>The project activity fulfill as defined in CMP 2, para 28 revision in the definitions for small-scale clean development mechanism project activities referred to in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures.</p> <p><i>Conclusion:</i> Based on the above justification the project activity qualifies as small scale activity</p>	/PDD/ B.2	OK	
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? (EB 55 Annex 1, § 136 (b)) <i>Check, if applicable the expiry dates of the applied methodology. Further, take into consideration the general guidance to the methodologies⁵, which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.</i>	<p><i>Description:</i> Yes, the project apply small scale methodology i.e., AMS III.Q “Waste energy recovery (gas/heat/pressure) projects” version 3 and also “Tool to calculate the emission factor for an electricity system” for baseline calculation.</p> <p>However CAR B1 has been raised</p> <p>The applied version of methodology is no more valid for submitting for request for registration; hence revision is requested in relevant sections of PDD. Also reference of other methodologies/ Tools referred in the PDD with title and</p>	/PDD/ (A.4.2)	CAR B1	OK

⁵ <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>version is missing in section B.1 of PDD.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been revised to the latest valid version 4 of AMS III.Q and also other referred methodologies have been addressed in the revised PDD, The chosen methodology is valid from 29th April 2011.</p> <p><i>Conclusion:</i></p> <p>The project activity applies valid version of methodology</p>			
<p>A.5.3. Is the small scale project activity not a debundled component of a larger project activity?</p> <p>(EB 55 Annex 1, § 136 (c))</p> <p><i>Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB 36, Annex 27 54, Annex 13).</i></p>	<p><i>Description:</i> It is confirmed that the small scale project activity is not a debundled component of a larger project activity.</p> <p><i>Justification of evidences:</i></p> <p>There is no similar small scale project activity proposed by the same project participant, under the same project category. There is only one location of the project activity. There is more than 1 km of the project boundary distance to the other proposed small-scale CDM project activity.</p> <p><i>Conclusion:</i></p> <p>This small scale project activity is not a debundled component of a larger project activity because there is no similar project activity and not in 1 km</p>	<p>/PDD/ (A.4.5.)</p>	<p>OK</p>	
<p>A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party?</p>	<p><i>Description:</i></p> <p>Indonesian DNA has stipulated of four indicators contribution of the CDM project to the sustainable development which</p>	<p>/LOA/</p>	<p>OK</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 136 (d))	<p>encompasses environment, social, economy and technology. IRK CDM project, Utilization of waste heat from Sulphur Recovery Unit to generate electricity, has fulfilled the indicators required by the Government by obtaining the DNA Approval Letter from the National Committee on CDM (Indonesian DNA) under Ministry of Environment of Republic of Indonesia on 31 July 2008</p> <p><i>Justification of evidences:</i></p> <p>Host country approval and checklist submitted to obtain Host country approval have been verified.</p> <p><i>Conclusion:</i></p> <p>Based on the submission of the check list to DNA the HCA has been provided hence it is concluded that the host party requirements has been met.</p>			
B. Project Baseline, Additionality and Monitoring Plan				
B.1. Application of the Methodology				
<p>B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof?</p> <p>(EB 55 Annex 1, § 65)</p>	<p><i>Description:</i> The project activity rightly applies an approved methodology AMS III.Q “Waste energy recovery (gas/heat/pressure) projects” version 4 which is valid from 29th April 2011. However the hosted PDD has applied version 1 of the methodology in this regard CAR B1 has been raised</p>	/unfccc/		OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>Describe the steps taken to validate this issue.</i>	<p>and successfully resolved.</p> <p>The applied version of methodology is no more valid for submitting for request for registration; hence revision is requested in relevant sections of PDD. Also reference of other methodologies/ Tools referred in the PDD with title and version is missing in section B.1 of PDD.</p> <p><i>Justification of evidences:</i></p> <p>UNFCCC web site</p> <p><i>Conclusion:</i></p> <p>The applied version is valid and appropriate</p>		CAR B1	
<p>B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website?</p> <p>(EB 55 Annex 1, §§ 65, 70)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p><i>Description:</i> Yes, the version 03 of the methodology applied is identical to the version available on the UNFCCC website.</p> <p><i>Justification of evidences:</i></p> <p>UNFCCC website</p> <p><i>Conclusion:</i></p> <p>The applied version is valid and appropriate.</p>	/unfccc/	OK	
<p>B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled?</p> <p>(EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76)</p> <p><i>Describe for each applicability criterion listed in the selected approved methodology the steps taken to assess the</i></p>	<p><i>Description:</i></p> <ol style="list-style-type: none"> 1. The project activity generates power utilizing the waste heat at the existing facility with the help of newly installed steam turbine generator. 2. This project activity utilizes the waste heat at CS₂ 	<p>/PDD/ (B.2)</p> <p>/XLS/</p> <p>/IM01/</p>		OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>information contained in the PDD.</i>	<p>manufacturing facility to generate electricity instead of waste pressure.</p> <p>3. The recovery of waste heat to generate power is a new initiative and in absence the facility was importing power from grid.</p> <p>4. The estimated emission reduction is about 7,315 tCO₂ e /y, which are less than 60 kt CO₂ e /y.</p> <p>5. The category is applicable under the following conditions:</p> <p>a. The energy produced with the recovered waste heat is measured in terms of electricity generated the same is measured through energy meter and the same has been evidenced during on site visit further to know the quantity of waste heat the pressure and temperature is monitored, hence the justification of applicability condition deemed appropriate.</p> <p>b. The electricity generated in the project activity is utilized in the facility as electricity required for the process prior to the project activity is imported from grid this has been evidenced by verifying the electricity bills hence the justification of applicability condition deemed appropriate.</p> <p>c. The electricity generated from the waste heat is utilized for captive purposes and the steam generated from waste heat is also utilized in CS2 separator and Waste Water Stripper in the plant the same has been cross checked by energy bills and the log sheets hence the justification deemed to be appropriate.</p> <p>d. The project activity is not conversion of existing single</p>		CAR B2 & CAR B10.1	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>cycle gas turbine(s) or internal combustion engine (s) with or without cogeneration system to a combined cycle system with or without cogeneration hence AMS III AL is not applicable the same is confirmed during onsite visit & interviews and the condition is not applicable to this project activity.</p> <p>e. The emission reductions are claimed by the IRK the same is verified in the PDD confirmed through onsite interviews hence the justification deemed to be appropriate.</p> <p>f. As discussed for the above points the electricity generated from waste heat is used by IRK without any export hence the condition and the sub bullets are not applicable and the justification deemed to be appropriate.</p> <p>g. The life time as mentioned in PDD is 30 years and the same has been verified from supplier letter hence the choice of fixed crediting period for the project activity deemed to be appropriate hence the justification deemed to be appropriate.</p> <p>h. In the absence of project activity from capacity expansion the steam from the waste heat is demonstrated by means of recorded waste excess steam let to atmosphere and the energy bills showing the import of electricity for the process procured from grid hence the justification deemed to be appropriate.</p> <p>6. The waste heat doesn't have intrinsic value in a spot market as energy carrier or chemical (e.g. natural gas,</p>			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>hydrogen, liquefied petroleum gas, or their substitutes) hence the project is applicable under the methodology.</p> <p>Nevertheless CAR B2 has been raised to point out the missing applicability criteria in the hosted version of PDD and the same was successfully closed.</p> <p>The justification of the choice of the applied methodology tabulated in the section B.2 of the PDD is incomplete (Cp. AMS-III.Q)</p> <p><i>Justification of evidences:</i></p> <p>Applicability Criteria of AMS – IIIQ version 4 has been verified.</p> <p><i>Conclusion:</i></p> <p>In the hosted PDD the description of all the applicability has not been justified individually and now the same is justified individually and the justification found to be adequately described, the project activity has installed a steam turbine for generation of steam utilizing the waste gas from the CS2 manufacturing facility and the same is verified through purchase orders of steam turbine and also during the site visit and is has been verified the justification found to be ok in the revised PDD, hence the CAR is closed.</p>			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines? (EB 55 Annex 1, §§ 72–75)	<i>Description:</i> Refer B.1.3 <i>Justification of evidences:</i> Refer B.1.3 <i>Conclusion:</i> Refer B.1.3		CAR B2& CAR B10.4	OK
B.1.5. Is the project in accordance with every other stipulation or requirement mentioned in all sections of the methodology and in guidances for approved methodologies provided by the CDM EB? (EB 55 Annex 1, § 69, 71) <i>Describe the steps taken to check whether the proposed project activity meets <u>all the other possible stipulations and/or limitations</u> mentioned in all sections of the approved methodology selected.</i>	<i>Description:</i> Refer B.1.3 <i>Justification of evidences:</i> Refer B.1.3 <i>Conclusion:</i> Refer B.1.3		CAR B2 & CAR B10.4	OK
B.2. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i>				
B.2.1. Are the project's spatial boundaries (geographical) clearly defined?	<i>Description:</i> The geographical co-ordinates of the project location are provided in the PDD; 6° 24'51" South latitude and 107° 26' 28" East longitudes	/PDD/ A.4.1.4		OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>(EB 55 Annex 1, §§ 67(a), 78–80) <i>Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p>The hosted version of PDD does not refer the exact location in this regard point 2 of CAR A3 has been raised and successfully closed.</p> <p>Latitude longitude information does not refer the exact location of the project activity, Source of coordinates of project location mentioned in section A.4.1.4 is missing. Clarification is requested.</p> <p><i>Justification of evidences:</i></p> <p>This was verified through http://maps.google.com/ & Snap shot of GPS instrument with co-ordinates of the location</p> <p><i>Conclusion:</i></p> <p>The Latitude and Longitude information is cross checked and found ok.</p>	<p>/maps/</p>	<p>/CAR A3/</p>	
<p>B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80) <i>Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p><i>Description:</i> The methodology requires the physical, geographical site of the facility where the waste gas/heat/pressure is produced and transformed into useful energy that delineates the project boundary. Accordingly the project boundary is delineated as the CS₂ manufacturing facility of IRK where the waste heat is produced, and the same is transformed into useful energy and the same is used in the same plant the same is clearly demonstrated in section A.4.2 of PDD and the same is verified during the site visit.</p> <p><i>Justification of evidences:</i></p> <p>AMS – III Q Version 4 has been checked</p>	<p>/PDD/ B.3 /IM01/</p>	<p>OK</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Conclusion:</i></p> <p>All the sources of methodology has been rightly chosen</p>			
<p>B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><i>Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.</i></p>	<p><i>Description:</i> Methodology clearly mentions the GHG emissions that are to be included and the PDD complies with it.</p> <p><i>Justification of evidences:</i></p> <p>The methodology stipulates that CO₂ emissions due to electricity consumption from grid as baseline emissions and since there is no use of fossil fuel in boiler the same has been excluded similarly, as there is no cogeneration or flaring activity, the corresponding emissions has not been considered. Similarly, as there is no cleaning of gas, corresponding emissions are excluded. And also there is no electricity consumption by the project activity hence the same has been demonstrated as nil.</p> <p><i>Conclusion:</i></p> <p>The Justification of PP for exclusion of source was verified during the site visit.</p>	<p>/PDD/ B.3</p> <p>/IM01/</p>	<p>OK</p>	



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.3. Baseline Identification <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
B.3.1. What possible baseline scenarios have been considered? (EB 55 Annex 1, §§ 67(b), 83) <i>Fill in all alternatives in table A-2.</i>	<p><i>Description:</i> The possible scenarios identified are as follows, continuous operation by purchasing electricity from PLN JAMALI Grid (letting out the waste heat into atmosphere) and Installation of waste heat based-power plant not as CDM project activity.</p> <p>Nevertheless the following CAR B3 and B4 has been raised and successfully closed.</p> <ol style="list-style-type: none"> 1. All documentary evidences need to be presented for arrival of baseline computations. 2. The variables, notations, values and units used in the PDD, spread sheet should be inline and consistent with the Annexure-I of guidelines for completing CDM-SSC-PDD form 3. The source of Emission factor used is missing. <p>Baseline is not clear in context of any fossil fuel usage and Moreover explanation and justification of key assumptions and rationale related to baseline development in the section B.4 of the PDD is inadequate. All data used to determine the</p>	/PDD/ B.4	<div>CAR B3</div> <div>CAR B4</div>	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>baseline emissions (variables, parameters, data sources etc.) is not neither presented in a tabular form (Cp SSC-CDM – PDD guidelines) nor referred to other section of the PDD.</p> <p><i>Justification of evidences & Conclusions</i></p> <ol style="list-style-type: none"> 1. All the necessary documentary evidence^{/BAS/} like CS₂ production, monthly report and daily report, which also shows the steam generation and the blower power consumption and the technical details of the steam turbine, CS₂ facility and also the same is cross verified during the site visit and the same has been provided. 2. All the variables, notations values and units are consistent and in line with the Annexure-I of guidelines for completing CDM-SSC-PDD form. 3. The emission factor calculation sheet is submitted in which the calculated value is 0.862tCO₂eq/MWh which is conservative than the value 0.891 tCO₂eq/MWh in letter from Indonesian DNA^{/EF/} was submitted the value chosen is conservative and found ok. <p>It has been checked from the monthly reports and found that there is no usage of fossil fuel for the cross verified from the energy bills. Also the steam generated in the Claus Unit/SRU (FI-5091) and steam produced from the CS₂ plant/furnace (FI-2007) is verified from the DCS archived data. Then the Basic Engineering Package from the technology provider has been checked for steam used to CS₂ separation and Waste Water Stripper.</p>			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>B.3.2. Is the list of alternatives complete? (EB 55 Annex 1, §§ 67(b), 83)</p> <p><i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i></p>	<p><input type="checkbox"/> All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted.</p> <p><input checked="" type="checkbox"/> The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued</p>	/PDD/ B.4	CAR B4	OK
<p>B.3.3. What has been identified as the baseline scenario? (EB 55 Annex 1, §§ 81–82, 86)</p> <p><i>Describe the chosen BL scenario, taking into consideration the technology that would be employed and / or the activities that would take place in the absence of the proposed CDM project activity.</i></p>	<p><i>Description:</i> Waste heat being released to the atmosphere and sourcing of the power requirement from the grid emerges as the baseline scenario.</p> <p><i>Justification of evidences:</i></p> <p>It has been checked from the monthly reports and found that there is no usage of fossil fuel for the cross verified from the energy bills. Also the steam generated in the Claus Unit/SRU (FI-5091) and steam produced from the CS₂ plant/furnace (FI-2007) is verified from the DCS archived data. Then the Basic Engineering Package from the technology provider has been checked for steam used to CS₂ separation and Waste Water Stripper.</p> <p><i>Conclusion:</i> There is no usage of fossil fuel, only the electricity consumption from grid by the project activity has been considered for calculating the project emissions and same is monitored throughout the crediting period. Also the data used to determine the baseline parameters has been tabulated in</p>	/PDD/ B.4	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	table 6 in section B.4 of PDD			
<p>B.3.4. Has the baseline scenario been determined according to the methodology?</p> <p>(EB 55 Annex 1, §§ 82, 87(e))</p> <p><i>Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.</i></p>	<p>For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2.</p> <p><input type="checkbox"/> The determination has been carried out as per the procedure contained in the applied methodology.</p> <p><input checked="" type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario:</p>	/PDD/ B.4	CAR B3 & B4	OK
<p>B.3.5. Has any plausible alternative scenario been excluded?</p> <p>(EB 55 Annex 1, § 83)</p> <p><i>Describe how it is validated that no plausible alternative scenario has been excluded.</i></p>	<p>For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2.</p> <p><input checked="" type="checkbox"/> No plausible baseline scenario has been excluded.</p> <p><input type="checkbox"/> The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:</p>	/PDD/ B.4	CAR B3 & B4	OK
<p>B.3.6. Is the identified baseline scenario reasonable and has the baseline scenario been determined using conservative assumptions where possible, including relevant references and sources?</p> <p>(EB 55 Annex 1, §§ 84–86(a)–(c))</p> <p><i>Describe whether the choice of the identified baseline scenario is reasonable by validating the <u>key assumptions, calculations and rationales</u> used in the PDD. Describe whether these are listed, relevant and <u>conservatively interpreted</u> in the PDD.</i></p>	<p><input type="checkbox"/> The baseline scenario is reasonable and has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above.</p> <p><input checked="" type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative</p>	/PDD/ B.4	CAR B3 & B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?</p> <p>(EB 55 Annex 1, §§ 85, 87(d))</p> <p><i>Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).</i></p>	<p><i>Description:</i> During the course of validation CAR B3 & B4 has been raised and successfully closed.</p> <p><i>Conclusion:</i> The baseline scenario sufficiently takes into account relevant national and/or sectoral policies, macro-economic trends and political aspirations. Refer response to the CAR</p>	/PDD/ B.4	CAR B3 & B4	OK
<p>B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?</p> <p>(EB 55 Annex 1, § 87(a)–(c))</p> <p><i>Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.</i></p>	<p><i>Description:</i> During the course of validation CAR B3 & B4 has been raised and successfully closed.</p> <p><i>Conclusion:</i> the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced Refer response to the CAR</p>	/PDD/ B.4	CAR B3 & B4	OK
<p>B.3.9. Does the PDD contain a <i>verifiable</i> description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.</p> <p>(EB 55 Annex 1, § 86)</p>	<p><i>Description:</i> yes the PDD contain a <i>verifiable</i> description of the identified baseline scenario including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity</p> <p><i>Justification of evidences:</i> During the course of validation CAR B3 & B4 has been raised and successfully closed.</p> <p><i>Conclusion:</i> Refer response to the CAR</p>	/PDD/ B.4	CAR B3 & B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.4. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>				
B.4.1. Methodology				
<p>B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools?</p> <p>(EB 55 Annex 1, §§ 67(d), 94–95)</p> <p><i>Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.</i></p>	<p><i>Description:</i> The project additionality was assessed according to the methodology.</p> <p><i>Justification of evidences:</i> Since it is a small scale project proponent has used Attachment A of Appendix B of Simplified Modalities and Procedures to demonstrate additionality.</p> <p><i>Conclusion:</i> However there were some gaps mentioned below in fulfilling the requirements in the Hosted PDD.</p>	/PDD/ (B.5)	OK	
B.4.2. Consideration of CDM before project start				
<p>B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms?</p> <p>(EB 55 Annex 1, § 104(a))</p> <p><i>Assess why the chosen starting date can be considered as</i></p>	<p><i>Description:</i> The agreement between the PP and PT Ometraco Arya Samanta for supply of turbine and Genset has been submitted to support the PP's contention that the start date of project be considered as 22 September 2005. The record submitted was verified and the results of assessment are as below:</p>	/PDD/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p><i>the earliest date at which either the implementation or construction or real action of a project has begun or will begin.</i></p> <p><i>Check that no other activities related to the project that happened before the identified start date can be considered as start date. In this context please also take into consideration infrastructural expenses if they are relevant (in terms of costs and importance for the project implementation) in the specific context of the project activity.</i></p>	<p><i>Justification of evidences & Conclusion:</i></p> <p>The project start date is given as 22 September 2005 which is the date of agreement between PT Ometraco Arya Samanta, and the PP for supply of one number of 1.1MW Steam turbine and generator set. Copy of the agreement has been verified. As this document signifies the commitment of the PP to meet a major project related expenditure, considering this as the start date is in accordance with the CDM glossary of terms.</p>			
<p>B.4.2.2. In case the project start date is on or after 2nd August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status?</p> <p>(EB 55 Annex 1, §§ 99–101)</p> <p><i>Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.</i></p>	<p>Not applicable since the project start date is prior to 2nd August 2008.</p>	/PO/	OK	
<p>B.4.2.3. In case the project start date is before commencing of validation and 2nd August 2008, was the incentive from the CDM seriously considered and are details given in the PDD?</p> <p>(EB 55 Annex 1, §§ 100, 102)</p>	<p><i>Description:</i> During the course of validation in this regard CR B1 has been raised and the same was resolved.</p> <p>1. Serious prior consideration of CDM has to be demonstrated inline with the guidance on the demonstration and assessment of prior consideration of the CDM (EB 41 Annex 46).</p>	Documents listed in PDD B.5	CL-B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.	<p>2. Clarification is requested in delay of approaching the DOE from the start date; moreover substantiate the same with implementation steps along with CDM milestones in PDD.</p> <p><i>Justification of evidences & conclusions:</i></p> <p>The mentioned documents were verified and the justification is found to be ok. The description of CDM considered as decisive factor has been included in revised PDD and it is in line with EB 41, Annex 46, paragraph 5 (a). And also documents of for demonstrating continuing and real action to attain CDM status has been verified and found in line with EB 41, Annex 46, paragraph 5 (b) hence the CL has been closed.</p>			
<p>B.4.2.4. How and when was the decision to proceed with the project taken?</p> <p><i>Describe the steps taken to validate the starting date.</i></p>	<p><i>Description:</i> The decision was taken by the Board of Directors to implement the proposed project and seek CDM status as related in B.4.2.2 on 21 February 2005.</p> <p>However CL has been raised and sucessfully closed.</p> <p><i>Justification of evidences:</i></p> <p>Board resolution dated 21/02/2005 has been checked.</p> <p><i>Conclusion:</i> The decision was taken by the Board of Directors to implement the proposed project and seek CDM status as related in B.4.2.2 on 21 February 2005</p>	/MD/ /PO/	CL-B4	OK
<p>B.4.2.5. Is the project start date consistent with the available evidences?</p>	<p>Yes, the corresponding sale purchase agreement between the PP and the equipment supplier PT Ometraco Arya Samanta for supply of turbine and Genset has been verified</p>	/PO/	CL-C4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 102) <i>Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i>	in this regard. Under section C.1.1, the start date is mentioned as 22/09/2005 and the basis is described as the agreement referred above. However CL C1 has been raised 1. Proof of start date mentioned in C.1 of PDD against what real action clarification is requested. 2. Proof of operational life time of the project activity The above mentioned document has been referred and the date has been revised.			
B.4.2.6. Was the decision to proceed with the project taken by a person which has the authority to do so? (EB 55 Annex 1, § 102(a)) <i>Describe the steps taken to validate this issue.</i>	<i>Description:</i> This is a limited company for which all major decisions are taken by the Board of Directors during a meeting of the Board of Directors. Accordingly, the decision to proceed with the power project was also considered and approved by the Board of Directors in 21 February 2005. <i>Justification of evidences:</i> Board resolution approved by the Board of Directors in 21 February 2005. <i>Conclusion:</i> The evidences considered is adequately and transparently mentioned in the PDD.	/MD/ /IM01/	OK	
B.4.2.7. How was the CDM involved in the decision making process? (EB 55 Annex 1, § 102) <i>Describe why CDM was a decisive factor in the decision making process.</i>	<i>Description:</i> The project activity replaces / provides GHG free electric power to the plant as a result of which the PP is eligible to claim for Certified Emission Reduction. Proceeds from this helps the PP to minimize the risks associated in implementation of the project activity.	/MD/ /IM01/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Justification of evidences:</i></p> <p>Board resolution approved by the Board of Directors in 21 February 2005.</p> <p><i>Conclusion:</i> The evidences considered is adequately and transparently mentioned in the PDD.</p>			
<p>B.4.2.8. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status?</p> <p>(EB 55 Annex 1, § 102; EB 49 Annex 22 § 7)</p>	<p>The evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status</p> <p>However CL B2 has been raised</p> <ol style="list-style-type: none"> 1. Serious prior consideration of CDM has to be demonstrated inline with the guidance on the demonstration and assessment of prior consideration of the CDM (EB 41 Annex 46). 2. Clarification is requested in delay of approaching the DOE from the start date; moreover substantiate the same with implementation steps along with CDM milestones in PDD. <p>The evidences considered is adequately and transparently mentioned in the PDD.</p>	<p>Documents listed in PDD B.5</p>	<p>CL-B2</p>	<p>OK</p>
<p>B.4.2.9. Is the gap of documented evidences to secure the CDM status less than 3 years and are the evidences relevant for substantiating the action taken, credible, reliable and complete?</p>	<p><i>Description:</i> The gap of documented evidences to secure the CDM status is less than 3 years and the evidences are relevant for substantiating the action taken.</p>	<p>Documents listed in PDD B.5</p>	<p>CL-B2</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 49 Annex 22 § 8)	<p>However CL B2 has been raised</p> <ol style="list-style-type: none"> 1. Serious prior consideration of CDM has to be demonstrated inline with the guidance on the demonstration and assessment of prior consideration of the CDM (EB 41 Annex 46). 2. Clarification is requested in delay of approaching the DOE from the start date; moreover substantiate the same with implementation steps along with CDM milestones in PDD. <p>The evidences considered is adequately and transparently mentioned in the PDD.</p>			
<p>B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM?</p> <p>(EB 51 Annex 58, § 7) <i>Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.</i></p>	<p>Not applicable to this project activity. Also from placing the tender to commissioning the project was not ceased</p>		OK	
<p>B.4.2.11. Can the CDM involvement in the decision assessed as serious?</p> <p>(EB 55 Annex 1, § 104(b)–(c)) <i>Describe whether or not the project would have been undertaken without the incentive of the CDM.</i></p>	<p>Yes, without the benefit of CDM registration promising to provide some relief, the project would not have been implemented. The PP would have continued using the grid power and let out the waste steam to atmosphere.</p>	/MD/ /IM01/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.4.3. Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2 if appropriate)				
<p>B.4.3.1. Does the list of alternatives contain the status-quo situation, the project not undertaken as a CDM project as well as all other viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?</p> <p>(EB 55 Annex 1, §§ 105–107) Describe the steps taken to validate this issue on the basis of your local and sectoral knowledge.</p>	Not Applicable	/AMS – IIIQ/	OK	
<p>B.4.3.2. Have all realistic alternatives been identified to the project?</p> <p>(EB 55 Annex 1, §§ 105–107) Describe whether the list of alternatives is credible and complete. Describe how it is validated that the alternatives are realistic.</p>	Not Applicable	/AMS – IIIQ/	OK	
<p>B.4.3.3. Do all identified alternatives comply with enforced legislations?</p> <p>(EB 55 Annex 1, §§ 106(c)) Describe the steps taken to validate this issue. Refer to the legislations.</p>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4. Investment analysis Step 2				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment of Financial Parameters" has to be used to provide additional details of the calculation parameters..</i>				
B.4.4.1. Does the PDD provide evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasible without the revenues from the sale of CERs? (EB 55 Annex 1, § 108)	Not Applicable		OK	
B.4.4.2. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)? (EB 55 Annex 1, § 108; EB 39 Annex 10) <i>Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.3. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? (EB 55 Annex 1, § 110; EB 51, Annex 58, §8) <i>Describe the steps taken to validate this issue.</i>	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>B.4.4.4. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?</p> <p>(EB 55 Annex 1, § 109; EB 51 Annex 58 § 3 – 4) <i>Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.</i></p>	Not Applicable	/AMS – IIIQ/	OK	
<p>B.4.4.5. Is the (remaining) technical lifetime of existing or project equipment defined in accordance with the guidance of the <i>Tool to determine the remaining lifetime of equipment?</i></p> <p>(EB 50 Annex 15)</p>	Not Applicable	/AMS – IIIQ/	OK	
<p>B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice?</p> <p>(EB 55 Annex 1, § 109; EB 51 Annex 58, § 4) <i>State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential</i></p>	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>mismatches between regulations and the approach applied for calculating the fair value.</i>				
B.4.4.7. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 4)	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.8. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 5)	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.9. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 5)	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.10. Were the input values used in the investment analysis valid and applicable at the time of the investment decision? (EB 55 Annex 1, § 109,112; EB 51 Annex 58, § 6) <i>In case the basis for input values is a Feasibility Study Report (FSR) describe how it has been ensured that the period in time between the finalisation of the FSR and the investment decision is sufficiently short so that it is unlikely that input values would have materially changed. Further confirm the consistency of values in</i>	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>FSR and PDD.</i>				
B.4.4.11. Is the plant load factor (PLF) chosen in a conservative manner, taking into account that the PLF may be different in the framework of demonstrating additionality and calculating the ex-ante ER? (EB 48, Annex 11)	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.12. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 9)	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.13. In cases where a post-tax benchmark is applied please ensure that actual interest payable is taken into account in the calculation of income tax. (EB 51 Annex 58, § 11) <i>As per the guidance it is recommended to select a pre tax benchmark in order to Describe the steps taken in assessing this requirement.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.14. In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
cash outflow? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 10)				
B.4.4.15. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)? (EB 55 Annex 1, § 111; EB 51 Annex 58, §§12 – 15) <i>In case risk premiums are applied precisely describe its suitability to reflect the risks associated with the project activity, considering the project type and market situation.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.16. Is the benchmark value suitable for the project activity and is it reasonable to assume that no investment would be made at a rate of a lower return than the benchmark? (EB 55 Annex 1, § 109; EB 51 Annex 58, §§13 – 15) <i>Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.17. Is it ensured that the project cannot be developed by other developers than the PP? (EB 55 Annex 1 § 109; EB 51 Annex 58, §§ 13 – 14) <i>Describe why the benchmark does not include the subjective</i>	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>profitability expectations or risk profile of the project developer. If applicable assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.</i>				
B.4.4.18. Was the benchmark consistently used in the past for similar projects with similar risks? (EB 55 Annex 1, § 112(c))	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.19. Does the PDD and related spreadsheets contain a sensitivity analysis and does the same contain variation of parameters which may vary throughout the project lifetime, (EB 55 Annex 1, §§ 109–110(e); EB 51 Annex 58, § 17–18) <i>Describe relevance of parameters used in the sensitivity analysis as well as their likeliness to vary during the project's lifetime. Parameters which are fixed on the basis of contracts, PPAs etc. may not be subject to variation and not adequate.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.4.20. Were only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation? (EB 55 Annex 1, § 109; EB 51 Annex 58, § 17)	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>B.4.4.21. Have parameters, constituting less than 20% of total project costs or revenues, been identified with potential material impact on the financial parameter?</p> <p>(EB 55 Annex 1, § 109; EB 51 Annex 58, § 17) Describe whether those parameters are considered in the sensitivity analysis?</p>	Not Applicable	/AMS – IIIQ/	OK	
<p>B.4.4.22. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector?</p> <p>(EB 55 Annex 1, § 109; EB 51 Annex 58, § 18) Describe whether the range of variation is appropriate with focus on historic developments, e.g. price of oil / labour etc., energy potential in the region in question.</p>	Not Applicable	/AMS – IIIQ/	OK	
B.4.5. Barrier analysis Step 3 or SSC additionality assessment				
<p>B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project?</p> <p>(EB 55 Annex 1, §§ 115, 134, 137) In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to</p>	<p>Description: There is no argument regarding impact of financial returns.</p> <p>However CAR B5 has been raised:</p> <p>Additionality is not clear and the demonstration of additionality with the chosen barriers is to be proven. The financial implication is not touched upon and strong demonstration of CDM requirement is also not seen.</p>	/PDD/ B.5	CAR B5	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>EB 51 Annex 58.</i>	<p><i>Justification of evidences:</i></p> <p>PDD B.5</p> <p><i>Conclusion:</i> The argument regarding technology barrier, prevailing practice and the institutional barrier has been demonstrated in the revised PDD. The CAR is asked why the PP has not considered Investment barrier as per Attachment A to Appendix B, PP has a option of demonstrating either one of the barriers listed and based on closure of subsequent CARs regarding individual barriers the arguments found to be justified hence CAR is closed.</p>			
<p>B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)?</p> <p>(EB 55 Annex 1, §§ 116, 134, 137)</p> <p><i>Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?</i></p>	<p><i>Description:</i> The additionality arguments under section B.5 are in line with Attachment A of Appendix B of simplified Modalities and procedures. The additionality of the project has been demonstrated by Technological barrier, Barrier due to prevailing practice and Other barriers (institutional).</p> <p>However CAR B6 and B7 has been raised</p> <p>The additionality arguments under section B.5 are not in line with Attachment A of Appendix B of simplified Modalities and procedures. For an example, Technological barrier has to be justified that 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. In this context additionality section is weak and needs further explanation.</p>	<p>/PDD/ B.5</p>	<p>CAR B6</p> <p>CAR</p>	<p>OK</p> <p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>The Barrier due to prevailing practice has to be justified that prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions. The prevailing practice analysis needs to be performed for the project and needs to be demonstrated on its uniqueness. The way it is presented, it looks like this is the first of its kind project if so justify / substantiate with proof.</p> <p><i>Justification of evidences:</i></p> <ol style="list-style-type: none"> 1. PLN statistics 2006 for electricity consumption 2. BPS-Statistics Indonesia, a Non-Departmental Government Institution 3. Technical details annex of Thai Rayon 20,000 MT/A CS₂ Plant <p><i>Conclusion:</i> The argument of no option of power generation in the basic design of CS₂ plant has been checked in the Technical details of the plant provided by Akzo Nobel. And it was anticipated that there would be risk in introduction of power generation. Also it was checked the technical details of CS₂ plant in quotation from a Chinese supplier to PP for their company in Thailand. It is evident that there is no power generation option in the technical details from both the suppliers. Also the power generation in the project activity is dependent on the steam generation from the CS₂ production process. Any disturbance in the CS₂ manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is</p>		B7	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>designed for minimum methane fraction of 91% and CO₂ content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO₂ content will directly impact the productivity of CS₂ process. The variation in composition of gas is checked with the test reports and the corresponding months steam generation and the CS₂ production were checked and found the variation in steam generation. Hence the project activity has the only alternative to let the waste steam to the atmosphere and continues to use the grid for meeting the electricity demand. Since the grid involves lower risks in terms of the performance uncertainty of the plant which in turn would have led higher emission. In this context the argument found to be justified</p> <p>The electricity consumption pattern of PLN Jamali Grid published by Electricity utility has been checked and found that the 93% of the total electricity is consumed by industries and the rest is consumed by households, commercial spaces and government offices. From this it is evident that industries are very much dependant on electricity from grid. Also in the Manufacturing Industry directory published by Bureau Central Statistic (BPS/Badan Pusat Statistik) of Indonesia, a Non-Departmental Government Institution for has been checked and found that IRK is the only CS₂ plant in Indonesia. Therefore, to put up the power plant to utilize the waste heat in CS₂ plant is the first of its kind to generate the electricity from waste heat in CS₂. The arguments found to be justified and the revised PDD found to be ok.</p>			
B.4.5.3. Has the unavailability of means of finance	<i>Description:</i> There is no argument regarding impact of	/PDD/		

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>for the project been described and adequately substantiated? Do evidences doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM?</p> <p>(EB 55 Annex 1, §§ 116, 137, EB 50 Annex 13, § 9)</p>	<p>financial returns.</p> <p>However CAR B5 has been raised:</p> <p>Additionality is not clear and the demonstration of additionality with the chosen barriers is to be proven. The financial implication is not touched upon and strong demonstration of CDM requirement is also not seen.</p> <p><i>Justification of evidences:</i></p> <p>PDD B.5</p> <p><i>Conclusion:</i> The argument regarding technology barrier, prevailing practice and the institutional barrier has been demonstrated in the revised PDD. The CAR is asked why the PP has not considered Investment barrier as per Attachment A to Appendix B, PP has a option of demonstrating either one of the barriers listed and based on closure of subsequent CARs regarding individual barriers the arguments found to be justified hence CAR is closed.</p>	B.5	CAR B5	OK
<p>B.4.5.4. How is it justified and evidenced that the barriers given in the PDD are real?</p> <p>(EB 55 Annex 1, § 116(a))</p>	<p><i>Description:</i> The hosted PDD had gaps in demonstrating the additionality the CAR B5, B6 & B7 has been raised during the course of validation and the same was successfully closed and the assessment of the same is presented in section 4 of this report.</p> <p><i>Justification of evidences:</i></p> <p>Refer B.4.5.1 to B.4.5.3</p> <p><i>Conclusion:</i></p>	/PDD/ B.5	CAR B5, B6 and B7	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	Refer B.4.5.1 to B.4.5.3			
<p>B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives?</p> <p>(EB 55 Annex 1, § 116(b))</p>	<p><i>Description:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Justification of evidences:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Conclusion:</i> Refer B.4.5.1 to B.4.5.3</p>	/PDD/ B.5	CAR B5, B6 and B7	OK
<p>B.4.5.6. Does the review of relevant background information on the nature of the company(ies) and entity(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real?</p> <p>(EB 50 Annex 13, § 4)</p>	<p><i>Description:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Justification of evidences:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Conclusion:</i> Refer B.4.5.1 to B.4.5.3</p>	/PDD/ B.5	CAR B5, B6 and B7	OK
<p>B.4.5.7. Has it been demonstrated in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers?</p> <p>(EB 50 Annex 13, § 5)</p>	<p><i>Description:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Justification of evidences:</i> Refer B.4.5.1 to B.4.5.3</p> <p><i>Conclusion:</i> Refer B.4.5.1 to B.4.5.3</p>	/PDD/ B.5	CAR B5, B6 and B7	OK
<p>B.4.5.8. Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated?</p>	<p><i>Description:</i> Refer B.4.5.1 to B.4.5.3</p>	/PDD/ B.5	CAR B5, B6 and	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 50 Annex 13, § 7) <i>Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .</i>	<i>Justification of evidences:</i> Refer B.4.5.1 to B.4.5.3 <i>Conclusion:</i> Refer B.4.5.1 to B.4.5.3		B7	
B.4.6. Common practice analysis Step 4 (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type? (EB 55 Annex 1, § 120(a)) <i>Describe why the project activity is not common practice in a transparent and unambiguous manner. If a region other than the entire host country is chosen, describe why this region is more appropriate.</i>	Not Applicable	/AMS – IIIQ/	OK	
B.4.6.2. To what extent similar projects have been undertaken in the relevant region? (EB 55 Annex 1, § 120(b))	Not Applicable	/AMS – IIIQ/	OK	
B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed? (EB 55 Annex 1, § 120(c))	Not Applicable	/AMS – IIIQ/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.5. Ex-Ante Calculation of GHG Emission Reductions <i>It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i>				
<p>B.5.1. Are the equations applied correctly according to the applied approved methodology?</p> <p>(EB 55 Annex 1, §§ 67(c), 89–90, 92)</p> <p><i>Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.</i></p>	<p><input type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context:</p> <p><i>Description:</i></p> <ol style="list-style-type: none"> 1. The project emissions has to be determined using the Tool to calculate project or leakage CO2 emissions from fuel combustion and the Tool to calculate project emissions from electricity consumption (Cp. Point 14 of AMS-IIIQ). In this regard clarity is missing in section B.6.1 and B.6.3 of PDD 2. On page 18, under “Project emissions“, it is stated that “emission reductions are calculated as an incremental gain of energy in the project activity as compared to baseline scenario“. Whereas on page 10, while justifying the applicability of the methodology, it is stated that “The IRK project activity is a new initiative, not an incremental gain project.” As is evident the two statements are 	/PDD/ B.6	CAR B8 CAR A7	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>contradictory and need to be reconciled.</p> <p>3. The data parameter the average quantity of CS₂ production is irrelevant in section B.6.2 and B.7.1 of PDD with out using the same in B.6.3 of PDD clarification is requested.</p> <p>1. This section B.6.2 of PDD shall include a compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period and that are available when validation is undertaken like f_{cap} is missing.</p> <p>Moreover estimation of capping factor for baseline emissions is not inline with the methodology AMS III Q. In this regard clarity is missing in section B.6.1 and B.6.3 of PDD</p> <p><i>Justification of evidences & Conclusion:</i></p> <p>The electricity consumption by the project activity from grid has been identified to estimate the project emissions in section B.6.1 and B.7.1 of PDD. The argument found to be justified and the revised PDD found to be ok</p> <p>The project activity is an new initiative and the same is clearly mentioned and the argument under project emissions is modified accordingly, the revised PDD found to be ok</p> <p>The parameter has been removed in section B.7.1 now it is present in section B.6.2 of PDD and further used in calculation of f_{cap} in the revised PDD.</p> <p>Parameters available during the validation is now part of the</p>		GAR B9	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	revised PDD The description regarding calculation of f_{cap} in section B.6.1 of revised PDD and calculation in excel sheet found to be ok.			
<p>B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i></p>	<p><i>Description:</i> The baseline emissions calculation equation (1) given in the methodology has been used and for calculating f_{cap} the determined according to the corresponding section of ACM0012. Hence the capping of baseline emissions for the project activity is determined by adopting Method-2.</p> <p>Nevertheless refer CAR B8 and B9</p>	/PDD/ B.6	CAR A7 CAR B8 and B9	OK
<p>B.5.3. Have conservative assumptions been used when calculating the project emissions?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i></p>	<p><i>Description:</i> As per approved methodology the project emissions include emissions due to combustion of auxiliary fuel to supplement waste gas and emissions due to consumption of electricity by the project activity. Since there is no usage of auxiliary fuel and only the electricity consumption met by the the project activity has been considered for project emissions.</p> <p>And moreover there is no waste gas and the CO₂ emission due to the combustion of the waste gas is not applicable.</p> <p>Nevertheless CAR has been raised and closed successfully.</p>	/PDD/ B.6	CAR A7 CAR B8 and B9	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology?</p> <p>(EB 55 Annex 1, § 77)</p>	<p><i>Description:</i></p> <p>The project activity comprises of generation of power by using waste heat and replacing a carbon intensive grid.</p> <p><i>Justification of evidences:</i></p> <p>AMS – III Q</p> <p><i>Conclusion:</i> All the GHG emissions within the project boundary have been addressed in the methodology.</p>	<p>AMS - IIIQ</p>	<p>OK</p>	
<p>B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions?</p> <p>(EB 48 Annex 11, §§ 1, 3–4)</p> <p><i>Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.</i></p>	<p>The considered PLF for the WHR system is 80% and it is reasonable and appropriate.</p>		<p>OK</p>	
<p>B.5.5. Are all data sources and assumptions appropriate and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered</i></p>	<p><i>Description:</i> The most important parameter which remains fixed throughout the crediting period and has a huge influence on ER calculations is the grid emission factor. Default value of emission factor from PLN Jamali grid which is calculated based on Tool to calculate the emission factor for an electricity system version 01.1 and conservative than the value provided by the DNA of Indonesia. This was the most recent official data that was available at the time of preparation of PDD.</p>	<p>/PDD/ B.6</p>	<p>CAR A7 CAR B3, B8 and B9</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i>	Also refer CAR B3 regarding the source of emission factor and the same was successfully closed after verifying the letter from DNA.			
<p>B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i></p>	<p><input type="checkbox"/> All “Values of data to be applied for the purpose of calculating expected emissions reductions” are considered to be reasonable, applicable and conservative.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context: The parameters considered in section B.7.1 of PDD are quantity of waste gas utilized by the project activity, electricity generated and consumed by the project activity. The waste gas quantity used to generate power has been considered based on the average of actual quantity used for power generation; the net energy is calculated based on the power generated and the auxiliary power consumption.</p>	/PDD/	OK	
<p>B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p><i>Description:</i> Power is generated by recovering waste heat that was being discharged into the atmosphere. Quantity of power generated is measured and partly used for captive consumption and the rest is evacuated in to the grid. Further, The project will have an expected life time of 30 years. Thus, the emission reductions caused by the project activity are real, measurable and provide long term environmental</p>	/PDD/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	benefits.			
B.6. Monitoring of Emission Reductions <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i>				
<p>B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan?</p> <p>(EB 55 Annex 1, §§ 67(e), 121, 123(a), 124)</p> <p><i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i></p> <p><i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i></p> <p><i>In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.</i></p>	<p><i>Description:</i> All applicable monitoring parameters are contained in the monitoring plan of the revised PDD.</p> <p>Measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the measurement interval not addressed adequately in section B.7.1 of PDD.</p> <p>Nevertheless refer CAR B8 and B9</p> <p><i>Justification of evidences:</i></p> <p>-</p> <p><i>Conclusion:</i> -</p>	/PDD/	CAR B10, 10.1, CAR B8 and B9	OK
<p>B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan feasible and in accordance with the requirements of the</p>	<p><i>Description:</i></p> <p>The monitoring parameters such as Quantity of waste energy used</p>		CAR B8, B9 and	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>applied methodology?</p> <p>(EB 55 Annex 1, § 123(a)–(b), 124)</p> <p><i>Assess whether the provided information for all parameters w.r.t.</i></p> <ul style="list-style-type: none"> a) <i>Label (name of the data / parameter)</i> b) <i>data unit</i> c) <i>description</i> d) <i>source of data</i> e) <i>measurement equipment / method / procedure</i> f) <i>monitoring frequency</i> g) <i>QA/QC procedures</i> <p><i>are appropriately described and in compliance with the requirements of the methodology.</i></p>	<p>for electricity generation, Quantity of Electricity supplied by the project activity, internal consumption from the project activity and grid and fixed ex-ante emission factor are the major monitoring parameters contained in the monitoring plan.</p> <p><i>Justification of evidences:</i></p> <p>Sample log sheets for the monitored parameters were verified during the site visit also the validation team verified the actual monitoring plan at the project site.</p> <p><i>Conclusion:</i></p> <p>All parameters are appropriately described in the PDD and in compliance with the requirements of the methodology. However the CAR B8, B9 and B10 has been raised during the validation stage and closed successfully:</p>		B10 & 10.1	
<p>B.6.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology?</p> <p>(EB 55 Annex 1, §§ 123(b), 124)</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.</i></p> <p><i>Please consider that additional equations might be</i></p>	<p><i>Description:</i> Yes, the required formula and the description of the parameters have been described clearly.</p> <p><i>Justification of evidences:</i> Nevertheless refer CAR B8, B9 and B10</p> <p><i>Conclusion:</i> Refer assessment for CAR B8, B9 and B10</p>	/PDD/ /AMS IIQ/	CAR B8, B9 and B10 & 10.1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>necessary to calculate auxiliary parameters.</i>				
<p>B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity?</p> <p>(EB 55 Annex 1, § 124(c))</p> <p><i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i></p>	<p><i>Description:</i> The arrangements can be implemented for the project activity. All the steps described are standard procedures and are well established.</p> <p><i>Justification of evidences:</i> Nevertheless refer CAR B8, B9 and B10</p> <p><i>Conclusion:</i> Refer assessment for CAR B8, B9 and B10</p>	/PDD/ /AMS IIIQ/	CAR B8, B9 and B10 & 10.1	OK
<p>B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified?</p> <p>(EB 55 Annex 1, § 124(b))</p> <p><i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p>	<p><i>Description:</i> All measuring instruments are subject to calibration at suitable intervals. Such instruments are calibrated and sealed. Procedures for internal audit are in place. Data is reviewed at different levels after being recorded before it is submitted to the Top management.</p> <p><i>Justification of evidences:</i> Nevertheless refer CAR B8, B9 and B10</p> <p><i>Conclusion:</i> Refer assessment for CAR B8, B9 and B10</p>	/PDD/ /IM01/	CAR B8, B9 and B10 & 10.1	OK
<p>B.6.6. Are procedures identified for data management?</p> <p>(EB 55 Annex 1, § 124(b))</p> <p><i>Check whether appropriate provisions are considered for data management including responsibilities, what records to</i></p>	<p><i>Description:</i> A Distributed Control System (DCS) monitors and records data continuously. Additionally, manual recording is done in relevant log books. Provision for back up of data in the DCS is made available. Provisions have been made for archiving and preservation of data for a period of 2 years</p>	/PDD/ /IM01/	CAR B8, B9 and B10 & 10.1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>keep, storage area of records and how to process performance documentation</i> <i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i>	beyond the crediting period.			
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>C.1. Is the project's starting date clearly defined and evidenced?</p> <p>(EB 55 Annex 1, § 99)</p> <p><i>Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of CDM terms".</i></p>	<p><i>Description:</i> Copy of the sale purchase agreement the PP and the equipment supplier PT Ometraco Arya Samanta for supply of turbine and Genset was submitted as evidence for proving the date on which the purchase decision of major project equipment was executed. This signifies a near irrevocable commitment to project activity and meets the definition of the starting date in the glossary.</p> <p>However CL C1 has been raised and successfully closed.</p> <ol style="list-style-type: none"> 1. Proof of start date mentioned in C.1 of PDD against what real action clarification is requested. 2. Proof of operational life time of the project activity <p><i>Justification of evidences:</i></p> <p>Copy of the sale purchase agreement the PP and the equipment supplier PT Ometraco Arya Samanta for supply of turbine and Genset</p> <p><i>Conclusion:</i> The project's starting date is clearly defined and evidenced.</p>	<p>/PDD/</p>	<p>CL C1</p>	<p>OK</p>
<p>C.2. Is the project's operational lifetime clearly defined and evidenced?</p> <p><i>Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).</i></p> <p><i>Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial</i></p>	<p><i>Description:</i> The project life time is clearly mentioned in revised PDD.</p> <p>However refer CL C1</p> <ol style="list-style-type: none"> 1. Proof of start date mentioned in C.1 of PDD against what real action clarification is requested. 2. Proof of operational life time of the project activity 	<p>/PDD/</p>	<p>CL C1</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>assessment, if applicable.</i>	<i>Justification of evidences:</i> The evidence of life time information obtained from the technology provider <i>Conclusion:</i> The operational life time of the project activity is between 20-30 years The evidence of life time information obtained from the technology provider by e-mail has been submitted during validation site visit.			
C.3. Is the start of the crediting period clearly defined and reasonable? <i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.</i>	<i>Description:</i> The start date of crediting period is clearly mention in revised PDD. Crediting period start date stated as 01/10/2008 and the validation process is the intermediate stage. Hence the PDD needs appropriate modification in the relevant sections. <i>Justification of evidences:</i> Date mentioned in PDD <i>Conclusion:</i> The starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.	/PDD/	CAR G1	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.</i>				
D.1.1. Are there any Host Party requirements for an	<i>Description:</i> As per Decree of the Minister of the Environment	/PDD/		OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
Environmental Impact Assessment (EIA)? (EB 55 Annex 1, §§ 131–133) <i>Check the host party regulations, regarding EIA.</i>	(MENLH No.11/2006 of the republic of Indonesia, an “Environmental Impact Assessment” is not required for the implementation of the project activity. However CAR D1 has been raised and successfully closed <i>Justification of evidences:</i> Decree of the Minister of the Environment (MENLH No.11/2006 of the republic of Indonesia <i>Conclusion:</i> The project activity requires no AMDAL and will not result in significant impacts to the environment.		CAR D1	
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved? (EB 55 Annex 1, §§ 131–133) <i>Check the EIA and its approval, if applicable.</i>	<i>Description:</i> Refer D.1.1 Not applicable <i>Justification of evidences:</i> <i>Conclusion:</i>		OK	
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? (EB 55 Annex 1, §§ 130–132) <i>Check the PDD (section D). Check whether the project will create any adverse environmental effects.</i> <i>Check the relevant national environmental legislation.</i>	<i>Description:</i> Refer D.1.1 Not applicable <i>Justification of evidences:</i> <i>Conclusion:</i>		OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
D.1.4. Are transboundary environmental impacts considered in the analysis? (EB 55 Annex 1, §§ 131–133) <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i>	<i>Description:</i> No Trans-boundary impact has been envisaged from this project activity. Not applicable		OK	
E. Stakeholder Comments <i>The DOE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>				
E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD? (EB 55 Annex 1, § 128) <i>Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.</i>	<i>Description:</i> A local stakeholders meeting is reported to have been conducted on 05 February 2008 at IRK office. The stakeholders identified are representative from the local environmental agency, the representative from neighbouring industries around IRK in Cikampek Industrial Park, the representative from local community located close to IRK, the representative from State-owned electricity company (PLN), the representative from DNA, the representative from technology provider and the representative from residential area. Information about the proposed project has been given to the participants and their comments have been recorded. No adverse comment is reported to have been received. However CAR has been raised and successfully closed. The process and via media for inviting the stakeholders is missing in section E.1 of PDD.	/PDD/	CAR	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Justification of evidences:</i></p> <p>IRK has informed the Stakeholder Consultation Meeting to the participants by invitation letter dated 31 January 2008".</p> <p><i>Conclusion:</i> Now submitted and revised</p>		E1	
<p>E.2. Can the local stakeholder consultation process be assessed as adequate?</p> <p>(EB 55 Annex 1, § 129(a)–(c))</p> <p><i>Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.</i></p> <p><i>Please consider the following requirements in this context:</i></p> <p>(a) <i>Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</i></p> <p>(b) <i>The summary of the comments received as provided in the PDD is complete;</i></p> <p>(c) <i>The project participants have taken due account of any comments received and have described this process in the PDD.</i></p>	<p><i>Description:</i> The main parameter to assess the adequacy of the stake holder consultation process was the cross section of the society that the invitees represented. The project proponent has sent invitation letters to the relevant stakeholders The meeting was attended by the local population and regulatory authorities. During the meeting the project promoter and consultant explained the various features, benefits and the eco-friendly nature of the project and there is no negative comment received from the stakeholders. Thus, the stakeholder consultation process is considered adequate and satisfactory.</p>	/PDD/	OK	

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification (EB 51 Annex 3, §§ 82 – 85)

<input type="checkbox"/>	Baseline is not identified
<input checked="" type="checkbox"/>	Assessment of baseline see below

Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)
Installation of waste heat based-power plant not as CDM project activity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The implementation of project activity would incur additional investment and involves modification in basic process design	/PDD/ B.5 /ADD/	<input checked="" type="checkbox"/>	It is clearly evident that implementation of this alternative involves additional investment. And also lead to basic process modification and uncertainty of the technology.
Continuous operation by purchasing electricity from grid	<input checked="" type="checkbox"/>	<input type="checkbox"/>	In the absence of the project activity, equivalent amount of power would have been drawn from the grid without any additional investment which is the baseline scenario.	/BAS/	<input type="checkbox"/>	The excess steam would have been let out to atmosphere and continue to use the existing grid facility for meeting the electricity needs with out any additional investment. The baseline for the project activity is the electricity (measured in kWh) produced by the generating unit multiplied by an emission coefficient (tCO ₂ e/GWh) calculated in a transparent and conservative manner. In order to arrive at the baseline scenario, the regional grid (PLN Jamali grid) has been considered, which is conservative and in line with the EB directives in this regard.

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters (EB 51 Annex 3, §§110, 111, 113/ in case financial parameters stem from FSR §112,)

<input checked="" type="checkbox"/>	No financial parameters are used for additionality justification					
<input type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
					<input type="checkbox"/>	

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis (EB 51 Annex 3, § 117)

<input type="checkbox"/>		No barrier parameters are used for additionality justification		
<input checked="" type="checkbox"/>		Assessment of barriers see below		
Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result

<u>Technological Barrier</u>	<p>The design of CS2 plant involves the application of complex chemical and thermodynamics. Practical knowledge and experience of the operating regimes and failure modes of associated equipment is necessary to minimise the risk of equipment failure and plant downtime. The power generation is dependent on the steam generation from the CS2 production process. Any disturbance in the CS2 manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is designed for minimum methane fraction of 91% and CO2 content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO2 content will directly impact the productivity of CS2 process. It demonstrates that the project activity faces the technological barrier. Since IRK is new to gas based technology for CS2 manufacturing, any addition to the process faces the risk which would not exist if IRK continue the current practice</p>	/PDD/ B.5 /ADD/ /IM01/	☒	<p>Waste steam availability and consistency of steam parameters are the most important aspects that can affect the performance of the project activity. Any non-availability of waste steam or inconsistency of key parameters will result in inadequate power generation. Non availability of Waste gas may occur due to functional disturbances of the equipment in the manufacturing facility. The argument of no option of power generation in the basic design of CS2 plant has been checked in the Technical details of the plant provided by Akzo Nobel. And it was anticipated that there would be risk in introduction of power generation. Also it was checked the technical details of CS2 plant in quotation from a Chinese supplier to PP for their company in Thailand. It is evident that there is no power generation option in the technical details from both the suppliers. Also the power generation in the project activity is dependent on the steam generation from the CS2 production process. Any disturbance in the CS2 manufacturing process adversely affects the waste heat generation consequently affecting the steam and power generation. The plant is designed for minimum methane fraction of 91% and CO2 content < 1%. Any deterioration in gas quality i.e drop in methane fraction and increase in CO2 content will directly impact the productivity of CS2 process. The variation in composition of gas is checked with the test reports and the corresponding months steam generation and the CS2 production were checked and found the variation in steam generation. Hence the project activity has the only alternative to let the waste steam to the atmosphere and continues to use the grid for meeting the electricity demand. Since the grid involves lower risks in terms of the performance uncertainty of the plant which in turn would have led higher emission. In this context the argument found to be justified and a decisive barrier.</p>
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<u>Barrier due to prevailing practice</u>	<p>Most of industrial facilities depend on electricity supply from PLN Jamali grid to fulfill the electricity requirements for their plant. Based on PLN statistics 2006 which is published by PT. Perusahaan Listrik Negara/PLN (State owned electricity company), a large amount of 93.69% of electricity exported from PLN Jamali grid is consumed by industrial facilities compared to others consumers such as households, business, social, government office and public facilities. The practice to import the electricity from PLN grid is well known and is a common practice in industries. Based on the BPS-Statistics Indonesia, a Non-Departmental Government Institution, IRK is the only CS₂ plant in Indonesia. Therefore, IRK is the first initiative taken to generate the electricity from waste heat in CS₂ facility.</p>	<p>/PDD/ B.5 /ADD/</p>	<input checked="" type="checkbox"/>	<p>Barriers due to prevailing practice has been justified that the around 93% of electricity from PLN Jamali grid was consumed by the industries compared with other consumers and also it can be inferred from the BPS-Statistics Indonesia, a Non-Departmental Government Institution that the only CS₂ manufacturing facility in Indonesia the argument found to be justified and also a significant barrier. The same has been verified with the document ^{/ADD/} provided by the project participant.</p>
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<u>Institutional Barrier</u>	<p>The project faces institutional barrier due to a lack of relevant experiences. PT. Akzo Nobel Satindo was taken over by PT. Indo Bharat Rayon in the year 2003 under the name of PT. Indo Raya Kimia. Prior to this, PT. Indo Bharat Rayon did not have any experience of operating gas based CS₂ plant.</p> <p>Other CS₂ plant supplier from China has given the offer to Thai Rayon Public Company Limited under Aditya Birla Group. In the offer, there is not mentioned of utilization of waste heat from CS₂ plant for power generation.</p>	<p>/PDD/ B.5 /ADD/</p>	<input checked="" type="checkbox"/>	<p>PT. Akzo Nobel Satindo was taken over by PT. Indo Bharat Rayon (Aditya Birla Group) in the year 2003 in the name of PT. Indo Raya Kimia. Prior to this, the group did not have any experience of operating gas based CS₂ plant. Even operation of gas based power plant itself is new and also power generation utilizing waste steam in gas based CS₂ Plant. Also a technology supplier from china for gas based CS₂ plant did not offer with the provision of utilisation of waste steam for power generation to the project participant for their plant in Thailand. The same has been verified with the offer^{/ADD/} provided by the supplier to the PP. for The institutional barrier argument based on lack of experience in operating gas based plants were justified and not a decisive barrier.</p>
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ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process
(§§ 40-42, VVM Version 1.2)

<input checked="" type="checkbox"/>	No comments were received during the global stakeholder consultation period					
<input type="checkbox"/>	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:					
Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Action taken by the validation team to take due account on the comment *)	Conclusion (incl. CARs CLs or FARs)

In case clarifications have been requested by the validation team corresponding rows shall be added

ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL

 CERTIFICATE OF APPOINTMENT Mr. B. J. Mohinder Amarnath born on 1975-07-29 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD CDM Lead Assessor The present appointment will terminate on 2013-06-21 Certification registration No. 10 06 06 – 53 rev1 Essen, 2010-06-22  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>	 CERTIFICATE OF APPOINTMENT Mr. K. V. Sudarshan born on 1952-04-15 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD CDM Lead Assessor The present appointment will terminate on 2013-08-11 Certification registration No. 10 08 01 – 78 rev1 Essen, 2010-08-12  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>	 CERTIFICATE OF APPOINTMENT Mr. Pankaj Mohan born on 1976-12-26 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD JI/CDM Lead Assessor The present appointment will terminate on 2013-01-27 Certification registration No. 10 01 02 – 150 rev1 Essen, 2010-01-28  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>
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<div><p>CERTIFICATE OF APPOINTMENT</p><p>Ms. Ellys Simamora</p><p>born on 1975-10-01</p><p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as</p><p>TÜV NORD CDM Assessor</p><p>The present appointment will terminate on 2013-06-13 Certification registration No. 10 06 03 – 111 rev1</p><p>Essen, 2010-06-14</p><p> Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</p></div>	<div><p>CERTIFICATE OF APPOINTMENT</p><p>Mr. Martin Saalmann</p><p>born on 1976-02-23</p><p>satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as</p><p>TÜV NORD JI/CDM Senior Assessor</p><p>The present appointment will terminate on 2013-03-31 Certification registration No. 10 04 01 – 22</p><p>Essen, 2010-04-01</p><p> Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</p></div>	<div><p>Statement of Competence <small>Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program</small></p><p>Mr. Rainer Winter</p><table border="1"><thead><tr><th>SCHEME</th><th>STATUS</th><th>VALID UNTIL</th></tr></thead><tbody><tr><td>CDM</td><td>Senior Assessor</td><td>2013-07-03</td></tr><tr><td>Validation, Verification</td><td>Senior Assessor</td><td>2013-07-03</td></tr><tr><td>J1</td><td>Senior Assessor</td><td>2013-07-03</td></tr><tr><td>VCS</td><td>Senior Assessor</td><td>2013-07-03</td></tr></tbody></table><p><small>Authorization status for technical areas within sectoral scopes:</small></p><table border="1"><thead><tr><th>CODE</th><th>TECHNICAL AREA</th></tr></thead><tbody><tr><td>1.1</td><td>Thermal Energy Generation</td></tr><tr><td>1.2</td><td>Renewable Energies</td></tr><tr><td>4.1</td><td>Cement Sector</td></tr><tr><td>4.3</td><td>Iron and Steel</td></tr><tr><td>4.5</td><td>Waste Heat Recovery</td></tr><tr><td>5.1</td><td>Chemical Process Industries</td></tr><tr><td>9.1</td><td>Metal Production</td></tr><tr><td>11.1</td><td>Chemical Process Industries</td></tr><tr><td>11.2</td><td>GHG Capture and Destruction</td></tr><tr><td>12.1</td><td>Chemical Process Industries</td></tr><tr><td>13.1</td><td>Waste Handling and Disposal</td></tr></tbody></table><p>003 – Rev. 3, Date: 2011-04-21</p><p><small>003_B01-F008_2011-04-21_jw3 001-F008 rev0 / 2010-04-19</small></p></div>	SCHEME	STATUS	VALID UNTIL	CDM	Senior Assessor	2013-07-03	Validation, Verification	Senior Assessor	2013-07-03	J1	Senior Assessor	2013-07-03	VCS	Senior Assessor	2013-07-03	CODE	TECHNICAL AREA	1.1	Thermal Energy Generation	1.2	Renewable Energies	4.1	Cement Sector	4.3	Iron and Steel	4.5	Waste Heat Recovery	5.1	Chemical Process Industries	9.1	Metal Production	11.1	Chemical Process Industries	11.2	GHG Capture and Destruction	12.1	Chemical Process Industries	13.1	Waste Handling and Disposal
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