



# VALIDATION REPORT

LANCO KONDAPALLI POWER PRIVATE  
LIMITED

GRID CONNECTED ELECTRICITY GENERATION  
USING NATURAL GAS BY LANCO KONDAPALLI  
POWER PRIVATE LIMITED

**Report No: 8106514850-10/86**

**Date: 2012-09-04**

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<b>Validation Report:</b>	<b>Report No.</b> 8106514850-10/86	<b>Rev. No.</b> 0	<b>Date of 1<sup>st</sup> issue:</b> 2012-03-01	<b>Date of this rev.</b> 2012-09-04
<b>Project:</b>	<b>Title:</b> <i>Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited</i>		<b>Initial PDD Version:</b> 20/01/2010	<b>Final PDD Version</b> 18/04/2011
<b>Client:</b>	Lanco Kondapalli Power Private Limited		<b>Client ref:</b>	Mr. Rakesh Gupta
<b>Project Participant(s):</b>	<b>Host Party:</b> India		<b>Other involved parties:</b> NA	
<b>Applied methodology/ies:</b>	<b>Title:</b> Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas		<b>No.:</b> AM0029 ver. 3	<b>Scope / TA:</b> 1 / 1.1
<b>Validation team / Technical Review and Final Approval</b>	<b>Validation Team:</b> Mr. Pankaj Patel (TL)    Mr. Sanjay Kandari (TM) Mr. Hemang Shah (TM) Mr. Saroj Sahoo (TM) Mr. Indrapal Parmar (TM)		<b>Technical review:</b> Stefan Winter Alexander Richter David Lubanga	<b>Final approval:</b> Mr. Stefan Winter
<b>Expected Emission reductions: [t CO<sub>2</sub>e]</b>	<b>Expected emission reductions over the first crediting period:</b> 8,301,330 t CO <sub>2</sub> e		<b>Project starting date:</b> 2008-02-01	
<b>Confidential content:</b>	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
<b>Summary of Validation Opinion:</b>	<input checked="" type="checkbox"/> Positive validation opinion		<input type="checkbox"/> Negative validation opinion	
<p>In detail the conclusions can be summarised as follows:</p> <p><input checked="" type="checkbox"/> The project is in line with all relevant host country criteria (India) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of India vide the Letter of Approval (HCA) dated 18/06/2010 from DNA of India.</p> <p><input checked="" type="checkbox"/> The project additionality is sufficiently justified in the PDD.</p> <p><input checked="" type="checkbox"/> The monitoring plan is transparent and adequate.</p> <p><input checked="" type="checkbox"/> The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 8,301,330 t CO<sub>2</sub>e tCO<sub>2</sub>e are most likely to be achieved within the fixed crediting period.</p> <p><input checked="" type="checkbox"/> 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

<b>BAU</b>	Business as usual
<b>CA</b>	Corrective Action / Clarification Action
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reduction
<b>CL</b>	Clarification Request
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent
<b>CCPP</b>	Combined Cycle Power Plant
<b>CP</b>	Certification Program
<b>DNA</b>	Designated National Authority
<b>EB</b>	CDM Executive Board
<b>EIA</b>	Environmental Impact Assessment
<b>FAR</b>	Forward Action Request
<b>GHG</b>	Greenhouse gas(es)
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>LKPPL</b>	Lanco Kondapalli Power Private Limited
<b>LUCE</b>	Levelized Unit Cost of Electricity
<b>MMSCMD</b>	Million Standard Cubic meters per day
<b>PDD</b>	Project Design Document
<b>QC/QA</b>	Quality control/Quality assurance
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	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<sup>VVM</sup>, 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.

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	Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited		
Project size	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale		
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/>	1	Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/>	2	Energy distribution
	<input type="checkbox"/>	3	Energy demand
	<input 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	AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas - Version 3.0		
Technical Area(s)	1.1 Thermal energy generation		
Crediting period	<input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (10 y)		
Start of crediting period	Date of registration or 31/03/2012, whichever is 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	India	Lanco Kondapalli Power Private Limited
Other involved party/ies	NA	NA

## 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	India
Region:	Andhra Pradesh
Project location address:	Village – Kondapalli, District – Krishna, Andhra Pradesh, India
Latitude:	16°38'30.10 " N
Longitude:	80°33'5.33" E

## 2.4 Technical Project Description

The project activity is an installation of 366 MW Combined Cycle Power Plant (CCPP) consisting the Brayton Cycle at the top and the Rankine cycle at the bottom of the CCPP using natural gas as a fuel. The project proposes to employ state of the art technology with estimated project life of 20 years. There is no technology transfer in this project activity. The table below provides the details of main equipments of the power plant.

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

**Table 2-4:** Technical data of the project activity

Parameter	Value
GTG (Gas Turbine Generator)	Make : GE, USA GTG is of advanced class industrial heavy-duty type (Model 9FA) with dry low NO <sub>x</sub> technology capable of operating in combined cycle mode, Nominal output capacity: 234 MW at site conditions (Dry Bulb Temperature - 32 deg. C; Design Wet Bulb Temperature - 25 deg. C; Relative Humidity (RH) = 70%)
STG (Steam Turbine Generator)	Make: Harbin, China One steam turbine generator of output capacity 132 MW at site condition (Dry Bulb Temperature - 32 deg. C; Design Wet Bulb Temperature - 25 deg. C; Relative Humidity (RH) = 70%)
HRSG (Heat Recovery Steam Generator)	Make: : Thermax , India Capacity: : HP/IP/LP Flow 282.79/ 42/34.26 TPH; temperature 567.3/567/286.6 Deg C ; pressure





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Parameter	Value
	98.47/22.4/3.1 Bar

### 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	27/01/2010
Submission of PDD for global stakeholder commenting process	12/03/2010
On-site visit	27/04/2010-28/04/2010
Draft reporting finalised	10/05/2010
Final reporting finalised	2012-09-03
Technical review on final reporting finalised	2012-09-04

## 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, consisting of one team leader and 04 additional team members, as well as the Technical Review personnel were appointed.

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 <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Host country Competence	Team Leading Competence	On-site Visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Pankaj Patel	TUV-India	TL <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Hemang Shah	TUV-India	TM <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	1.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Saroj Sahoo	TUV-India	TM <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Indrapal Parmar	TUV-India	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Sanjay Kandari	TUV-India	TM <sup>A)</sup>	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	David Lubanga	TÜV NORD CERT GmbH	OR <sup>B)</sup>	T	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	-

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Host country Competence	Team Leading Competence	On-site Visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Alexander Richter	TÜV NORD CERT GmbH	TR <sup>B)</sup>	LA	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Stefan Winter	TÜV NORD CERT GmbH	TR <sup>B)</sup> / FA <sup>B)</sup>	SA	<input checked="" type="checkbox"/>	1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-

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

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

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

In order to qualify further personnel the project team was accompanied by observers and/or trainees as indicated in the table above. They are usually not considered as team members.

Statements of competence 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.

<b>Validation Protocol Table A-1: Requirement checklist</b>				
<b>Checklist Item</b>	<b>Validation Team Comment</b>	<b>Reference</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<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 sub-divided 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 a site visit 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
1. Project proponent representatives: Lanco Kondapalli Power Private Limited /IM01/ 2. Project consultant: /IM02/ 3.	<ul style="list-style-type: none"> <li>- Chronological description of the project activity with documents of key steps of the implementation.</li> <li>- Current status of plant design</li> <li>- Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project</li> <li>- Host Country Approval</li> <li>- Approval procedures and status</li> <li>- Monitoring and measurement equipment and system.</li> <li>- Financial aspects</li> <li>- Crediting period</li> <li>- Project activity starting date</li> <li>- CER allocation / ownership</li> <li>- Baseline study assumptions</li> <li>- Additionality</li> <li>- Sustainable development issues</li> <li>- Monitoring</li> <li>- Analysis of local stakeholder consultation</li> <li>- Roles &amp; responsibilities of the project participants w.r.t. project management, monitoring and reporting</li> <li>- National Legislation</li> <li>- Editorial issues of the PDD</li> </ul>

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 <sup>1)</sup>	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	02	00	00
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	22	10	00
Duration of the Project / Crediting Period (C)	00	00	00
Environmental impacts (D)	00	00	00
Stakeholder Comments (E)	00	00	00
<b>SUM</b>	<b>24</b>	<b>10</b>	<b>00</b>

<sup>1)</sup> The letters in brackets refer to the validation protocol

**Table 4-2:** PDD versions used for assessments

Version Number.	Assessment Round
PDD v. 01 (Published)	Initial Findings
PDD v. 02	DOE Assessment #1
PDD v. 03	DOE Assessment #2
PDD v 04 (Final)	DOE Assessment #2

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.

General	A1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Host Country Approval is yet to be submitted to DOE.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The project proponent has received the Host Country Approval. The approval is enclosed as Annexure - 1 to this document.		
<b>DOE Assessment #1</b> <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>	Host Country Approval dated 18/06/2010 is submitted to DOE. Validation team has verified the same and confirmed that the project implementation is a voluntary participation.  CAR is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

General	A2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Quantity and period of Gas supply and gas transmission agreement is not specified in the PDD under section A.4.3		

General	A2
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Section A.4.3 has been revised in the PDD to incorporate the quantity and period of the gas supply and transportation agreement.</p>
<b>DOE Assessment #1</b> <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>Quantity of gas supply by RIL is not specified in MMCMD in addition to MMBTU for easy correlation with the total requirement of the gas by the project activity. CAR is open</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The gas quantity has been specified in the PDD (section A.4.3) in terms of MMBTU per day. This is in accordance with the Gas Transportation Agreement (GTA) with RGTIL which stipulates the gas quantity in similar unit i.e. MMBTU per day. The relevant agreements are enclosed as Annexure - 2a &amp; Annexure 2b to this report.</p> <p>In the revised PDD, however, the estimated gas consumption has been mentioned in MMBTU per day along with MMSCMD. This will enable to draw a comparison between gas supply available to the project activity and the estimated gas consumption.</p>
<b>DOE Assessment #2</b> <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>Section A.4.3 of the PDD is revised to incorporate required details of gas consumption in similar units for better comparison. Same is checked by the validation team and is correct.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.2, references are not mentioned in the PDD to support the details provided in justification for applicability criteria 3.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Section B.2 in the PDD has been revised to incorporate all the references that justify the applicability criteria 3.</p>

General	B1
<b>DOE Assessment #1</b> <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>Various values of gas availability in the region is referred from <a href="http://petroleum.nic.in/ng.htm">http://petroleum.nic.in/ng.htm</a> Ministry of petroleum and natural gas web site and same is now incorporated in the PDD. Values are checked by the validation team and confirmed that the values are correct.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B2
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.3, in project boundary it is stated that the "Electricity supply to PGCIL grid through substation" same is required to be corrected w.r.t PGCIL grid or Southern region grid. Also in table -1 emission sources covered by the project activity is not in line with the approved methodology AM 0029 ( page 4/14)</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The project boundary as stated is section B.3. of the PDD has been revised accordingly.</p> <p>The table 1 (i.e. Overview of emissions sources included in or excluded from the project boundary) under section B.3. has been revised in line with the approved methodology AM0029, version-03.</p>
<b>DOE Assessment #1</b> <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>Project boundary under section B.3 is revised. However for corrections in table 1 is not identified.</p> <p>All the corrections made should be done in track change mode to identify the corrections made.</p> <p>Moreover geographical coordinates of the project activity as stated in the PDD is not correct.</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The table 1 (i.e. Overview of emissions sources included in or excluded from the project boundary) under section B.3. has been revised in line with the approved methodology AM0029, version-03.</p> <p>All the revisions in table 1 of the PDD have been highlighted in track mode.</p>

General	B2
<b>DOE Assessment #2</b> <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>Necessary corrections are made in table-1 of the revised PDD is in conformity with the applied methodology. Geographical coordinates are corrected and verified by validation team.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B3
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.4, details provided for potential baseline alternatives under table at sr no 8 – New power plant based on nuclear power states that it is permitted by the regulations, however in the analysis it is stated that nuclear power generation is not available to private investor. Necessary corrections are required w.r.t prevailing regulations in India.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The section B.4. of the PDD has been revised stating that new power plant based on nuclear power is not available to a private investor and hence excluded as a baseline option.</p>
<b>DOE Assessment #1</b> <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>Same is now corrected appropriately in the PDD based on the regulations prevailing in India. Validation team has verified the same and confirmed that nuclear power plant cannot be installed by the private parties.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B4
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR

General	B4
<p><b>Description of finding</b></p> <p><i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i></p>	<p>The web hosted PDD does not seem to conform to the methodology AM 0029in as much as</p> <ul style="list-style-type: none"> <li>a) The investment analysis does not seem to have been presented in a transparent manner with all relevant assumptions, so that a reader can reproduce the analysis and obtain the same results.</li> <li>b) Assumptions do not seem to have been justified or cited in a manner that can be validated by the DOE;</li> <li>c) Though the CV of Coal and also the cost differs between sub-critical and super-critical technology plant, the difference is not well substantiated in the web hosted PDD;</li> </ul>
<p><b>Corrective Action #1</b></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"> <li>a. All the assumptions as considered in the financial model along with the references have been presented in the revised PDD, Appendix - 03.</li> <li>b. All the input values in the assumption of the financial calculation have been sourced from either the Detailed Project Report (DPR), as prepared by FICHTNER Consulting Engineers (India) Pvt Ltd , Chennai in October, 2007 or information sources available in the public domain. The relevant section of the DPR has already been submitted to the DOE. The relevant web-links have been provided in the financial model for the parameters not referred to the DPR.</li> <li>c. The type of coal used for the two technologies, sub-critical &amp; super-critical power plants is different. While in former it is the domestic coal with low calorific value and low cost has been considered, for latter, the calorific value and cost corresponds to that of imported coal. This underlying reason has been substantiated in the financial model shared with DOE and also in the Appendix – 03 of the PDD.</li> </ul>
<p><b>DOE Assessment #1</b></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>CAR questions the webhosted PDD and not revised PDD. As per the Methodology, "The investment analysis should be presented in a transparent manner and all the relevant assumptions should be provided in the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results". From the information given in the web hosted PDD, it does not appear that a reader can reproduce the analysis and obtain the same results.</p> <p>Even now, only one page of the DPR and two pages of Offshore agreement for parts supply and repair services have been submitted. DOE requires the full report without any omission or commission.</p> <p>It is not clear as to why imported coal should be used for super critical plants when there are plants in India which have proposed super critical power plants with domestic coal. The explanation that the super critical plants require superior quality of coal is not borne by the experience of DOE.</p>

General	B4
<b>Corrective Action #2</b>	<p>a. All the assumptions as considered in the financial model along with the references have been presented in the revised PDD, Appendix - 03.</p> <p>b. All the input values in the assumption of the financial calculation have been sourced from either the Detailed Project Report (DPR), as prepared by FICHTNER Consulting Engineers (India) Pvt Ltd, Chennai in October, 2007 or information sources available in the public domain. The DPR has already been submitted to the DOE. The relevant web-links have been provided in the financial model for the parameters not referred to the DPR.</p> <p>c. The alternative section pertaining to coal based power plant using super critical technology has been revised. As per the revision the same alternative has been further sub-categorised as per type of fuel i.e. domestic and international coal. The relevant sections of the PDD have been revised accordingly.</p>
<b>DOE Assessment #2</b>	<p>a. PDD is revised to include all input parameters considered for financial calculations. Same is reviewed by validation team. Assessment of input parameters is provided in table-3 of this report. CAR is closed.</p> <p>b. Basis of assumption i.e. detailed project report (DPR) is submitted to DOE. Same is verified and confirmed that the input values are sourced from the DPR. CAR is closed</p> <p>c. PDD is revised to include the supercritical technology using domestic coal is included in alternative section CAR is closed</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B5
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	The entire write up of Section B.5 does not seem to conform to Additionality Tool at all.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the</i>	The section B.5 "Assessment And Demonstration Of Additionality" has been developed in accordance with the guideline recommended in AM0029, version -03 and "Tool For The Demonstration And Assessment Of Additionality", version – 05.2.1



<p><i>corrective action taken in details.</i></p>	<p>The following key aspects have been presented in section B.5. in the revised PDD.</p> <ol style="list-style-type: none"> <li>1. Justification of prior consideration of CDM by LKPPL as per the "Guidance On The Demonstration And Assessment Of Prior Consideration Of CDM" (EB 62, Annex 13).</li> <li>2. Step 1 (As per AM0029, version - 03): Benchmark investment analysis using sub-steps 2b (Option III: Apply benchmark analysis), sub-step 2c (Calculation and comparison of financial indicators), and 2d (Sensitivity Analysis) of "Tool For The Demonstration And Assessment Of Additionality", version - 05.2.1</li> <li>3. Step 2 (As per AM 0029, version - 03): Common practice analysis by applying Step 4 (common practice Analysis) of "Tool For The Demonstration And Assessment Of Additionality", version - 05.2.1</li> <li>4. Step 3 (As per AM 0029, version - 03): Impact of CDM registration by applying Step 5 (Impact of CDM registration) of "Tool For The Demonstration And Assessment Of Additionality", version - 05.2.1.</li> <li>5. In addition, substantiation with regard to the suitability of the financial indicator and also the applied benchmark has been provided in Sub-step 2(b): Benchmark Analysis (Option III) of the revised PDD.</li> </ol> <p>The discussion presented above demonstrates that the section B.5. of the PDD has been presented in accordance with the guideline provided in the AM0029, version -03 and "Tool for the demonstration and assessment of additionality", version - 05.2.1</p>
<p><b>DOE Assessment #1</b></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 section B.5 of the PDD has been revised. Details explained in relevant section of the PDD adheres to the guideline recommended in the approved methodology AM0029, version -03 and also the related section of the additionality tool.</p> <p>CAR is closed.</p>
<p><b>Conclusion</b></p> <p><i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B6		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



General	B6
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Step 1 of the Methodology states, "Demonstrate that the proposed CDM project activity is unlikely to be financially attractive by applying Sub-steps 2b (Option III: Apply benchmark analysis), Sub-step 2c (Calculation and comparison of financial indicators), and 2d (Sensitivity Analysis) of the latest version of the "Tool for demonstration assessment and of additionality" agreed by the CDM Executive Board". However, the project additionality has not been demonstrated using benchmark analysis.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Kindly refer to the response to the finding above. Further, Section B.5 of the PDD has been revised wherein the project additionality has been demonstrated applying benchmark analysis (i.e. Sub-step 2b, option - III).</p> <p>In addition, further substantiation has been provided in the revised PDD to justify the suitability of the financial indicator and the applied benchmark as considered in this regard.</p>
<b>DOE Assessment #1</b> <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 section B.5 of the PDD has been revised. Project additionality has been demonstrated using benchmark analysis in the revised PDD. Details explained in relevant section of the PDD adheres to the guideline recommended in the approved methodology AM0029, version -03 and also the related section of the additionality tool.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B7
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>While calculating the levelised cost for Lignite, heat rate is taken from CERC web site and fuel cost is taken from GERC web site which is not correct. Same source of information should be used for calculating levelised cost.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Please refer to paragraph - 6 of the guideline on the assessment of investment analysis which stipulates the following guideline to justify the input values for the investment analysis:</p> <p><i>"Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing. The DOE should also validate that the listed input values have been consistently applied in all calculations."</i></p>

	<p>The invest approval accorded to the present project activity vide Board meeting dated 15th October, 2007.</p> <p>The reference documents evidencing :</p> <ol style="list-style-type: none"><li>1. the heat rate of the lignite power plant available on <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a> ; dated 26th March, 2004) and</li><li>2. the cost of lignite available on <a href="http://www.gercin.org/docs/Orders/Nonconv%20orders/Year%202007/order%201-2007.pdf">http://www.gercin.org/docs/Orders/Nonconv%20orders/Year%202007/order%201-2007.pdf</a>; dated 3rd January, 2007</li></ol> <p>were both was available at the time of investment decision taken by the project participant.</p> <p>Hence the applicability of heat rate and the cost of fuel of lignite based alternative remain justified from the aspect of timeline of investment decision making process.</p> <p>Further, heat rate is a parameter that determines the energy conversion rate (thermal to electrical and vice-versa) and is related to the efficiency of the equipment (e.g. turbine generator) and the power plant as a whole. Heat rate does not have any correlation with the quality of fuel used and the related fuel cost. Hence referring the heat rate and cost of fuel of lignite based alternative from two different sources does not lead to any kind of inconsistency in the computation.</p> <p>In this regard please note that the input values pertaining to Net Calorific Value (NCV) of lignite and the cost of fuel is directly related and they have been evidenced from the similar source (<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>).</p>									
<p><b>DOE Assessment #1</b></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>Though both the documents are available at the time of decision making, clarification is required why fuel cost is taken from GERC and not from CERC.</p>									
<p><b>Corrective Action #2</b></p>	<p>The input parameters pertaining cost and NCV of fuel have been revised in the estimation of levelised cost of generation of lignite based alternative. The following revisions have been incorporated in the PDD</p> <table><tr><th>Sr. No</th><th>Revision</th><th>Reference</th></tr><tr><td>1.</td><td>Cost of lignite has been considered as INR 0.80 per kg.</td><td>CEA expert committee report on fuel for power generation; page 4 of 17</td></tr><tr><td>2.</td><td>The NCV of lignite has been considered as 2800 kCal per</td><td>CEA expert committee report on fuel for power generation; page 4 of</td></tr></table>	Sr. No	Revision	Reference	1.	Cost of lignite has been considered as INR 0.80 per kg.	CEA expert committee report on fuel for power generation; page 4 of 17	2.	The NCV of lignite has been considered as 2800 kCal per	CEA expert committee report on fuel for power generation; page 4 of
Sr. No	Revision	Reference								
1.	Cost of lignite has been considered as INR 0.80 per kg.	CEA expert committee report on fuel for power generation; page 4 of 17								
2.	The NCV of lignite has been considered as 2800 kCal per	CEA expert committee report on fuel for power generation; page 4 of								

	kg	17
The relevant section of the PDD has been revised accordingly.		
<b>DOE Assessment #2</b> <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>For calculation of levelised cost for Lignite fuel cost and NCV is now correctly sourced from the central electricity Authority (CEA) which is conservative than the different type of sources considered by the PP earlier. Also CEA data is valid and available at the time of decision making.</p> <p>CAR is closed.</p>	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed	

General	B8										
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR								
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Justification is required for considering heat rate of 1850 kcal/kWh. In the PDD it is stated that it is derived from the DPR. Basis of consideration in DPR may be explained. (As per CERC tariff order heat rate for gas based power plant is 1950 kcal/kWh.). Accordingly "values applied" and "source of data used" under section B.6.2 against parameter Station Heat Rate of the project activity should be corrected.</p>										
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The heat rate value (1850 kCal / kWh) as considered in the PDD has been sourced from the Detailed Project Report (DPR) that was prepared by a third party consultant (FICHTNER Consulting Engineers (India) Pvt Ltd. Chennai, India).</p> <p>The CERC tariff order dated 26th March, 2004 (<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>) has stipulated the heat rate of a combined cycle gas based power plant at 1950 kCal / kWh.</p> <p>The heat rate considered in the PDD is lower than that specified in the CERC tariff order. Since heat rate is inversely proportional to efficiency of the power plant, a lower value of heat rate will improve the economic attractiveness of the project activity. A comparison of levelized cost of generation as estimated using the two different heat rate values is presented in the table below:</p> <table border="1"> <thead> <tr> <th>Sl.No.</th><th>Source</th><th>Heat Rate (kCal/kWh)</th><th>Levelized Cost of Generation (INR/ kWh)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>DPR</td><td>1850</td><td>2.74</td></tr> </tbody> </table>			Sl.No.	Source	Heat Rate (kCal/kWh)	Levelized Cost of Generation (INR/ kWh)	1.	DPR	1850	2.74
Sl.No.	Source	Heat Rate (kCal/kWh)	Levelized Cost of Generation (INR/ kWh)								
1.	DPR	1850	2.74								

	2.	CERC Tariff Order, Dated 26th March, 2004	1950	2.83
	Hence it is quite evident from the discussion presented above that a conservative approach has been followed to ascertain the applicable heat rate of the project activity.			
<b>DOE Assessment #1</b> <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>	As the Heat rate is sourced from the Detailed project report ( DPR/FSR) and is conservative it is accepted. OK  CAR is closed.			
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

General	B9		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Landed cost of gas at Rs.231.70/MMbtu appears to be very high compared to other projects validated by DOE. Since the project has been in operation since 2000, a copy of the invoice at the time of decision making should be submitted as evidence to substantiate the cost.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The DOE seems to refer to Phase – I of the project here. The Phase-II has been developed in a separate project with a fresh investment analysis and approval.</p> <p>The price of gas has been determined as per the DPR that has been prepared by a third party consultant viz. FICHTNER Consulting Engineers (India) Pvt Ltd , Chennai, in October, 2007.</p> <p>Further, LKPPL has executed the Gas Supply &amp; Transportation Agreements with Reliance Industries Limited (RIL) and Reliance Gas Transportation Infrastructure Limited (RGTEL) respectively. The landed cost of gas has been estimated at 239.60 INR/MMbtu as per the actual agreement.</p> <p>The fuel cost estimation work sheet as per the actual agreements is enclosed as Annexure - 3 to this document.</p>		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open</i>	DOE is not referring to Phase I. It is referring to Phase II only. It seeks information on the NG cost based on Phase I, which seems to be operating since 2000. Hence, it should be possible for the PP/Consultant		

<p><i>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>to provide NG cost based on phase I operation. This document should be submitted to DOE.</p> <p>Moreover, calculations on NG cost have been provided. DOE has following clarification thereon:</p> <ul style="list-style-type: none"> <li>• It is not clear as to how the cost of \$4.32 was arrived at;</li> <li>• Detailed calculation sheet based on Gas Transportation Agreement for both gas transportation cost and monthly rental for gas transportation with reference page no. needs to be submitted.</li> <li>• The assumption of 1.49 MMBtu/month does not appear to be correct as the total requirement of project activity is 556.3 SCM or 22.07 MMBtu for the entire year, which translates into 1.84 MMBtu/month.</li> <li>• Service tax has been added at #0.12 for transportation cost of \$0.39 which works out to 30.7% and does not appear to be correct</li> <li>• It is not clear to which period the exchange rate pertains to</li> </ul>
<p><b>Corrective Action #2</b></p>	<p>Phase-I of the power plant is not a part of the project boundary. Further, for Phase-I, the gas supplier is Gas Authority of India Limited (GAIL). GAIL is the responsible entity for both supply and transportation of natural gas for Phase I.</p> <p>For the project activity, the natural gas is being supplied through RIL and transported through RGTIL. There would be no correlation between the fuel cost of the present project activity that of Phase I.</p> <p>The point-wise responses to bullet points above are as follows:</p> <p><b><u>Cost of \$4.32:</u></b></p> <p>It has been referred in the actual gas price estimation work sheet (Annexure -3) that supply cost of gas (4.32 USD per MMBTU) has been sourced from the Gas Supply Agreement (GSA) dated 29th August, 2009. Exhibit -2 of the GSA specifies the formulae to determine the gas price. As per the formulae the gas price has been estimated at USD 4.20 per MMBTU.</p> <p>The Exhibit – 2 of the GSA also indicates that “Marketing Margin” has been estimated at USD 0.135 per MMBTU.</p> <p>In this regard would also like to refer to the decision (dated 13th September, 2007) by the Empowered Group of Ministers (EGOM) on the gas pricing. The relevant document is enclosed as Annexure – 3a to this reply.</p> <p>Taking into account both the components the supply cost of gas has been ascertained at USD 4.335 per MMBTU.</p> <p>Scanned copy of the relevant section of the GSA (Exhibit 2: Page no 43 of 54) is enclosed as Annexure 3b to this report.</p>

<b>Calculation sheets</b>			
<p>Detailed gas pricing work sheet with reference to the relevant section of gas supply agreement and gas transportation agreement has been submitted to the DOE.</p> <p>Reference to the gas transportation cost and monthly rental cost for dedicated gas transportation network with relevant page no of the respective agreements is as follows:</p>			
<b>Sr. No</b>	<b>Parameter</b>	<b>Value</b>	<b>Reference</b>
1.	Gas transportation cost as per the GTA dated 23 <sup>rd</sup> September, 2009	16.65 INR per MMBTU	GTA (page no 54 of 79). As per the agreement the transportation cost has been estimated at INR 15/ MMBtu on GHV (Gross Heating Value)basis. The same has been converted to NHV (Net Heating Value) applying a multiplication factor of 1.11. The transportation cost on NHV basis has been estimated at INR 16.5 / MMBtu. The scanned copy of the relevant section of the GTA is enclosed as Annexure – 3c to this report.
2.	Gas transportation cost (rental) for the dedicated line as per GTA dated 23 <sup>rd</sup> September, 2009. (For first five years)	INR 12.65 Million per Month	GTA (page no 17 of 70). The scanned copy of relevant section of GTA is enclosed as Annexure – 3d to this report
3.	Total quantum of gas (in MMBTU) transported per month through the dedicated transportation line.	<p>Firm basis – 46929 MMBTU per day.</p> <p>Fall back basis – 5071 MMBTU per day.</p> <p>This will result into 52000 MMBTU per day and 1.56 million MMBTU per month (considering month @30 days).</p>	<p>Firm contract: Amendment to Gas Transportation Agreement with RGTIL dated 24<sup>th</sup> November, 2009. The same document is enclosed as Annexure – 2a to this report.</p> <p>Fall back contract: Side letter for interim MDQ dated 27<sup>th</sup> June, 2010 issued by RGTIL. The same is enclosed as Annexure – 2b to this report.</p>



	<p>Please refer to Annexure – 3 (Fuel cost estimation) of this report. The worksheet viz. “Dedicated line_Monthly MMBTU” provides the detailed calculation to arrive at the total quantity of gas transported through the dedicated transportation line per month.</p> <p><b><u>Assumption of 1.49 Million MMBTU/month</u></b></p> <p>Thermal quantity of gas contracted is 46929 MMBTU per day (Firm basis) and 5071 MMBTU per day (Fall back basis) by LKPPL. This will result into 1.56 million MMBTU of gas per month (month @30 days). Accordingly the total quantity of gas transported through dedicated line has been revised as 1.560 Million MMBTU per Month.</p> <p><b><u>Service tax</u></b></p> <p>Service tax has been added at 12.24% upon the entire transportation cost (USD 0.65 / MMBtu) of gas.</p> <p><b><u>INR USD conversion rate</u></b></p> <p>The fuel cost estimation has been carried out as per the actual agreement. The GSA has been executed on 29th August, 2009 &amp; GTA on 23rd September, 2009. During the period August 2009 to September 2009 the lowest value (i.e. 47.7459, 22days average) of USD to INR exchange rate has been observed for the month of June, 2009 (Reference: <a href="http://www.x-rates.com/d/INR/USD/hist2009.html">http://www.x-rates.com/d/INR/USD/hist2009.html</a> ). The exchange rate considered in the present computation is 42.74 INR / USD.</p>
<p><b>DOE Assessment #2</b></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>Detailed break up of gas transportation cost is submitted by the PP. Validation team has cross checked the input values considered to arrive at the gas price. Same is based on the supply cost of gas, transportation cost, service tax and same is based on Gas supply agreement and Gas transport agreement. Based on the location of the power plant, there is a separate dedicated gas line to cater the gas requirement. All input values are correctly considered by the PP to arrive at the gas prices. It is concluded that the NG prices considered at the time of decision making is valid and appropriate and same is cross checked with the actual data.</p> <p>CAR is closed.</p>
<p><b>Conclusion</b></p> <p><i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B10		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b>	The cost of project at Rs.32.5 mn./MW is 20% higher than the cost recommended by Expert Committee on Fuel. The reasons for such a		

Describe the finding in un-ambiguous style; address the context (e.g. section)	high cost needs to be explained.																																	
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The total project cost and also the estimated per MW cost has been sourced from the DPR that has been prepared by a third party engineering consultant i.e. FICHTNER Consulting Engineers (India) Pvt Ltd. Chennai, India.</p> <p>The total project cost and the per MW estimated cost of the gas based power plant in the Southern region as included in the 11th five year plan of Government of India (GOI) is as follows (Reference: <a href="http://www.cea.nic.in/">http://www.cea.nic.in/</a> ; Project Monitoring)</p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Project</th> <th>Capacity (MW)</th> <th>Project Cost (Million INR)</th> <th>Project Cost (Million INR per MW)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Gautami CCPP</td> <td>464</td> <td>19351.30</td> <td>41.70</td> </tr> <tr> <td>2.</td> <td>Koenseema CCPP</td> <td>445</td> <td>20350.00</td> <td>45.73</td> </tr> <tr> <td>3.</td> <td>Valuthur GTPP; Phase – II</td> <td>92.2</td> <td>35550.00</td> <td>38.55</td> </tr> <tr> <td colspan="5">Project Activity</td> </tr> <tr> <td>4</td> <td>Lanco Kondapalli – Phase II</td> <td>366</td> <td>11880</td> <td>32.45</td> </tr> </tbody> </table> <p>It is evident from the table presented above that the total capital cost of the project activity and the cost per MW as well are on the lower side as against the other similar projects in the same region.</p> <p>In this regard please note that all the documents justifying the actual project cost have been submitted to the DOE during validation that clearly justifies the project cost as considered in the PDD.</p>				Sl. No.	Project	Capacity (MW)	Project Cost (Million INR)	Project Cost (Million INR per MW)	1.	Gautami CCPP	464	19351.30	41.70	2.	Koenseema CCPP	445	20350.00	45.73	3.	Valuthur GTPP; Phase – II	92.2	35550.00	38.55	Project Activity					4	Lanco Kondapalli – Phase II	366	11880	32.45
Sl. No.	Project	Capacity (MW)	Project Cost (Million INR)	Project Cost (Million INR per MW)																														
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2.	Koenseema CCPP	445	20350.00	45.73																														
3.	Valuthur GTPP; Phase – II	92.2	35550.00	38.55																														
Project Activity																																		
4	Lanco Kondapalli – Phase II	366	11880	32.45																														
<b>DOE Assessment #1</b> <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>Having regard to the information available in the public domain on the project and other projects, the project cost is accepted.</p> <p>CAR is closed</p>																																	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed																																	

General	B11		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Fuel stock and secondary fuel stock assumed at 60 days for working capital estimation for project activity, do not seem to be in conformity with CERC Order.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Please refer to the CERC tariff order dated 26th March, 2004 (<a href="http://www.cercind.gov.in/13042007/Terms%20and%20conditions%20of%20tariff.pdf">http://www.cercind.gov.in/13042007/Terms and conditions of tariff.pdf</a>). It specifies for non pit head coal and lignite fired generating the cost of primary and secondary fuel should be considered for two months in order to determine the working capital on account fuel stock. The same has been considered in the present context in order to determine the working capital on account of fuel stock for coal (sub-critical &amp; super-critical) and lignite based alternative.</p> <p>As per the CERC tariff order the primary and secondary fuel stock for gas based station to be considered for 30 days and 15 days respectively. The levelized cost of generation for the project activity has been revised accordingly and the same has been estimated at INR 2.72 per kWh.</p> <p>The project activity still remains economically unattractive option as against the other baseline alternative like coal (sub-critical &amp; super-critical) and lignite.</p> <p>The levelized cost of generation for alternative based on naphtha has also been revised incorporating the changes on account of fuel stock in the working capital estimation.</p>
<b>DOE Assessment #1</b> <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>In the original submission, fuel and secondary fuel stock was taken at 60 days and 30 days only for project activity. In the case of a few alternatives also, the stocking period was incorrect. This has now been corrected after the CAR was raised. Anyway, since the stocking period has been corrected.</p> <p>CAR is closed</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B 12		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Tax computation does not appear to be correct. Moreover, providing MAT does not appear to be correct as the company is already existing and profit making company.</p>		

General	B 12																
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The tax payable as applied for calculation of the levelized tariff in the financial analysis is based on the following assumptions:</p> <table><tr><th>Sl.No.</th><th>Parameter</th><th>Value</th><th>Reference</th></tr><tr><td>1.</td><td>Corporate tax rate</td><td>33.66%</td><td>Income Tax Act</td></tr><tr><td>2.</td><td>Minimum Alternate Tax</td><td>11.33%</td><td>Income Tax Act</td></tr><tr><td>3.</td><td>Tax exemption u/s 80IA</td><td>10 years</td><td>Income Tax Act</td></tr></table> <p>The tax computation has been based upon ROE of the respective years. In this regard please note that LKPPL would be exempted from the corporate tax for consecutive ten (10) years out of first fifteen (15) years of operation and the exemption is available as per section 80-IA of the income tax act for each undertaking (Project Individual Phase i.e. phase – I &amp; phase II)separately.</p> <p>However LKPPL is subject to MAT to be computed on the book profit of the Company (all phases included).</p> <p>Hence it has been reflected that for the first ten year period only MAT has been paid by LKPPL. The corporate tax (@33.66%) has been paid from 11th year to 20th year.</p>	Sl.No.	Parameter	Value	Reference	1.	Corporate tax rate	33.66%	Income Tax Act	2.	Minimum Alternate Tax	11.33%	Income Tax Act	3.	Tax exemption u/s 80IA	10 years	Income Tax Act
Sl.No.	Parameter	Value	Reference														
1.	Corporate tax rate	33.66%	Income Tax Act														
2.	Minimum Alternate Tax	11.33%	Income Tax Act														
3.	Tax exemption u/s 80IA	10 years	Income Tax Act														
<b>DOE Assessment #1</b> <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>PP/Consultant is advised to check the tax rate once again and ascertain whether the corporate tax rate was 33.66% while the MAT was 11.33% and vice versa.</p> <p>The project activity is not a stand-alone activity, but a division of an existing profit making company. Hence, the provision of MAT does not seem to be justified.</p> <p>Tax computation is therefore not acceptable. CAR is open</p>																

General	B 12
<b>Corrective Action #2</b>	<p>The corporate tax rate has been revised as 33.99%. The MAT rate has been estimated at 11.33%. (Reference: <a href="http://www.madaan.com/taxrates.htm">http://www.madaan.com/taxrates.htm</a>)</p> <p>The tax computation has been based upon ROE of the respective years. In this regard please note that LKPPL would be exempted from the corporate tax for consecutive ten (10) years out of first fifteen (15) years of operation as per section 80-IA of the income tax act for each undertaking (Project Individual Phase i.e. phase – I &amp; phase II) separately.</p> <p>However LKPPL is subject to MAT which would be computed on the book profit of the Company (all phases included).</p> <p>Hence it has been computed that for the first ten year period only MAT has been paid by LKPPL. The corporate tax (@33.66%) has been paid from 11th year to 20th year.</p>
<b>DOE Assessment #2</b>	<p>The corporate tax rate and MAT rate is revised. As MAT is calculated on the book profit of the company (All the phases) it is as per the requirement.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B13
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>The expected COD as given in 'Input' worksheet is October 2009. However, the projections are given from 2010-11 onwards. First year of operation (2009-10) with 6 months generation, revenue and pro rata cost has not been accounted for.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The expected COD (October, 2009) as stated in the "Input" worksheet pertains to open cycle operation.</p> <p>The COD for combined cycle operation has been considered to be 1st April, 2010. The project activity is power generation from a gas based unit in combined cycle operation. Hence FY 2010-11 has been considered as the year of commencement to estimate the levelized cost of generation of the project activity.</p>

General	B13
<p><b>DOE Assessment #1</b></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>If the open cycle is scheduled to start in October 2009 and the combined cycle in April 2010, then the worksheet should take into consideration open cycle generation from October 2009 to March 2010 and combined cycle generation from April 2010 onwards. Worksheet starts with 2010-11 and the entire year is assumed to be open cycle operation, which contradicts the response.</p> <p>Further, the response on the COD is neither in conformity with actual COD nor the scheduled COD as per the information available on the public domain nor even the worksheet. From the information available on the public domain it appears that the project commenced operation on 01/06/2010; considering February 2008 as the start date and 22 months completion (both the information are available in public domain), the expected COD of the project should be December 2009. Hence, what has been 'considered' by the PP/consultant does not seem to conform to either.</p> <p>Moreover, in the worksheet heat rate considered for 2010-11 is 2685. Since the gap between open and combined cycle operation is only 6 months, the calculation cannot be considered correct.</p>
<p><b>Corrective action #2</b></p>	<p>The expected COD (October, 2009) as stated in the "Input" worksheet pertains to open cycle operation.</p> <p>The COD for combined cycle operation has been considered to be 1st April, 2010. The project activity is power generation from a gas based unit in combined cycle operation. Hence FY 2010-11 has been considered as the year of commencement to estimate the levelized cost of generation of the project activity.</p> <p>In the worksheet heat rate considered for 2010-11 has been revised as 1850 kCal / kWh (corresponding to combined cycle operation).</p>
<p><b>DOE Assessment #2</b></p>	<p>Response on 2<sup>nd</sup> para of the DOE assessment # 1 is missing.</p>
<p><b>Corrective Action #3</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>Please refer to the Detailed Project Report (financial) of the project activity that specifies 1st April, 2010 as the commissioning date of the combined cycle power plant. In accordance with the DPR the COD for combined cycle operation has been considered as 1st April, 2010.</p> <p>Information pertaining to the actual COD of the project was not available to the project participant at the time of investment decision making of the project activity.</p>
<p><b>DOE Assessment #3</b></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>Expected commissioning date of the project activity i.e combined cycle power plant is corrected based on the Detail Project Report (DPR). Same is verified and appropriate at the time of decision making.</p> <p>CAR is closed</p>

General	B13
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B14
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Common practice analysis is not exhaustive and all the projects do not seem to have been included. It does not seem to conform to Step 4 of additionality tool.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The step-4 of the tool for the demonstration and assessment of additionality, version - 05.2.1 recommends the following sub-steps to carry out the common practice analysis</p> <p>Sub-step 4a: Analyze other activities similar to the proposed project activity.</p> <p>Sub-step 4b: Discuss any similar Options that are occurring</p> <p>In line with the guideline stipulated in the additionality tool, version - 05.2.1 the common practice analysis in the PDD has defined other activities that have been subject to further analysis. A detailed analysis has been presented in the PDD to demonstrate that activities similar to the project activity is not widely observed and commonly carried out in the region. Hence the common practice analysis has not been extended to sub-step 4b of the additionality tool since there are no similar options occurring in the region.</p> <p>Please refer to the Sub-step 4a. of the common practice section as presented in section B.5. in the PDD. The investment decision of the project activity was approved on 15th October, 2007. Hence the gas based power stations operating or under implementation around the same time has been considered to carry out the common practice analysis. In this regard please note that the gas based power stations as listed in the relevant section in the PDD has been sourced from the information available in the public domain at the time of investment decision making process (CO2 baseline database, version – 02, dated 21st June 2007, <a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm</a>).</p> <p>It is quite evident from the CO2 baseline database, version-02 that all the gas based power plants of the southern region has been considered to carry out the common practice analysis.</p>
<b>DOE Assessment #1</b>	PDD is revised to include step wise justification of common practice

<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>as per the requirement of the additionality tools. Same is verified and reviewed by the validation team and convinced that project activity is not a common practice in the region.</p> <p>CAR is closed.</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B15
<p><b>Classification</b></p>	<p><input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR</p>
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>Under section B.5, Step 2 common practice analysis, (B 17)</p> <p>a. It is stated that “Out of 118 thermal power plants in the southern grid in 2006-07 (as of 21st June 2007), ..... using CCGT technology“, However details provided in the table states that “activities implemented by 2004-05“. Also details provided under column Gross generation details and Implemented .under implementation in 1991-92 should be corrected accordingly.</p> <p>b. Location stated against Karikal power plant should be corrected.</p> <p>c. Capacity shown against Vemagiri CCPP is 233 MW which is not correct.</p> <p>d. Capacity shown against Valantharvi is 38 MW which is not correct</p> <p>e. Clarification is required for not including following gas based power plant in common practice analysis. Kaniminke ( 107.6 MW, Karnataka) , Vypeen CCGT ( 679.2 LNG, Kerala), Kannur CCGT ( 513 MW, Kerala), Vembar ( 1873 MW, TN)</p> <p>f. Penetration of the CCGT technology in the region is shown by comparing actual generation by the CCGT. Instead actual percentage of the CCGT installed capacity in the region may be compared with the total installed capacity of power generation in the region.</p> <p>g. For common practice analysis, reasons explained for exclusion of the power plant under technology aspect i.e. multi fuel firing capabilities are not convincing.</p>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in</i></p>	<p>a. It is a typographical error. The PDD has been revised to correct the same. Also the year as mentioned in the gross generation column has been revised as 2006-07.</p> <p>b. Gas based CCPP project that was Implemented/under</p>



<p><i>details.</i></p>	<p>implementation in 1991-92 has been separately categorised in order to analyse other activities similar to the proposed project activity from the perspective of comparable environment with respect to regulatory framework it has been, as advised in Substep 4 (a) of the additionality tool. The detailed explanation justifying such categorisation has been presented in common practice analysis section in the PDD. Hence the details provided in the column “implemented/under implementation in 1991-92” has not been revised.</p> <p>c. Location stated against Karikal power plant has been corrected in the revised PDD.</p> <p>d. The capacity stated against the Vemagiri CCPP has been sourced from the CEA baseline CO2 emission database, version 02 (<a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm</a>). The database evidently reflects the capacity of the Vemagiri CCPP as 233 MW and the same has been mentioned in the relevant section of the PDD.</p> <p>e. The capacity stated against the Valantharvi GT has been sourced from the CEA baseline CO2 emission database, version 02 (<a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm</a>). The database evidently reflects the capacity of the Valantharvi GT as 38 MW and the same has been mentioned in the relevant section of the PDD.</p> <p>The investment decision of the project activity was approved on 15th October, 2007. Hence the gas based power stations operating or under implementation around the same time has been considered to carry out the common practice analysis. In this regard please note that the gas based power stations as listed in the relevant section in the PDD has been sourced from the information available in the public domain at the time of investment decision making process (CO2 baseline database, version – 02, dated 21st June 2007 ; <a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm</a>). It is quite evident from the CO2 baseline database, version-02 that all the gas based power plants in the southern region has been considered to carry out the common practice analysis.</p> <p>f. The relevant section in the PDD has been revised incorporating the percentage (%) penetration of the gas based power station in the region as per installed capacity.</p> <p>g. Multi-fuel fired CCGTs offer greater flexibility to choose within a range of fuels and are thus better able to diversify fuel risks</p>
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	and dispatch risks, as compared to single (natural gas) fired plants. Hence categorisation on the technology aspect (i.e. single fuel and multi fuel) to analyze other activities similar to the proposed project activity is justified.
<b>DOE Assessment #1</b> <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>	A,B C : Ok CAR is closed D and E : As information provided in the PDD is sourced from the CEA database which is available at the time of decision making CAR is closed. F : Why the year 2004-05 is considered appropriate for calculating penetration of gas based power station when the decision making date is in the month of October 2007. CAR is open G : Categorisation based on the single fire and multi fire technology is justified. CAR is closed.
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	F The relevant section of the PDD has been revised. As per the revision the overall installed capacity in the Southern region and the same for gas based power station have been revised as per the information available as on 30 <sup>th</sup> September, 2007.
<b>DOE Assessment #2</b> <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>	F. Penetration of the CCGT technology in the region is now shown by comparing actual percentage of the CCGT installed capacity in the region at the time of decision making. CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B16		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Under section B.1, Latest version of the "tool to calculate emission factor for an electricity system" version 2.2.1 needs to be referred as per CP guidelines for completing CDM -PDD		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The relevant section of the PDD has been revised referring to version – 02.2.1 of the "Tool To Calculate Emission Factor For An Electricity System".		
<b>DOE Assessment #1</b> <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>	Under section B.6.1, option:2, details provided in justification for use of Simple OM is not as the tool to calculate emission factor for an electricity system version 2.2.1 Last five most recent years data needs to be presented in the PDD.		



General	B16
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The relevant section of the PDD has been revised referring to version – 02.2.1 of the “Tool To Calculate Emission Factor For An Electricity System”.</p>
<b>DOE Assessment #2</b> <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>PDD is revised to include latest version of “Tool to calculate emission factor for an electricity system” Version 02.2.1.</p> <p>CAR is closed</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B17
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Under section A.4.3, it is stated that the project activity is designed to use natural gas for power generation and NG is likely to be a combination of NG and R-LNG. However ER calculation shows only NG consumption. Ratio of NG/R-LNG is required to be specified in the PDD and leakage calculation should be carried out accordingly due to fossil fuel consumption/electricity consumption associated with the liquefaction, transportation, re-gasification and compression.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The project activity will primarily use NG as the fuel. In future combination of NG &amp; Regasified- Liquid Natural Gas (“R-LNG”) could also be combusted as fuel. As per the present scenario the ER for the project activity has been estimated considering 100% NG. However in future the percentage combination of NG and RLNG could be readjusted in the ER calculation.</p> <p>The procedure to determine the ratio of NG and RLNG has been clearly stated in the Annex-4 of the revised PDD.</p>
<b>DOE Assessment #1</b> <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>As the project is already commissioned, actual ratio of NG: R-LNG should be presented in the ER sheet for leakage emission calculation. Also in ER sheet cell no B 40 and B 42, it is stated as LNG-50%.</p> <p>In calculation of fugitive emission factor of build margin in ER sheet, Net electricity generation (Million kWh) corresponding to build margin from CEA Database, version – 05 is shown as 31606 in cell no I 15 in “Fugitive_emission_factor” worksheet. How this figure is arrived in not traceable in ER sheet.</p>
<b>Corrective Action #2</b> <i>This section shall be filled by</i>	<p>The project activity has already been commissioned and NG is</p>

General	B17
<p><i>the PP. It shall address the corrective action taken in details.</i></p>	<p>combusted as fuel during actual operation. RLNG could also be combined with NG for future plant operation. The proportion of RLNG that is likely to be combined with NG is a hypothetical scenario. Hence the actual ratio of NG to RLNG could not be ascertained at this stage. In the event of RLNG being used during actual operation, the leakage on account of RLNG consumption will be addressed during CDM verification of the project activity.</p> <p>It has been assumed in the present computation of emission reduction that 100% NG will be used as fuel for the project activity. Cell no B 40 and B 42 in the ER work sheet has been revised. The revised worksheet does not refer to proportion of LNG to be used as fuel.</p> <p>CEA Database, version – 05 specifies the net electricity generation (Million kWh) corresponding to build margin in the Southern grid as 31,606 GWh. The same has been used in the cell no 15 in “Fugitive emisison factor” worksheet.</p>
<p><b>DOE Assessment #2</b></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>Though ratio of NG: LNG is considered as 100 : 0 , the procedure for determination of the leakage calculations due to use of LNG is included in the PDD. Same will take care of the calculation of the ex-post emission reduction in case LNG is used by the PP.</p> <p>ER sheet cell no B 40 and B 42 is revised.</p> <p>As value of 31,606 GWh as electricity generation for BM in southern grid is sourced from CEA database version 05 is acceptable.</p> <p>CAR is closed.</p>
<p><b>Conclusion</b></p> <p><i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B18
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<p><b>Description of finding</b></p> <p><i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>The section B.7.1 / Annex-4 does not demonstrates the 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 , cross check with commercial invoice. (Cp guidelines for completing CDM-PDD) for parameter FCf,y, NCV f,y, EG PJ,y.</p>

<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Please refer to the section B.7.1 and Annex-4 in the PDD. The following information with regard to monitoring of the selected parameters (as stated above) has been stated in the PDD.				
	Data variable	Measurement	Calibration and accuracy	Entity responsible for measurement	Measurement Interval
	Annual quantity of natural gas consumed in project activity (FC f,y)	Ultrasonic meters along with pressure and temperature transmitters.	Periodical calibration in accordance with prescribed standards.  Accuracy will be less than 0.1%.	The main meter at the supplier gas conditioning/metering skid – Reliance Gas Transportation Infrastructure Limited (RGTIL).  Check meter at LKPPL gas conditioning skid	Daily
	Net Calorific Value of fuel (f)	Online chromatograph installed by Gas supplier as well as project proponent	As per AM0029, version -03 no additional QA/QC is required for this parameter.	Gas supplier as well as the project proponent. This is in line with the AM0029, version - 03	Daily
	Electricity generation in the project plant during the year in MWh. (EG PJ,y)	Energy Meter (Main & check)	Periodical calibration as per the norms maintained by Power Grid Corporation of India Limited (PGCIL). Accuracy of the energy meter is maintained at 0.2 class Accuracy of the energy meter is maintained at 0.2 class	The power generated by the project activity is supplied to the PGCIL southern GRID. The entity responsible for measurement is PGCIL.	Measurement to be continuous measurement record will be downloaded on weekly basis PGCIL and will be sent to South Region Load Despatch Centre (SRLDC).
<p>It has been mentioned in the PDD that fuel consumption would be cross checked from the gas joint fortnight ticket received from RGTIL.</p> <p>In appreciation to the discussion presented above it is to be concluded that all the information as requested by the DOE had already been presented in the relevant section in the PDD.</p>					

<b>DOE Assessment #1</b> <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>	Accepted, however, calibration frequency for monitoring parameter FC f,y and EG pj,y needs to be specified in the PDD.											
<b>Corrective Action #2</b> <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>Sr.No.</th> <th>Parameter</th> <th>Calibration frequency</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Electricity generation in the project plant during the year in MWh. (EG PJ,y)</td> <td>                     Periodical calibration (i.e. once in every five year) as per Central Electricity Authority (CEA) regulation, 2006 on installation and operation of energy meters.                       4.1.1                      (Reference: <a href="http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf">http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf</a>)                 </td> </tr> <tr> <td>2.</td> <td>Annual quantity of natural gas consumed in project activity (FC f,y)</td> <td>The gas flow meter (main and check will be calibrated once in a year)..</td> </tr> </tbody> </table>			Sr.No.	Parameter	Calibration frequency	1.	Electricity generation in the project plant during the year in MWh. (EG PJ,y)	Periodical calibration (i.e. once in every five year) as per Central Electricity Authority (CEA) regulation, 2006 on installation and operation of energy meters.  4.1.1 (Reference: <a href="http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf">http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf</a> )	2.	Annual quantity of natural gas consumed in project activity (FC f,y)	The gas flow meter (main and check will be calibrated once in a year)..
Sr.No.	Parameter	Calibration frequency										
1.	Electricity generation in the project plant during the year in MWh. (EG PJ,y)	Periodical calibration (i.e. once in every five year) as per Central Electricity Authority (CEA) regulation, 2006 on installation and operation of energy meters.  4.1.1 (Reference: <a href="http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf">http://www.cea.nic.in/e&amp;c/regulations/notified_regulations/Metering_Regulations.pdf</a> )										
2.	Annual quantity of natural gas consumed in project activity (FC f,y)	The gas flow meter (main and check will be calibrated once in a year)..										
<b>DOE Assessment #2</b> <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>	Calibration frequency for meters used for measurement of electricity generation in the project plant and annual qty of natural gas consumed is now defined in the PDD. This will ensure the accuracy of the collection of actual ex-post data.  CAR is closed.											
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed											

General	B19		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

General	B19
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.7.1 for the parameter EG PJ,y,.</p> <p>a. It is stated that “PLF and Aux consumption values are based on CERC order” is not relevant as this is a monitored parameter.</p> <p>b. Under Annex-4 and section B.6.3 it is stated that, EG PJ,Y is calculated by measuring energy generated from GT, STG and Auxiliary consumption of the plant. Please ensure whether Net electricity exported to the grid is measured at plant location by measuring energy generated from GT, STG and aux consumption or from interface meters installed at PGCIL substation.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The statement “PLF and auxiliary consumption values based on guidelines of Central Electricity Regulatory Commission” has been removed in the revised PDD.</p> <p>The net electricity supplied by the project activity to the GRID (EG PJ, Y) would be monitored by the electronic meters installed at the grid inter-connection point at 400 kV PGCIL Nunna substation. The relevant sections of the PDD have been revised accordingly.</p>
<b>DOE Assessment #1</b> <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>Monitoring of net electricity exported to the grid is now revised in the PDD. Also statement stated at (a) above is removed from the PDD.</p> <p>CAR is closed</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B20
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.7.1 for parameter FCy Natural gas consumption details provided against “Description of the measurement methods” shows that „ The values will be taken from invoices received from RIL ..... The values will be correlated with invoices received from RIL “ Which is not clear.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The relevant section of the PDD has been revised. It has been stated in the revised PDD that RGTIL will issue daily gas ticket which will be the basis of recording gas consumption. The natural gas consumption (FCy) will be cross verified from the gas fortnight joint ticket issued by RGTIL fortnightly.</p>

General	B20
<b>DOE Assessment #1</b> <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>RIL is a gas supplier and RGTIL is a transporter. NG consumption is also to be cross checked from the invoices of the NG supplier. Same is required to be included in the PDD.</p> <p>CAR is open.</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>RGTIL will issue daily gas ticket which will be the basis of recording gas consumption. The quantity of natural gas consumption (FCy) will be cross verified from the joint ticket issued by RGTIL fortnightly. The sample copies of the daily gas ticket and fortnight gas ticket have already been submitted to the DOE during validation.</p>
<b>DOE Assessment #2</b> <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>Quantity of natural gas consumed in the project activity is measured by the RGTIL and issue daily gas ticket based on the measured value. Same is also verified from the fortnightly joint gas tickets. PDD is revised to include the same.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B21
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Under section B.7.2 Roles &amp; responsibilities of the project participants w.r.t. Project management, monitoring, calibration and reporting is not defined.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The organogram at LKPPL that would be responsible to ensure proper monitoring of the project activity in line with the approved monitoring methodology AM0029, version -03 has been included in the revised PDD.</p>
<b>DOE Assessment #1</b> <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>Details are not traceable in the revised PDD. Any change in the PDD is required to be done in trek change mode.</p> <p>New details included in section B.7.2 is only related to CSR activities. Roles and responsibilities for data collection, recording, calibration should also required to be defined in the PDD.</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The organogram structure followed at LKPPL for data collection, recording, calibration has been included in the section B.7.2 of the revised PDD.</p>



General	B21
<b>DOE Assessment #2</b> <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>Roles and responsibilities of the project participants is now included in section B.7.2 of the revised PDD.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B22
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Metering plan with clear installation of energy meters and location are to be included in the PDD.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Metering plan with clear installation of energy meters and location has been mentioned in section B.7.1 and Annex-4 of the revised PDD.</p> <p>The single line diagram clearly delineating the power evacuation system of the project activity has been submitted to the DOE in this regard.</p>
<b>DOE Assessment #1</b> <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>Metering plan and procedures for measurement along with calibration is included in the section B.7 of the PDD.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B1
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Clarification is required for considering 500 MW capacity for Lignite and Coal-sub critical alternative and 660 MW for coal – Super critical alternative for calculating levelized cost.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the</i>	<p>The capacity of solid fuel (coal &amp; lignite) fired baseline alternatives using sub-critical technology has been considered at 500 MW as per the commercially available capacity of the same (Reference: CEA CO2 Baseline Database; version -02; <a href="http://www.cea.nic.in/">http://www.cea.nic.in/</a>)</p>

<p><i>corrective action taken in details.</i></p>	<p>The capacity of the coal super critical alternative has been considered at 660 MW which is in line with the capacity of the second stage of NTPC's mega-power project at Barh near Patna, Bihar, India In this regard please refer to the following guideline as mentioned in AM 0029, version -03 to identify the plausible baseline scenario</p> <p>"These alternatives need not consist solely of power plants of the same capacity, load factor and operational characteristics (i.e. several smaller plants, or the share of a larger plant may be a reasonable alternative to the project activity), however they should deliver similar services (e.g. peak vs. base load power)."</p> <p>Hence it is quite evident that the difference in the capacity of the lignite and coal super critical alternative is in accordance with the guideline recommended in the approved methodology AM 0029, version – 03.</p>
<p><b>DOE Assessment #1</b> <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>Capacity of the Coal and lignite power plant considered is within the range of 50 to 150 % of the capacity of the project activity Hence same is considered appropriate. For Supercritical technology 660 MW is the minimum capacity of the size available in the market in host country for this technology. As this meets the requirement of methodology it is accepted.</p> <p>CL is closed.</p>
<p><b>Conclusion</b> <i>Tick the appropriate checkbox</i></p>	<p><input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed</p>

General	B2		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<p><b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i></p>	<p>The start date of the project is given as 30.01.2008 in Sec. B.5. and sec. C.1.1. However, the material available in public domain states that the EPC contract for the project was awarded in November 2007 and the notice to proceed (NTP) was issued in February 2008 with a schedule of 16 months for open cycle and 22 months for combined cycle. Explain the reasons for the difference.</p>		



General	B2
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>With regard to deciding the start date of a proposed CDM project activity please find below the relevant excerpts as mentioned in the Glossary of CDM terms; version -05 (Reference: <a href="http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf">http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf</a>)</p> <p>“The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.”</p> <p>“The start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project.”</p> <p>The material available in public domain refers to a “Letter of Acceptance” (LOA) that was issued by the project proponent to M/s. Lanco Infratech Limited on 29th November, 2007. The letter specifies that the project proponent had accepted the EPC offer received from the M/s. Lanco Infratech Limited subject to terms and condition stipulated therein. However project proponent has not committed any expenditure related to implementation or construction of the project activity in the LOA. Hence the same has not been considered as the project activity start date. The related evidence is enclosed as Annexure - 6 to this document.</p> <p>The start date of the project activity has been considered as 30th January, 2008. This is based upon the date of executing the Engineering, Procurement and Construction agreement with Lanco Infratech Limited. It is quite evident that the execution of the EPC agreement is interpreted as expenditure commitment by the project towards implementation or construction of the project activity.</p>
<p><b>DOE Assessment #1</b></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>PP/Consultant is advised to read the quote given once again. It states “.. the date on which the project participant has committed to expenditure...”. The material available in the public domain states, “The EPC contract for the project was awarded in November 2007 and the notice to proceed (NTP) was issued in February 2008 with a schedule of 16 months for open cycle and 22 months for combined cycle“. It does not state LOA or any of the issues stated in the response. Clarify whether the award of EPC contract is a commitment to expenditure or not.</p>

General	B2
<b>Corrective Action#2</b>	<p>The LOA specifies that the project proponent had accepted the EPC offer received from the M/s. Lanco Infratech Limited subject to terms and condition stipulated therein. The project proponent has not committed any expenditure related to implementation or construction of the project activity in the LOA.</p> <p>In appreciation to this the start date of the project activity has been revised as 1<sup>st</sup> February, 2008. The relevant section of the PDD has been revised accordingly.</p>
<b>DOE Assessment #2</b>	<p>Validation team has verified the letter and confirmed that the notice to proceed is the correct start date of the project. Same is now revised in the PDD. Validation team has also verified the EPC contract dated 30/01/2008 and Notice to proceed letter with effective start date as 01/02/2008 and convinced that start date considered is appropriate.</p> <p>CL is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>Since there is a significant gap between the start date of the project activity and the commencement of validation (the project start date is January 2008 and the DOE was appointed in end 2010), PP may explain how it was possible to commit funds to the project in advance of receiving a positive validation opinion.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The chronology of event as presented in section .B-5 of the PDD justifies that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. This is in accordance with the UNFCCC guideline (EB49 ; Annex-22) document on demonstration and assessment of prior consideration of the CDM, version -03 (Reference: <a href="http://cdm.unfccc.int/EB/049/eb49_repan22.pdf">http://cdm.unfccc.int/EB/049/eb49_repan22.pdf</a>)</p>
<b>DOE Assessment #1</b> <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>Though the response does not answer the CL, since the project activity is in conformity with Annex 13, EB 62 ,</p> <p>CL is closed</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B4		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	It may be clarified how the CDM revenues were considered essential to overcome the investment barrier to this project activity, in particular that the benchmark represents a rate below which the investment could not be made.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In order to carry out the benchmark analysis levelised cost of generation has been considered as the financial indicator. The levelised cost of generation for the project activity over a period of 20 years has been estimated at INR 2.72 per kWh.		
<b>DOE Assessment #1</b> <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 response does not answer the CL.  CL is open		
<b>Corrective Action #2</b>	Please refer to the "tool for the demonstration and assessment of additionality", version 06. As per the latest version of the tool it is not required to analyse the impact of CDM registration to demonstrate additionality of the project activity.		
<b>DOE Assessment #2</b>	As per the requirement of the additionality tool, CDM revenue will not affect the additionality of the project. CL is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

General	B5		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Input parameters for alternatives have been sourced from different sources for reasons not explicit, while both CERC tariff order and Expert Committee on Fuel seem to give all required information. Moreover, it is also observed that in case the Lignite, approved cost has been chosen while the latest cost is available; the heat rate assumed in computation is not in agreement with the figures given in the source cited; CV of and the cost of lignite are based on Gujarat, while the project is located in AP. The reference given for heat rate of super critical plant is dated 28.7.2009, which is post-decision making period; moreover, the referred source does not give the heat rate at all. In sum, the LUCE computation does not evoke much confidence.		
<b>Corrective Action</b>	Please refer to paragraph - 6 of the guideline on the assessment of		

General	B5
<p><b>#1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>investment analysis which stipulates the following guideline to justify the input values for the investment analysis</p> <p>“Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant.”</p> <p>The investment approval accorded to the present project activity vide Board meeting dated 15th October, 2007. All the input values have been referred from sources which are available at the time of investment decision making process. It justifies the use of different sources to rationalize the input values since they are available to project proponent at the time of investment decision making process.</p> <p>Project Cost – Lignite based alternative: The project cost of Neyveli TPS II project (Reference: <a href="http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf">http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf</a>) has been considered to determine the total investment in the levelised tariff computation. In this regard please note that for 500 MW Neyveli – TPS II project (Unit1- 250 MW ; Unit2-250 MW) the approved cost was estimated at INR 20307.8 Million which leads to a per MW project cost of INR 40.60 Million per MW.</p> <p>The latest cost for the 500 MW Neyveli – TPS II project has been estimated at INR 24535.7 Million (INR 49.07 Million per MW). Since this information was not available to the project proponent at the time of investment decision making process the same has not been considered in the levelised tariff computation. However the levelised tariff for the lignite based alternative was estimated at INR 2.26 per kWh corresponding to the per MW project cost at INR 49.07 Million. Hence it is evident that even after considering the latest cost of the Neyveli TPS II project the lignite based alternative remains economically more attractive as against the present project activity.</p> <p>Heat Rate – Lignite based alternative: The CERC tariff order dated 26th March, 2004 (Reference: <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a> ; Page 10 &amp; 11) has been referred to justify the applicable heat rate for the lignite based alternative. In line with the tariff order the station heat rate of coal-based thermal power generating stations has been used after accounting a multiplying factor to arrive at the applicable heat rate for the lignite based alternative. The heat rate of the coal based power plant of 500 MW capacity (2450 kCal / kWh) and the multiplying factor (1.10) corresponding to 50% moisture level have been used to arrive at the applicable station heat rate for the project activity (i.e. 2695 kCal /kWh = 2450 kCal /kWh *1.10).</p> <p>Calorific value and cost of lignite: The input values pertaining to Net Calorific Value (NCV) of lignite (3097kCal/kg) and the cost of fuel (INR</p>

General	B5
	<p>780 / tonne) have been evidenced from sources available to the project proponent at the time of investment decision making process.</p> <p>Heat Rate – Coal Super-critical: Document pertaining to heat rate or efficiency was not available in the public domain at the time of investment decision making process. Hence it has been sourced from documents available with CEA on efficiency of the super-critical units to be installed in the country dated 28th July 2009. Moreover the heat rate (2228 kCal /kWh) has been derived from efficiency (38.6%) as mentioned in the referred source using the standard kCal to kWh (860 kCal / kWh) conversion factor.</p>
<p><b>DOE Assessment #1</b></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>CL only seeks the reasons for sourcing input parameters from different sources and not justification. However, there appears to be no reason to give different sources for different values. DOE has other projects which have projected lower CV for coal based on equally credible sources; the lignite price considered is at pithead. It does not include transportation cost. Moreover, there appears to be no reason for choosing Gujarat lignite when NLC data are available. as to why It does not seem to include transportation cost. That the information on Supercritical plant were not available at the time of decision making is not acceptable as there are published reports as early as 2006. In short the input parameters do not appear convincing.</p> <p>CL is open</p>
<p><b>Corrective Action #2</b></p>	<p><u>Project Cost – Lignite based alternative:</u></p> <p>The project cost of Neyveli TPS II project (Reference: <a href="http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf">http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf</a>) has been considered to determine the total investment in the levelised tariff computation. In this regard please note that for 500 MW Neyveli – TPS II project (Unit1- 250 MW ; Unit2-250 MW) the approved cost was estimated at INR 20307.8 Million which leads to a per MW project cost of INR 40.60 Million per MW.</p> <p>The latest cost for the 500 MW Neyveli – TPS II project has been estimated at INR 24535.7 Million (INR 49.07 Million per MW). Since this information was not available to the project proponent at the time of investment decision making process the same has not been considered in the levelised tariff computation. However the levelised tariff for the lignite based alternative was estimated at INR 2.4073 per kWh corresponding to the total project cost of INR 24535.7 Million. Hence it is evident that even after considering the latest cost of the Neyveli TPS II project the levelised cost of generation of lignite based alternative remains below the project activity.</p> <p><u>Heat Rate – Lignite based alternative:</u></p> <p>The CERC tariff order dated 26th March, 2004 (Reference: <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.p">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.p</a></p>

General	B5									
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DOE Assessment #2	Source and references for input parameters are now appropriately considered. Same is verified by the validation team and convinced that the values are available at the time of decision making. Further									



General	B5
	assessment is provided in Annex-3 of this report. CL is closed,
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B6
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	The rate of interest prevailing at the time of decision making was 12.75% to 13.25%. Please clarify on what basis the rate of interest was taken at 11.50% and how does the rate of interest conform to Annex 05, EB 62.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	As per DPR the interest rate has been considered at 11.5% to estimate the levelised cost of generation of the project activity and all the alternatives. As commented by the DOE the interest rate prevailing at the time of decision making was 12.75% - 13.25% which is higher than the interest rate assumed in the present context. Any further increase in the applicable interest will increase the levelised cost of generation of the project activity and the same for all the alternatives. Hence it is to be concluded that a conservative approach has been adopted to determine the interest rate in the levelised tariff estimation.
<b>DOE Assessment #1</b> <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 interest rate considered is not in conformity with Annex 5, EB 62 Hence, the assumed interest rate is not acceptable. CL is open
<b>Corrective Action #2</b>	The interest rate for the project activity and the baseline alternatives has been revised as 13.00 % i.e. the average of prevailing interest rate at the time of decision making. The relevant section of the PDD has also been modified accordingly.
<b>DOE Assessment #2</b>	Rate of interest prevailing at the time of decision making is taken from Reserve Bank of India web site. As same is conservative, it is acceptable. CL is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B7
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR

General	B7
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Regular and MAT Tax rates have been taken at 33.66% and 11.22% respectively. The investment decision was made in October 2007, i.e., FY 2007-08. Please clarify whether these were the tax rates prevailing then.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The applicable corporate tax and MAT at the time of investment decision making process i.e. FY 2007-08 was 33.66% and 11.33% respectively (Reference: <a href="http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=51177">http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=51177</a> ). The same rate has been considered in the levelised tariff computation.
<b>DOE Assessment #1</b> <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>	Before giving the response, PP/consultant is advised to read referred website carefully and also state the figures correctly in the response. Response is incorrect. CL is open
<b>Corrective action #2</b>	The corporate tax rate has been revised as 33.99%. The MAT rate has been estimated at 11.33%.  Reference: <a href="http://www.madaan.com/taxrates.htm">http://www.madaan.com/taxrates.htm</a>
<b>DOE Assessment #2</b> <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>	Corporate tax rate and MAT rate are revised correctly.  CL is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

General	B8
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	Clarify the reasons for using GCV of coal in the case of Super critical technology option and NCV for Sub-critical technology option. Moreover, the CV value also differs substantially. While in the case of super critical plant, the GCV is assumed at 5400, for sub-critical technology plant, the NCV is assumed at 3755.



General	B8
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The CV coal is higher as against the same for the sub-critical alternative. This is attributable to the fact that superior quality fuel with high heating value is essentially required for a coal based power plant with super critical technology as against the sub-critical alternative. In tandem with this the cost of fuel as considered for super-critical alternative is higher than the sub-critical option</p>
<b>DOE Assessment #1</b> <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 contention is neither true nor acceptable. DOE has validated supercritical power projects where domestic coal (with same CV) has been used for both sub-critical and super critical plants. The response is not convincing and hence not acceptable. CL is open</p>
<b>Corrective Action #2</b>	<p>The alternative section pertaining to coal based power plant using super critical technology has been revised. As per the revision the same alternative has been further sub-categorised as per type of fuel i.e. domestic and international coal.</p> <p>The calorific values of the coal based alternatives have been revised in the levelised cost of generation estimation. As per the revision NCV of coal has been applied to determine the levelised cost of generation from coal subcritical, coal supercritical (Imported coal and Domestic coal) alternatives.</p> <p>The same value has been assigned against cost of fuel and NCV for coal subcritical and coal supercritical (domestic coal) alternatives.</p>
<b>DOE Assessment #2</b>	<p>In baseline alternative scenario PP has separately considered coal based power generation using supercritical technology based on both domestic and imported coal separately. Calorific value is considered correctly. CL is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B9
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i>	<p>For the purpose of common practice analysis, the region has been defined as 'southern grid'. Mere location of the project in a particular grid does not seem to be an acceptable basis for restricting the common practice analysis to the region. Since the technology is no different and so too the regulatory regime, restricting the geographical region definition to southern grid is not acceptable.</p>

General	B9
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Sub step 4a (i.e. analyze other activities similar to the proposed project activity) of the tool for the demonstration and assessment of additionality, version 06 provides the following guideline in order to carry out the common practice analysis</p> <p>“Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc.”</p> <p>It is quite evident that as per the additionality tool the common practice analysis could be restricted within the region of the project activity. The similar approach has been followed in the present context.</p> <p>Further, the section viz. “identify plausible baseline scenarios” recommends the following</p> <p>“Note further that the baseline scenario candidates identified may not be available to project participants, but could be other stakeholders within the grid boundary (e.g. other companies investing in power capacity expansions).”</p> <p>It is quite evident from the above statement that only the power plants within the project grid boundary (Southern grid in this case) can be considered as the plausible baseline option.</p> <p>Similar approach has been adopted to carry out the common practice analysis. The project activity is connected to the southern regional grid through PGCIL substation. Hence the Southern Region has been considered to perform the common practice analysis.</p>
<b>DOE Assessment #1</b> <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>Southern region grid is appropriately considered as a region for common practice considering similar region and evacuation facilities available in the region.</p> <p>CL is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

General	B10
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of</b>	Following documents/documentary evidence should be submitted:

General	B10
<p><b>finding</b> <i>Describe the finding in un-ambiguous style; address the context (e.g. section)</i></p>	<p>a) DPR of the project activity b) SHR and NCV of fuel for project activity c) O&amp;M cost for the project activity d) Cost of Oil e) Annual Reports of Lanco Kondapalli Power Pvt. Ltd. for the year ending March 31, 2007, 2008 and 2009 f) Discount factor used g) Board resolution on serious consideration</p> <p>Following documents required to be submitted</p> <p>a. MoEF clearance and EIA for phase-II units b. APPCB consent to establishment for 368 to 865 MW is required. c. Technoeconomic clearance from CEA if obtained. d. Soft copy of the time line documents f. Appointment letter to PwC – CDM consultants g. Copy of the gas invoice ( Supply and transport) for phase-I unit for the year 2006-07 and phase-II units ( latest) h. Copy of the short term contract with TN for sale of energy and details of the purchase of power through exchanges i. Copy of the LTSA agreement with OEM j. Technical specification of the project component. k. Gas supply agreement with Reliance industries ( After 28/02/2010)</p>

General	B10																																		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The document /documentary evidence as requested is enclosed as follows</p> <table border="1"> <thead> <tr> <th>Sr.No</th> <th>Document</th> </tr> </thead> <tbody> <tr><td>1.</td><td>DPR of the project activity</td></tr> <tr><td>2.</td><td>SHR and NCV of fuel for project activity</td></tr> <tr><td>3.</td><td>O&amp;M cost for the project activity</td></tr> <tr><td>4.</td><td>Cost of Oil</td></tr> <tr><td>5.</td><td>Annual Reports of Lanco Kondapalli Power Pvt. Ltd. for the year ending March 31, 2007, 2008 and 2009</td></tr> <tr><td>6.</td><td>Board resolution on serious consideration</td></tr> <tr><td>7.</td><td>MoEF clearance and EIA for phase-II units</td></tr> <tr><td>8.</td><td>APPCB consent to establishment</td></tr> <tr><td>9.</td><td>Technoeconomic clearance from CEA if obtained.</td></tr> <tr><td>10.</td><td>Soft copy of the time line documents</td></tr> <tr><td>11.</td><td>Appointment letter to PwC – CDM consultants</td></tr> <tr><td>12.</td><td>Copy of the gas invoice ( Supply and transport) for phase-I unit for the year 2006-07 and phase-II units ( latest)</td></tr> <tr><td>13.</td><td>Copy of the short term contract with TN for sale of energy and details of the purchase of power through exchanges</td></tr> <tr><td>14.</td><td>Copy of the LTSA agreement with OEM</td></tr> <tr><td>15.</td><td>Technical specification of the project component.</td></tr> <tr><td>16.</td><td>Gas supply agreement with Reliance industries ( After 28/02/2010)</td></tr> </tbody> </table>	Sr.No	Document	1.	DPR of the project activity	2.	SHR and NCV of fuel for project activity	3.	O&M cost for the project activity	4.	Cost of Oil	5.	Annual Reports of Lanco Kondapalli Power Pvt. Ltd. for the year ending March 31, 2007, 2008 and 2009	6.	Board resolution on serious consideration	7.	MoEF clearance and EIA for phase-II units	8.	APPCB consent to establishment	9.	Technoeconomic clearance from CEA if obtained.	10.	Soft copy of the time line documents	11.	Appointment letter to PwC – CDM consultants	12.	Copy of the gas invoice ( Supply and transport) for phase-I unit for the year 2006-07 and phase-II units ( latest)	13.	Copy of the short term contract with TN for sale of energy and details of the purchase of power through exchanges	14.	Copy of the LTSA agreement with OEM	15.	Technical specification of the project component.	16.	Gas supply agreement with Reliance industries ( After 28/02/2010)
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<b>DOE Assessment #1</b> <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>All the documents are submitted to DOE CAR is closed</p>																																		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input type="checkbox"/> Additional action should be taken (finding remains open)  <input checked="" type="checkbox"/> The finding is closed                 </p>																																		

## **5 VALIDATION ASSESSMENT SUMMARY**

### **5.1 General Description of the Project Activity**

#### **5.1.1 Participation**

##### **LOA**

Host Party for this project activity is India. India has ratified the Kyoto protocol in August 2002. Same has been confirmed from the UNFCCC web site. Link [http://unfccc.int/kyoto\\_protocol/status\\_of\\_ratification/items/2613.php](http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php) Host country approval No 4/5/2010-CCC dated 18/06/2010 issued by DNA of India confirm voluntary participation by M/s Lanco Kondapalli Power Private Limited in proposed CDM project activity entitle "Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited" in Krishna district of Andhra Pradesh state of, India. Host country approval was checked and found that it confirms the EB guidelines and contributes sustainable development in India.

##### **Project Participants**

Project participant M/s Lanco Kondapalli Power Private Limited is correctly specified in section A.3, annex-I of the PDD as per Host Country Approval<sup>/HCA/</sup> received from DNA of India (party to Kyoto protocol). Host country approval was checked and found that it confirms the EB guidelines.

#### **5.1.2 Contribution to Sustainable Development**

Host Government i.e. DNA of India vide Host Country Approval dated 18/06/2010 approved that the project will contribute to sustainable development in India.

#### **5.1.3 PDD editorial Aspects**

Latest version 03 of large scale CDM -PDD format is used by Project Participant and filled up as per the guidelines for completing CDM -PDD version 07 dated 02/08/2008, EB 41, and Annex 12.

During the validation CAR A1 and CAR A2 were raised regarding editorial aspect and closed successfully.

#### **5.1.4 Technology to be employed**

Based on site visit and document review, validation team confirms that the project activity installation and operation of a new natural gas based grid connected Combined Cycle Power Plant (CCPP) of 366 MW installed capacity at Kondapalli in Krishna district of Andhra Pradesh state of India and thus to reduces GHG emission.

The description of the project is complete and accurate as described in section A.4.3 of the PDD. As project activity is a green field natural gas based grid connected Combined Cycle Power Plant (CCPP) of 366 MW capacity so, it doesn't involve the alteration of an existing installation or process and the same is confirmed by the validation team during site visit and document review. The project employs state of the art technology which is safe environment safe and sound.

#### **5.1.5 Small Scale Projects**

In accordance with decision 17/CP.7 as project activity is a renewable energy project and total installed capacity is 366 MW which is greater than 15 MW and does not fall under small scale CDM project activity.

### **5.2 Project Baseline, Additionality and Monitoring Plan**

#### **5.2.1 Application of the Methodology**

The selected baseline methodology for the project activity is the approved baseline methodology "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas" (AM0029: Version 3.0: EB 39).

All applied methodological tools i.e. Tool to calculate emission factor for an electricity system" and "Tool for the demonstration and assessment of additionality" are valid and approved and the applied methodology and methodological tools are derived from UNFCCC CDM website. All applicability conditions as mentioned in the methodology are clearly defined and justified in section B.2 of the PDD and the project is in line with all requirements and stipulations mentioned in all sections of the applied methodology AM0029, version 3.0. As per the methodology the project emissions, includes only CO<sub>2</sub> emissions from fossil fuel combustion at the project plant. In the calculation of baseline emissions, only CO<sub>2</sub> emissions from fossil fuel combustion in power plant in the baseline are considered. For leakage, emissions due to fugitive upstream CH<sub>4</sub> emissions are considered for the Project activity. There are no significant emissions, due to project activity related to project and leakage, other than those listed in the methodology.

### **5.2.2 Project Boundary**

The system boundaries of the project are clearly defined in the PDD. The spatial extent of the project boundary includes the project site and all power plants connected physically to the baseline grid i.e. Southern region grid of India. Project boundary includes Gas Turbines, Generators, waste heat recovery boiler, steam turbine and regional grid.

Validation team has checked the project boundary during site visit and verified the power plants connected to the grid from CO<sub>2</sub> database of Central Electricity Authority<sup>CEA</sup> which form a part of the project boundary. As the project is already commissioned, validation team has also checked the actual installation of Gas turbines, Steam turbines, Generators and power evacuation facilities and ensured that the same is in line with the description provided in the PDD.

The CO<sub>2</sub> which is emitted from the electricity generation in fossil fuel fired power plants is the only GHG included in the project boundary. Validation team has reviewed the approved methodology and confirm that no other source or gas to be included.

### **5.2.3 Baseline Identification**

Description of baseline scenario and its identification is clearly and transparently mentioned in section B.4 of the PDD and same is verified by the validation team. As per the procedure/approach from paragraph 48 of the CDM modalities and procedures "Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment" is used to determine the baseline scenario identification. Thus the procedure to arrive to the baseline is derived from the applied methodology AM0029, Version 3.0.

All plausible baseline alternatives identified as required by using Step 1 of "Identification of baseline scenarios" of the applied baseline methodology AM0029, version 3.0 are described by project proponent in section B.4 of the PDD. Since, the project activity has more than one alternative so the identification of the most plausible and conservative baseline scenario is selected by the levelized cost of electricity generation in INR/kwh. Out of the selected alternative scenarios having least value of electricity generation in INR/kwh is selected as the most plausible baseline scenario. For the present project activity coal based power generation alternative using subcritical technology continue to remain the economically most attractive options and thus identified as the most plausible baseline scenario.



## 5.2.4 Calculation of GHG Emission Reductions

As per the final PDD, the project activity is expected to reduce 8,301,330 t CO<sub>2e</sub> over the entire crediting period of 10 years.

The project intends to reduce GHG emissions to the extent of the difference of baseline emissions and project emissions and leakages.

The calculations of GHG emission reduction is represented by PP under section B.6 of the PDD. In accordance with AM0029 the emission reduction calculation covering leakage, project emission and baseline is demonstrated in the supporting excel sheets which were provided to the validation team. Leakage calculation is described in Appendix-2 of the PDD.

As per the methodology, **baseline emission** are calculated by multiplying electricity generated in the project activity (  $EG_{pj,y}$  ) in MWh with baseline CO<sub>2</sub> emission factor (  $EF_{BL,CO_2,y}$  )

Baseline emission factor is selected based on the lowest amongst three options suggested in the methodology. For calculating these values build margin and combined margin emission factor ( Option 1 and Option 2 ) are taken from Southern region grid taken from the public data available from database of Central Electricity Authority (CEA) version 05<sup>/CEA/</sup>. For option 3,  $\eta_{BL}$  = the energy efficiency of the technology identified as the baseline scenario i.e. Coal based power plant i.e. 34.6 % is based on the coal based power plants identified in southern region grid and taken from Central Electricity Authority CO<sub>2</sub> database which is publicly available data. As the data is obtained from the authentic source and available on the public domain validation team is convinced that it is appropriate for calculating baseline emission factor and is in accordance with the requirements of the methodology.

Option :1 build margin value of 0.818 tCO<sub>2</sub>/MWh is the lowest amongst three options is considered as baseline CO<sub>2</sub> emission factor for this project activity. This value is determined ex-ante at the time of validation and same will be updated annually ex-post As per "tool to calculate emission factor for an electricity system" . Data source used is Central Electricity Authority is a Government organisation and is publicly available.

The Net electricity generation has been duly calculated based on the plant load factor (80%), the installed capacity (366 MW) and auxiliary consumption (3%). The applied plant load factor is in line with the information given in the Detailed Project Report<sup>/DPR/</sup>. The installed capacity (366 MW) has been duly taken from the Detailed Project Report<sup>/DPR/</sup> and the Power Purchase Agreement<sup>/PPA/</sup>. The applied auxiliary consumption (3%) is in line with the DPR<sup>/DPR/</sup>. For further details please refer to Annex 3 of this report.

The **project emissions** are calculated by multiplying total volume of the natural gas consumed for power generation (  $FC_{f,y}$  ) SCM with CO<sub>2</sub> emission coefficient (  $COEF_{f,y}$  )



t CO<sub>2</sub> / SCM. Applied CO<sub>2</sub> emission factor for NG of 56.1 tCO<sub>2</sub>/TJ is in line with IPCC values (IPCC 2006 Guidelines for National Greenhouse Gas Inventory: Volume 2 Energy). Validation team is convinced that the value of CO<sub>2</sub> emission coefficient taken from IPCC in absence of any specific local availability of emission factor data for Natural Gas is appropriate and in line with the methodology.

For ex-ante estimation of the emission reduction the Net Calorific Value (NCV) has been taken from the detailed project report<sup>/DPR/</sup> and same has been provided and the appropriateness of the applied NCV value could be verified.

The natural gas consumption associated with electricity generation has been calculated based on the heat rate and the electricity generation. For assessment of the applied heat rate please refer to the Annex 3 of this report.

Fugitive upstream CH<sub>4</sub> emission (  $LE_{CH_4,y}$  ) is calculated by multiplying the quantity of natural gas consumed by the project with emission factor for upstream fugitive CH<sub>4</sub> emissions (  $EF_{NG,upstream,CH_4}$  ) from natural gas consumption and subtracting the emission occurring from fossil fuels used in the absence of the project activity which is calculated by multiplying energy generated in the project activity (  $EG_{pj,y}$  ) with emission factor for upstream fugitive methane emission in the absence of project activity (  $EF_{BL,upstream,CH_4}$  ) . For the emission reduction calculations,  $EF_{NG,upstream,CH_4}$  is taken as 296 tCH<sub>4</sub>/PJ from table 2 of AM0029 in absence of local specific data and  $EF_{BL,upstream,CH_4}$  is taken as 13.26 t CO<sub>2</sub> /GWh based on the calculation of fugitive emission for build margin data taken from CEA database version 05<sup>/CEA/</sup> which is an authentic source of information in India.

**Leakage emission** due to fossil fuel combustion/electricity consumption associated with liquification, transportation, re gasification and compression of LNG into NG transmission or distribution will be calculated by multiplying quantity of natural gas combusted in the project (  $F_{cy}$  ) with Emission factor for upstream CO<sub>2</sub> emission (  $EF_{CO_2,upstream,LNG}$  ) of 6.0 tCO<sub>2</sub> / TJ taken from approved methodology AM0029 in absence of local specific data.

By means of the document review the validation team has gained sufficient confidence that the applied default values are found consistent with the approved methodology.

The calculations of the project emission as well as baseline emission and leakage emission are documented in section B.6.3, B.6.1 and in Appendix-2 of PDD.

### Emission factor considered for GHG emission reduction

Sr No	Parameter	Reference / Basis	• Value
1	Baseline CO <sub>2</sub> emission factor for Southern region Grid.	CO <sub>2</sub> Baseline Database for Indian Power Sector" published by Central Electricity Authority, Ministry of Power,	• 0.818 tCO <sub>2</sub> /MWh

	<p>EF<sub>BL,CO2,y</sub></p> <p>(Equals EF<sub>BM,CO2,y</sub> - as build margin emission factor was determined as the lowest of the three options provided in the approved methodology. The same is provided in the PDD).</p>	<p>Government of India, version 5.0<sup>/CEA/</sup>.</p> <p>The value has been verified and found correct.</p>	
2	<p>CO2 emission factor for Natural Gas.</p> <p>EF<sub>CO2,f,y</sub></p>	<p>Table 1.4 of 2006 IPCC guidelines for National Greenhouse Gas Inventories.</p> <p>Based on the document review of the India's Initial national communication to UNFCCC validation team is convinced that carbon emission factor for local / country specific data for natural gas is not available. Also Gas invoices are reviewed to ascertain that the supplier data is also not available for CO<sub>2</sub> Emission factor for project activity.</p> <p>In absence of the local / regional / country specific data, IPCC 2006 values taken is appropriate in context to the project activity..</p> <p>The value has been verified and found correct.</p>	56.1 tCO <sub>2</sub> /TJ

3	<p>Emission factor for upstream fugitive CH<sub>4</sub> emission for NG</p> <p>EF<sub>NG,upstream,CH4</sub></p>	<p>Table 2.0 Default emission factor for fugitive CH<sub>4</sub> upstream emissions of AM 0029 V.03.</p> <p>In absence of reliable and accurate national data default values specified in table 2 of the approved methodology AM 0029 used</p> <p>Value considered is acceptable as this is applicable for other region and the most conservative value amongst the various other options in table 2 of the approved methodology AM 0029.</p>	296 t CH <sub>4</sub> /PJ
4	<p>Emission factor for upstream fugitive CH<sub>4</sub> emission in absence of project activity.</p> <p>EF<sub>BL,upstream, CH4</sub></p>	<p>CEA database Version 05.</p> <p>The value has been verified and found correct.</p>	13.26 t CO <sub>2</sub> /GWh
5	<p>Emission factor for Upstream CO<sub>2</sub> emission for LNG</p> <p>EF<sub>Co2,up stream, LNG</sub></p>	<p>AM0029, V 03, Pg 10</p> <p>In absence of reliable and accurate national data default values specified in table 2 of the approved methodology AM 0029 used is appropriate and correct.</p>	6 t CO <sub>2</sub> /TJ

## 5.2.5 Additionality Determination

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

The project developer has stated the start date of the project activity is 01/02/2008 and has submitted a copy of the notice to proceed for the project activity issued to M/s Lanco Infratech Limited as evidence. The project developer has not undertaken any construction or any real action on the implementation of the project activity prior to this date. Since the *real action of the programme activity* had begun on 01/02/2008, as per Glossary of CDM terms (Version 05), this date has been treated as the start date of the project activity. Since the real action of the project activity had begun before 02 August 2008, the project activity falls under the category of *existing project activity* as per paragraph 100 of VVM (1.2).

The PDD was web-hosted for public comments on 12/03/2010, i.e., after the start date of the project activity. Since the project is an 'existing project activity' and the PDD was web-hosted after the start date, the project developer was asked to demonstrate the serious consideration of CDM while taking the decision to implement the project activity as required vide paragraphs 102 (a) and (b) of VVM [ver.1.2] read with paragraphs 6 (a) & (b) and 8 of Annex 13, EB 62.

During the personal discussion, project developer informed that he was aware of the CDM benefits as other projects of the Lanco group companies are already registered under CDM at the time of decision making of this project activity. Project developer had submitted a certified copy of the Board Resolution dated 15/10/2007. The resolution states to develop the project as CDM. Validation team was therefore convinced that the project developer was aware of CDM benefits before the investment decision was taken and that CDM benefits were the decisive factor in going ahead with the project activity.

As regards demonstration of continuing and real action were taken to secure CDM status for the project in parallel with its implementation, the project developer submitted a chronology of events [which forms part of PDD] a summary of which is given below:

Activity	Date
1. Serious consideration of CDM benefits by the Board.	15/10/2007
2. Effective Notice to proceed to EPC contractor M/s Lanco Infratech Limited	01/02/2008
3. Appointment of CDM consultants	05/06/2008
4. Local Stakeholders meeting	06/01/2009
5. Appointment of TÜV NORD as DOE	29/01/2010
6. Letter of Host Country Approval for the project activity	18/06/2010

As evident from the chronology of events given above, the gap between any two CDM activity is less than even 1 year, Validation Team concludes that continuing and real action were being taken to secure CDM status for the project in parallel with its implementation in terms of paragraphs 112 (b) of VVM [ver.1.2] read with paragraphs 6 (b) and 8 of Annex 13, EB 62.

In the light of the above and the documentary evidence<sup>1</sup> submitted by the PP, Since the fulfilment of both the conditions stipulated vide paragraphs 102 (a) and (b) of VVM [ver.1.2] have been demonstrated with documentary evidence, Validation Team concludes that *there was a prior consideration of CDM and the CDM benefits were considered necessary in the decision to undertake the project as a CDM project activity.*

### **Application of methodology / methodological tools**

The project is large scale project. Hence, Tool for the demonstration and assessment of additionality (Ver 06) applies to the project activity. Therefore, in accordance with applied methodology AM 0029, the additionality was demonstrated based on the valid version of the tool for demonstration and assessment of additionality (Ver 06) and Guidance given vide Annex 05 of EB 62 As all requirements specified vide additionality tool and guidance on investment analysis are complied with by the project activity, this approach has been assessed to be appropriate for the additionality demonstration of this project activity.

Project developer had chosen investment barrier and to demonstrate the investment barrier had selected levelised cost of generation as financial indicator. Having regard to the fact that the project proponent is in the business of power generation and if PP would not have gone for the gas based power plant, have installed other fossil fuel based power plant. Since in this instant case, as subsequent section would reveal, baseline scenario leaves the project proponent no other choice than to make an investment to supply the electricity to the grid, the investment comparison analysis is most suited as per Guidance 16 of Guidelines on the assessment of the investment analysis V 03, Annex 05 of EB 62.

*In the above background Validation Team concludes that the additionality justification given by the project developer is in accordance with the requirements derived from the approved CDM methodology and the methodological tools referred therein and also conforms to guidance given by EB vide paragraph 110 of VVM (Ver 1.2).*

### **Application of the Methodology**

The selected baseline methodology for the project activity is the approved baseline methodology "Grid connected Electricity Plants using Natural Gas" (AM0029, Version

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<sup>1</sup> Documentary evidence submitted include Board Resolutions, purchase orders issued to M/s lanco Infratech Limited, appointment of CDM consultant, minutes of local stakeholders' meeting, HCA and appointment of DOE

3: EB 39). The selected baseline methodology, i.e., AM0029, Version 3 and Tool to calculate the emission factor for an electricity system version 2.1.1 is correctly applied to this type of grid connected electricity generation using natural gas. The project meets all the applicability criteria specified in the methodology. Validation team is convinced that as this being generation of electricity by using natural gas.

Applicability criteria as described in the methodology are fulfilled and discussed below in the table.

**Table : Applicability criteria assessment :**

Applicability criteria	Assessment
<p>The project activity is the construction and operation of a new natural gas fired grid-connected electricity generation plant;<sup>1</sup></p> <p>Footnote 1 : Natural gas should be the primary fuel. Small amounts of other startup or auxiliary fuels can be used, but can comprise no more than 1% of total fuel use, on energy basis.</p>	<p>366 MW Grid connected Combined cycle power plant installed by Lanco Kondapalli Power Private Limited (LKPPPL) is newly constructed gas based combined cycle power plant and is based on natural gas fuel firing.</p> <p>In the course of validation, based on the document review of the EPC contract validation team is convinced that the project activity is a new combined cycle power project based on natural gas only and there is no auxiliary fuel firing.</p> <p>Hence it is confirmed that first applicability criteria with its footnote requirements are fulfilled.</p>
<p>The geographical/physical boundaries of the baseline grid can be clearly identified and information pertaining to the grid and estimating baseline emissions is publicly available;</p>	<p>The boundary of the Southern regional (SR) Grid of India is clearly defined as baseline grid.</p> <p>Information related to the SR grid and baseline emissions are publicly available by Central Electricity Authority (CEA). <a href="http://www.cea.nic.in">www.cea.nic.in</a>. Same is verified by the validation team.</p> <p>Based on above information it is confirmed that this second applicability condition is fulfilled</p>
<p>Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity,</p>	<p>Project proponent has described in section B.2 of the PDD that the natural gas is sufficiently available for the project activity and will not result in price-</p>



<p>are not constrained by the use of natural gas in the project activity.<sup>2</sup></p> <p>Footnote 2 : In some situations, there could be price-inelastic supply constraints (e.g. limited resources without possibility of expansion during the crediting period) that could mean that a project activity displaces natural gas that would otherwise be used elsewhere in an economy, thus leading to possible leakage. Hence, it is important for the project proponent to document that supply limitations will not result in significant leakage as indicated here.</p>	<p>inelastic supply constraints.</p> <p>Further the PDD also explains the availability of the natural gas in the region and future projections of the availability of natural gas and comparison with the estimated demand of natural gas by the upcoming gas based projects including project activity.</p> <p>As verified by the validation team from the web site of the Ministry of Petroleum and Natural Gas, Government of India<sup>2</sup>, prevailing scenario of the availability of natural gas in the country can be summarized as below.</p> <p>In India, at present total production of the natural gas is around 87 million standard cubic meters per day (MMSCMD) supplied by Oil &amp; Natural Gas Corporation Ltd. (ONGC), Oil India Limited (OIL) and JVs of Tapti, Panna-Mukta and Ravva. Also under New Exploration Licensing Policy ( NELP) to private and public sector companies Government have offered gas fields for exploration under production sharing contracts. Out of this, 74 MMSCMD is available for sale to various consumers.</p> <p>In addition various other sources are discovered by the Reliance Industries Limited ( RIL) in Krishna Godavari basin ( KG D-6 basin) and as verified from the sources provided in the PDD, RIL expected to produce 60 to 80 MMSCMD with effect from 2009.</p> <p>Hence DOE ensures that the Information provided in the PDD regarding LNG terminal through east-west gas distribution network is correct and</p>
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<sup>2</sup> <http://petroleum.nic.in/ng.htm>



	<p>conservative.</p> <p>Total likely future gas supply from the above sources estimated by the PP at approximately 39914 million standard cubic meter per year ( MSCM/year) is appropriate.</p> <p>At the same time, as verified by the validation team from independent sources and confirmed that in India various LNG terminals are installed by the Petro net LNG<sup>3</sup> at Dahej port and having a present capacity of 10 MMTPA per year. ( equivalent to 40 MMSCMD) and Dabhol LNG terminal of the capacity of 5 MMTPA by the GAIL.</p> <p>Regarding future upcoming NG based power projects PP has referred 11<sup>th</sup> Five year plan issued by the planning commission of the India. DOE has also verified the same to ensure the details provided in the PDD. Sources referred are authentic.</p> <p>Accordingly, total 1367 MW capacity power plants are coming up based on the NG including the project activity. Natural gas requirement for these projects will be around 2000 million standard cubic meters per year (MSCM/year).</p> <p>Based on the information presented in the PDD on demand and supply of the natural gas and background investigation it can be concluded that natural gas was sufficiently available in India at the time of decision making and will also be available in future to the extent that other future natural gas based power plant are</p>
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<sup>3</sup> <http://www.petronetlng.com/>

	<p>not constraint by the uses of natural gas in the project activity.</p> <p>This confirms that third applicability conditions along with provisions of footnote 2 are fulfilled.</p>
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## Alternatives

### Identification of the baseline scenario

#### 1. Identify plausible baseline scenarios

The project developer has considered following alternatives for the project activity, viz.,

- Project activity not implemented as a CDM project;
- Power generation using natural gas, but technologies other than the project activity;
- Power generation technologies using energy sources other than natural gas;
- Power generation based on nuclear energy
- Power generation based on renewable sources of energy i.e. Wind, Solar, Hydro
- Import of electricity from connected grids, including the possibility of new interconnections.

The validation team has examined whether all possible realistic and credible alternatives that provide outputs or services comparable with the proposed CDM project activity (including the proposed project activity without CDM benefits) have been analysed. By doing this all type of power plants that could be constructed as alternative to the project activity within the grid boundary have been considered. It could be confirmed that all possible realistic and credible alternatives that provide baseload electricity power have been considered. Alternatives that provide peak load power or cogeneration plants that provide steam and electricity have been correctly excluded. The detailed assessment of this step is as follows:

Project activity not implemented as a CDM project i.e. Power generation using natural gas as fuel and combined cycle technology without CDM revenues has been correctly identified as a plausible baseline scenario.

Gas turbine in open cycle technology was identified under power generation using natural gas but technologies other than the project activity.

- It is obvious that the Gas turbine in open cycle has efficiency which is less as compared to combined cycle. Same is verified by the validation team and confirmed that this kind of technology is mainly used for the peak-load electricity generation<sup>/IEA-CHP//T-CHP//T-GT1/</sup>. Hence the justification that the same is not plausible alternative is acceptable

Under the alternative Power generation technologies using energy sources other than natural gas, following alternatives were analyzed.

1. Power generation using coal as fuel – sub critical technology
2. Power generation using coal ( Imported coal) as fuel – super critical technology
3. Power generation using coal ( Domestic coal) as fuel – super critical technology
4. Power generation using lignite as fuel.
5. Power generation using naphtha as fuel
6. Power generation using hydro power.
7. Power generation using wind energy.
8. Power generation using nuclear energy.

**Power generation using coal as fuel – sub critical technology** was correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.

**Power generation using coal (Imported and Domestic) as fuel – supercritical technology** was correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.

**Power generation using lignite** as fuel was also correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.

**Power generation using naphtha** as fuel was also correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.

Other power generation technology based on the renewable sources of energy i.e. power generation using hydro power and wind power were correctly excluded from the baseline scenario. It is evident that these technologies are based on renewable sources of energy and cannot deliver base load power. The project activity delivers base load and the hydro power and the wind power delivers the peak load. .Hence exclusion of above alternatives is justified.

Due to regulatory requirement, no private investor in India is allowed to construct nuclear based power station. Hence exclusion of the alternative power generation using nuclear energy is appropriate.

Import of electricity from connected grid is correctly excluded from consideration as a plausible baseline scenario because of the fact that there is frequency mismatch of the transmission network, lack of availability of transmission corridor and also in southern region grid where project activity is going to export the power was always a power deficit grid. From power demand and supply data it is evident that southern region grid is having peak load deficit of 1990 MUs. Same is verified by the validation team from the Central Electricity Authority web site and convinced that import of electricity from connected grid is not a plausible scenario.

Hence, six alternatives left are setting up

- (i) Coal based power plants with sub critical technology
- (ii) Coal based power plant with super critical technology using imported coal
- (iii) Coal based power plant with super critical technology using domestic coal
- (iv) Lignite based power plants
- (v) Naphtha based power plants
- (vi) Setting up the project as a non-CDM activity.

All the alternatives are in compliance with all applicable legal and regulatory requirements as

- the implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- the Electricity Act 2003 does not restrict or empower any authority to restrict the fuel choice for power generation;
- the applicable environmental regulations do not restrict the use of gas energy; and
- there is no legal requirement on the choice of a particular technology.

### **Identification of the economically most attractive baseline scenario alternative**

The economically most attractive baseline scenario alternative has been identified according to the Step 2 of the methodology. By doing this the Levelized Unit Cost of Electricity (LUCE) have been selected as financial indicator. This is in line with the methodology. Of the six alternatives, alternative (ii), (iii), (iv), (v) and (vi) i.e., Coal based (Imported / Domestic) fuel using supercritical technology, Lignite based power plants, Naphtha based power plants and setting up the project as non-CDM activity cannot be considered realistic because these are not the economically most attractive alternatives.

The Levelized Unit Cost of Electricity (LUCE) of coal based power plant with sub critical technology is INR 2.1182/kWh, Coal based power plant with super critical technology using imported coal is INR 2.3283 / kWh, Coal based power plant with super critical technology using domestic coal is INR 2.2707 /kWh, Lignite based power plant is INR 2.2439/ kWh, Naphtha based power plant is INR 4.2872 / kWh

and the Levelized Unit Cost of Electricity (LUCE) of gas based power plant are INR 2.6819/kWh.

The validation team assessed the applied financial parameters and it could be verified that they have been elaborated in accordance with the requirements of the §109 and §110 of the VVM (EB 55 Annex 1). By doing this the technical lifetime of the considered technologies has been assessed as appropriately justified and in accordance with latest version of the "Guidance on the Assessment of Investment Analysis" as provided by the CDM EB vide letter from the EPC contractor<sup>/ELT/</sup>.. For detailed assessment of the applied parameters please refer to the Annex 3 of this report.

A sensitivity analysis has been done by varying the investment cost, Station heat rate, fuel cost and PLF also reveals that the coal based power plants remains the most financially attractive option. Hence, coal based power plants i.e. alternative (i) could be justified as realistic, credible and plausible baseline alternative to the PP. It should be noted that baseline emissions will determined based on the build margin and not on the emission factor of the coal. This is in line with the methodology. Detailed analysis is given in section 5.2.5.Para (e)

## **Investment analysis**

As per the requirement of the applied methodology, Project developer has demonstrated through the Sub-step 2b (Option III: Apply benchmark analysis) of the Additionality Tool that the financial indicator (LUCE) of the project activity will remain higher than the benchmark rate, i.e., the lowest value of levelised cost of generation of all the baseline alternatives.

The validation team has adopted a five pronged strategy to ascertain the veracity of the conclusion drawn by the project developer in accordance with the requirements of the §109 and §110 of the VVM (EB 55 Annex 1).

- a) determining the suitability of the benchmark applied for the type of financial indicator presented;
- b) conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy and suitability of parameters;
- c) cross-checking the parameters against third-party or publicly available sources;
- d) assessing the correctness of computations carried out and documented;;

- e) subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions variations in the result would occur, and the likelihood of these conditions.

a) Suitability of financial indicator and benchmark:

The project developer has chosen LUCE to demonstrate the additionality of the project. Additionality Tool (Ver. 06) permits the use of LUCE as financial indicator. Since the project developer is demonstrating the financial unattractiveness of the project, LUCE is appropriate, as it provides an immediate indication of how costly the power generated by the project activity. Having regard to the fact that the project proponent is in the business of power generation and if PP would not have gone for the gas based power plant, have installed other fossil fuel based power plant. Since in this instant case, baseline scenario leaves the project proponent no other choice than to make an investment to supply the electricity to the grid, LUCE comparison analysis is most suited as per Guidance 16 of Guidelines on the assessment of the investment analysis V 03, Annex 05 of EB 62

For benchmark, under Section 6 of the Sub-step 2 b of additionality tool, version 06, option 6(a) to 6(c) is not applicable to the project activity as it is not related to LUCE. Also option 6 (d) is not applicable in absence of any Government / official approved benchmark for this type of project activity in India. Hence under option 6(e), using any other benchmark as the lowest value of levelised cost of generation of all the baseline alternatives (i.e. for coal based power generation using sub critical technology) as a benchmark and is considered appropriate.

In addition as a cross check PP has also worked out project IRR and considered WACC as a benchmark. Validation team has cross checked the calculations and confirmed that it does not cross the benchmark even with the sensitivity analysis of +/- 10 % and project remains additional.

While calculating the Benchmark (WACC) following input parameters are used

Cost of Debt is correctly sourced from the RBI web site and is available at the time of decision making time. The RBI publishes the range of PLR of the five major nationalized banks in India in its weekly publication. In the project case, the average of PLR range (12.75% - 13.25%) i.e. 13.0 % was considered as the cost of debt for arriving at benchmark. The average value of PLR is appropriate considering the project investors are generally undecided which bank will agree to the expected terms and conditions and therefore they normally consider higher PLRs. It is important to note that RBI's PLR is in itself a conservative benchmark as it does not take into account the commercial lending rates of private sector banks which are typically higher than that of nationalized banks. However to be on a conservative side, the average rate of PLR range of five nationalized banks as published by RBI has been considered in the project case. In light of the above the average value of PLR is the most appropriate and conservative benchmark.



Risk free return of 7.89 % is appropriately considered from long term government bond rate from the Reserve Bank of India web site. Same is verified by the validation team.

PP has calculated the beta value based on the minimum beta calculated for 1,2,3,4 and 5 years. Accordingly 1 year beta works out to be minimum. As this approach is conservative, DOE has accepted the same. All other input values used for the calculation of beta is verified by the DOE and ensured that it is sourced from the authentic and reliable sources and is publicly available.

Based on above information DOE is convinced that the benchmark value of 13.53 % applied is suitable for the project activity and assessed as appropriate.

b) Parameters and assumptions used: The three important parameters, which determine LUCE, are project cost, financing pattern, and profitability estimates. The project cost estimates is based on the Detailed Project Report (DPR), which is equivalent to Feasibility Study Report (FSR). Applying DPR for the investment analysis is in line with the EB 38 para 54. The project has been conceptualised with financed by debt (Rs.891 crores.) and equity (Rs.297 crores.). The financing pattern yields a gearing of 75:25, which is accepted financing pattern for power projects. For details please refer to the Validation Table for Assessment of Financial Parameters included in the Annex of this report.

The profitability estimates of the project, which forms the basis for LUCE calculation is based on installed capacity, PLF, SHR, NCV, O&M cost, insurance cost, interest, depreciation and taxation. The PLF has been taken at 80% which is based on the DPR. O&M cost are all based on DPR. Interest is based on detailed computation forming part of the worksheet. The project developer has adopted depreciation rate recommended by Central Electricity Regulatory Commission (CERC) for power projects. Tax liability has been calculated as per the income tax rules. In computing the income tax liability, the project developer has taken into account eligible and the Tax holiday (u/s 80IA of the Income Tax Act, 1961), which the infrastructure projects (under which the project activity falls) are entitled to for the 10 consecutive years out of the first 15 years. The tax rate assumed corresponds to the tax rate prevailing at the time of taking decision. For details please refer to the Validation Table for Assessment of Financial Parameters included in the Annex of this report.

For calculating project IRR project proponent has used tariff based on the detailed project report available at the time of decision making. As per DPR, levelised cost of generation is considered which includes return on equity in addition to other variable and fixed charges. The applicable tariff of all the power stations had been decided following the CERC regulation dated 26th March, 2004<sup>4</sup>. As this value is based on the Detailed Project Report following CERC guideline is appropriate.

c) Cross checking parameters: The cost of project, O&M cost, interest costs, depreciation and tax rate have been cross checked with DPR, CERC guidelines,

<sup>4</sup> [http://www.cercind.gov.in/13042007/Terms\\_and\\_conditions\\_of\\_tariff.pdf](http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf)



Companies Act and Income Tax Act. In order to gain further confidence that assumed values were valid and applicable at the time of the investment decision the validation has carried out a plausibility check by applying information and factors in accordance with which the tariff for sale of electricity by Generating Companies to the Board and to other persons shall be determined as provided by the Ministry of Power in India<sup>/CERC/</sup>. This data source was valid at the time of decision making. For details please refer to the Validation Table for Assessment of Financial Parameters included in the Annex of this report.

**d) Assessment of correctness of computation:**

The assessment involves checking the data input taken from DPR/documents, adoption of correct accounting principle and arithmetical accuracy. The validation team checked the documents and ensured that right input has been taken in the project cost and projections. The accounting principles adopted with respect to tax computation are found to be in order. The arithmetical accuracy is also found to be correct.

The principle adopted by the project developer for computing LUCE is in conformity with the “Guidance on the Assessment of Investment Analysis” version 05, EB 62, Annex 05 issued by EB. LUCE has been computed for 20 years for project activity as well as baseline alternatives. Same is in conformity with the guidance at No. 3 of the EB 62 Annex 05.

Based on the above, the LUCE of the project works out to INR 2.6819/kWh in contrast to the benchmark of INR 2.1182/kWh. In the above background, the validation team is convinced that the project is additional and not a business-as-usual scenario. However, this conclusion was checked by subjecting the critical assumptions to reasonable variations.

**e) Sensitivity analysis:** The Guidance on assessment of investment analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation ( $\pm 10\%$ ). The project developer has identified project cost, Station Heat Rate (SHR), fuel cost and PLF as the most critical assumptions. Accordingly, sensitivity analysis has been conducted to analyze the impact of a change in (a) project cost by  $\pm 10\%$ , (b) Station Heat rate by  $\pm 10\%$  (c) Fuel Cost by  $\pm 10\%$  and (d) PLF by  $\pm 10\%$  on the LUCE. The sensitivity analysis reveals that even under more favourable conditions, the LUCE would not cross the benchmark value as given in the following table:

**Table 4.4: Sensitivity Analysis**

Parameter	Investment cost	Fuel cost	PLF	Heat rate
-10%	2.6057	2.5019	2.7799	2.5019
0%	2.6819	2.6819	2.6819	2.6819
+10%	2.7701	2.8620	2.6018	2.8620

The validation team carried out its own independent assessment, which reveals that the project would become *non additional* only if

- PLF goes up by more than 40 % ( i.e. 120% however maximum PLF can be 100% only).
- Fuel cost goes down by more than 23.6 %

LUCE is not sensitive to project cost at all. The validation team considers that such a reduction of the fuel cost or increase of PLF is highly unrealistic and unlikely to happen.

Sensitivity analysis is also carried out for project IRR by applying variation of + / - 10 % for parameters PLF, Station heat rate, project cost, fuel cost and O&M. Analysis results are presented below

Sr. No.	Parameter	Project IRR (%)	Project IRR (%)	Project IRR (%)
		(+10%)	(Base case)	(-10%)
1.	Plant load factor	11.80	11.80	11.80
2.	Station heat rate	11.80	11.80	11.80
3.	Project capital cost	11.80	11.80	12.09
4.	Fuel cost	11.80	11.80	11.80
5.	O&M cost	11.80	11.80	11.80

As observed, project IRR always remains below the benchmark (WACC) value of 13.53 %. Which is calculated based on the minimum beta worked out for 1 to 5 years. There is very marginal variation in the project IRR as it is based on the levelised cost of generation. As per the CERC guideline the levelised cost of generation for power projects to be derived based upon total fixed (including return on equity @ 14%) and variable cost as incurred by the project activity. As it is based on the CERC guidelines and as per the detailed project report available at the time of decision making is considered appropriate and acceptable. Validation team has also reviewed recently registered project (4419) and observed the similar results of sensitivity analysis on project IRR is obtained as the project activity.

### Barrier analysis

Project developer did not considered barrier analysis. Hence, this is not applicable.

### Common practice analysis

Project activity is not a common practice which can be evident from the following arguments presented in section B.5 of the PDD:

Since it is a large scale project, as per paragraph 119 of VVM (01.2), common practice analysis is required to be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality. This is a test to complement the investment analysis to confirm that the project activity is not widely observed and commonly carried out in the region. As required, project developer has analysed 'similar' projects to demonstrate that setting up combined cycle gas based power projects is not a common practice in the identified geographical region.

PP has carried out common practice as per the guidelines on common practice vide EB 63, Annex-12. Accordingly entire host country ( India) is correctly considered for the assessment. Applicable output range as per the guidelines is correctly considered as 183 MW to 549 MW considering 366 MW capacity of the project activity.

Out of total 18 projects identified, two projects have completed CDM hence Nall is considered as 16. Out of which 8 projects is undertaken by the state / Government utility and hence appropriately eliminated based on the different investment climate for government and private entity. Other 8 projects are based on the multi fuel fired technology which provides flexibility of selection of fuel source and differs from the project activity. Hence N diff is considered as 16 and ration comes out to zero.

Based on the above, validation team has come to the conclusion that setting up of large scale combined cycle gas based projects is not a common practice in Host country.

The PDD provides links to official data sources where the publicly available information about the electricity market can be found. The validation team has proved all indicated data sources by referring the public domain information and the provided conclusions could be verified. The validation team is convinced that the project activity is not a common practice at the time of the start of this project activity and is in line with the EB guidelines on common practice published in EB 63, Annex12.

## Summary

Step <sup>1</sup>	Argument	Assessment
(2)	Investment Analysis : Project is financially unattractive and would continue to remain financially unattractive even under optimistic assumptions.	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant

Step <sup>1</sup>	Argument	Assessment
		barrier
(4)	Common practice analysis: Gas based power generation is not a common practice in Gujarat	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant barrier
<b>Assessment of the validation team</b>		<input checked="" type="checkbox"/> Project is additional <input type="checkbox"/> Project is not additional

1 According to Additionality tool Version 06

In the above background, the validation team concludes that the project is not a business-as-usual scenario and is additional in accordance with provisions of the Methodology.

## 5.2.6 Monitoring Methodology

Applied baseline and monitoring methodology is AM0029 Version 3.0 which is approved by UNFCCC and appropriate for the project activity. Monitoring plan is described in section B.7.2 of the PDD. During the site visit and by conducting document review, validation team is convinced that the monitoring plan described in the PDD is implemented at the project site.

## 5.2.7 Monitoring Plan

The project applies approved monitoring methodology: AM00029 "Grid Connected Electricity Generation plant using Non-Renewable and less GHG intensive fuel", Version 03, as per the CDM EB 39.

The methodology requires monitoring of Annual Fuel(s) consumption in project activity, Net Calorific value(s) of the fuel used in the project activity, Fuel emission factors for fuel(s) used in the project activity.

Calibration, periodical testing and maintenance procedures of monitoring equipment are clearly mentioned in the section B.7.2 of PDD as per QA/QC procedure.

Gas flow meters installed by the gas supplier is ultrasonic flow meter. Pressure transmitter and temperature transmitter is calibrated as per manufacturer guidelines.

For NCV measurement, chromatographs installed by gas supplier and calibrated as per standard. However, as per approved monitoring methodology AM 0029, no additional QA/QC is required for parameter NCV.

## Baseline emissions

Validation team is convinced that the baseline parameters are properly identified and described in the PDD. Net annual electricity generated in the project plant is measured by online energy meters

Grid emission factor was identified based on the lowest of three options as required by the methodology. Accordingly the PP has taken the build margin as baseline emission factor. According to methodology as build margin is selected as emission factor it needs to be determined ex-post as described in tool to calculate emission factor for an electricity system and is specified in the PDD. The Build margin has been duly included in the monitoring plan. The procedures to monitor this parameter including the information about the data source and measurement method have been appropriately indicated in the section B.7.1. of the PDD.

Validation team has reviewed the CEA CO<sub>2</sub> database version 5.0 available at the time of validation and procedures of approved methodology and confirmed that baseline emission factor is correctly identified for calculation of baseline emissions. The PP has duly selected option 1, Build margin emission factor amongst all three options. The value of data applied (0.818 tCO<sub>2</sub>/MWh) is correct.

For **project emission**, annual quantity of fuel i.e. natural gas used in the project activity is monitored by flow meters installed at the gas supplier end and cross checked with the online mass flow meter and density meter installed by project proponent. Net calorific value is measured by online chromatograph installed by gas supplier.

As per the methodology ex-post determination of emission factor for upstream fugitive methane emission is required to monitor **leakage emission**. Section B.7.1 of the PDD clearly specified the above requirement and will be determined ex-post based on the latest data available.

## 5.2.8 Project Management Planning

For the purpose of the projects monitoring an appropriate project management planning team is maintained by the Lanco Kondapalli Power Private Limited (LKPPL) at site. The detailed structure of the CDM project management team is clearly defined in section B.7.2 of the PDD. At each level the roles and responsibilities of project team members is mentioned clearly.

Validation team has also reviewed the documents submitted by the PP and ensured that roles and responsibilities for operation and maintenance and data recording are properly implemented. All monitored data will be archived in physical as well as in electronic form. The data will be kept for the whole crediting period and additional 2 years as given in the PDD<sup>PDD2/</sup>.

### **5.2.9 Crediting Period**

As described in section C.2.2.1 of the PDD<sup>/PDD2/</sup>, crediting period chosen is 10 years fixed period. The 1<sup>st</sup> year of crediting will start from the date of registration of this project activity or **31/03/2012** whichever is later. Start date of the crediting period chosen is appropriate.

### **5.2.10 Environmental Impacts**

The Environmental Impact Assessment study has been carried out for the proposed project activity was carried out by M/s Pioneer Consultants Pvt. Ltd. appointed by the project participant to assess the environmental impact and suggest mitigation measures from the Project. This has been confirmed by the validation team during the site visit, interview with the stakeholder and review of the EIA report submitted to the validation team. Moreover the project has received Environmental Clearance from MoEF and Consent for Establishment from Andhra Pradesh Pollution Control Board (APPCB). The project activity does not result in any negative impacts on environment.

### **5.2.11 Comments by Local Stakeholders**

Local stakeholders were invited by personal invitation fifteen days prior to the stakeholder meeting and meeting was conducted on 06/01/2009. No negative or adverse comments were received. Details of the stakeholder consultation meet was described in section E of the PDD. This was also confirmed during the site visit by conducting interview with local stakeholders.

## 6 VALIDATION OPINION

M/s Lanco Kondapalli Power Private Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited" 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 <24> Corrective Action Requests (CARs) and <10> 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 (India) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of India vide the Letter of Approval (HCA) dated 18/06/2010.
- 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 8,301,330 t CO<sub>2</sub>e 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.

Vadodara, 2012-09-04



Mr. Pankaj Patel  
TÜV NORD JI/CDM CP  
Validation Team Leader

Essen, 2012-09-04



Stefan Winter  
TÜV NORD JI/CDM CP  
Final Approval



## 7 REFERENCES

**Table 7-1:** Documents provided by the project participant

Reference	Document
/CP/	Proof of capacity:- 366 MW NG based power station – EPC contract dated 30/01/2008
/CC/	Commissioning Certificate ref. No. LKPPL; P-II Consortium Members; 651:10 dated 26/08/2010 of 366 MW combined cycle power plant commissioned on 01/08/2010.
/CON-EL/	Consultant Engagement letter for advisory services for CDM project development by PWC to Lanco Kondapalli Power Private Limited dated 26/10/2009.
/DPR/	Detailed project report of 355 MW Gas based CCPP Power Plant II Project (Doc. No. 1880710001-GE-DPR-700-001, Rev A) by FICHTNER India
/EGoM/	Reference article titled as “EGoM clears gas pricing formula for KG Block” dated 13/09/2007.
/EIA/	Environment Impact Assessment
/ELT/	Proof of estimated life time of the project activity- Letter from EPC contractor M/s Lanco Infratech Limited dated 21/04/2010.
/EPC/	Engineering, procurement and construction agreement between Lanco Kondapalli Power Private Limited and Lanco Infratech Limited dated 30/01/2008 - <b>Evidence of Project starting date</b>
/GSA/	<ul style="list-style-type: none"> <li>Gas Sales and Purchase Agreement signed between Lanco Kondapalli Power Private Limited (as buyer) and Reliance Industries Limited and NIKO (NECO) Limited (as sellers) dated 29/04/2009.</li> <li>Gas Sales and Purchase Agreement signed between Lanco Kondapalli Power Private Limited (as buyer) and Reliance Industries Limited and NIKO (NECO) Limited (as sellers) dated 27/04/2009.</li> </ul>
/GTA/	<ul style="list-style-type: none"> <li>Gas Transportation Agreement (Main Line) between Reliance Gas Transportation Infrastructure Limited (as Transporter) and Lanco Kondapalli Power Private Limited (as Shipper) dated 23/09/2009.</li> <li>Gas Transportation Agreement (Rental Line) between Reliance Gas Transportation Infrastructure Limited (as Transporter) and Lanco Kondapalli Power Private Limited (as Shipper) dated 23/09/2009.</li> </ul>

Reference	Document
	<ul style="list-style-type: none"> <li>Side Letter for GTA given by Reliance Gas Transportation Infrastructure Limited to Kondapalli Power Private Limited dated 27/06/2010.</li> <li>Amendment to Gas Transportation Agreement (GTA) phase-II given by Reliance Gas Transportation Infrastructure Limited to Kondapalli Power Private Limited dated 24/01/2009.</li> </ul>
/HCA/	Host Country Approval from Ministry of Environment and Forest, India vide letter no. 4/5/2010-CCC dated 18/06/2010
/INV/	Gas Invoice for delivery and billing for the period 1/10/2009 to 15/10/2009 by NIKO (NECO) Ltd vide invoice no. 4524750141 dated 15/10/2009.
/IRR/	IRR calculation sheet
/LOA/	Letter of acceptance for stage II of Lanco Kondapalli Power Plant-365 MW combined cycle power plant- EPC work vide letter ref. No. LKPPL/EPC/2007/774 dated 29/11/2007
/LTSA/	<ul style="list-style-type: none"> <li>Offshore Agreement for parts supply and repair services between Lanco Kondapalli Power Private Limited and GE Energy Parts Inc dated 25/06/2008.</li> <li>Long Term maintenance Service agreement with M/s GE international inc for gas turbine dated 25/06/2008</li> </ul>
/MD/	Management decision - Copy of resolution passed by directors Lanco Kondapalli Power Private Limited in the Board meeting held on 15/10/2007.
/MOC/	Modalities of Communication
/NCV/	Proof of NCV of the fuel used in project activity and baseline.
/N-Change/	Fresh certificate of Incorporation consequent upon change of name on conversion from Lanco Kondapalli Power Private Limited to Lanco Power Limited with corporate identity number U401018P1995PLC021459 dated 23/12/2010 by Government of Indian- Ministry of corporate affairs Registrar of Companies, Andhra Pradesh.
/O&M/	Operation and maintenance agreement with M/s Genting Lanco Power (India) private Limited dated 19/11/2009.
/PDD/	<p>PDD V 01 Project Design Document named "Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited" hosted from 12.03.2010 to 10.04.2010</p> <p>PDD V02 Project Design Document named "Grid connected electricity</p>

Reference	Document
	<p>generation using natural gas by Lanco Kondapalli Power Private Limited” dated 27/06/2010</p> <p>PDD V03 Project Design Document named “Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited” dated 18/04/2011</p> <p>PDD V04 Project Design Document named “Grid connected electricity generation using natural gas by Lanco Kondapalli Power Private Limited” dated 02/01/2012</p>
<b>/SC/</b>	<p>Statutory clearances</p> <ul style="list-style-type: none"> <li>Consent order for establishment of Project by Andhra Pradesh Pollution control board vide order no. APPCB/VJA/574/CFE/HO/2008/1460 dated 11/08/2008.</li> <li>Ministry of Environment and Forrest (MOEF) clearance for enhancement from 850 MW to 1155 MW Natural Gas based combined cycle power plant as Kondapalli, district Krishna, Andhra Pradesh by M/s Lanco Kondapalli Power Private Limited vide letter no. J-13012/22/2003-IA-II (T) dated 13/03/2008.</li> </ul>
<b>/LSHC/</b>	<p>Proof of local stake holders consultation process</p> <ul style="list-style-type: none"> <li>Invitation letter dated 22/12/2008</li> <li>List / Record of Participants dated 06/01/2009</li> <li>List of Queries / issues raised by local stakeholders. Feed back forms</li> </ul>
<b>/TS/</b>	Technical specifications of GT/STG/HRSG
<b>/TNEB/</b>	Letter of acceptance issued by TNEB vide letter No. DIR/EE/AEE/PP/P purchase Jan10 to May 10/D. 725.6/10 dated 29/01/2010 for Electricity purchase for round the clock power for the month of Feb 2010.
<b>/XLS/</b>	Emission reduction calculation spreadsheet

**Table 7-2:** Background investigation and assessment documents

Reference	Document
/AM0029/	Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas (Version 03)
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GCP/	UNFCCC: Guidelines for completing CDM-PDD and CDM-NM
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPPC-RM/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
/PDD-T/	Project Design Document Form (CDM PDD) - Version 03
/TA/	<ul style="list-style-type: none"> <li>• Tool for the demonstration and assessment of additionality (Ver. 4 – Ver. 06).</li> <li>• Tool to calculate emission factor for an electricity system</li> <li>• Glossary of CDM Terms, version 05.</li> <li>• Guidelines on the Demonstration and Assessment of Prior consideration of the CDM – Annex 13 of EB 62</li> <li>• Guidelines on Assessment of Investment Analysis – Annex 05 of EB 62.</li> </ul>
/VVM/	Validation and Verification Manual (Version 01.2, Annex 1, EB 55)

**Table 7-3: Websites used**

Reference	Link	Organisation
/cea/	<a href="http://www.cea.nic.in/planning/c%20and%20e/government%20of%20india%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/government%20of%20india%20website.htm</a>	CEA CO <sub>2</sub> database
/cd4cdm/	<a href="http://www.cd4cdm.org">www.cd4cdm.org</a>	UNEP Riso Centre
/cerc/	<a href="http://www.cercind.gov.in/">http://www.cercind.gov.in/</a>	Central Electricity Regulatory Commission
/dna/	<a href="http://www.cdmindia.nic.in">http://www.cdmindia.nic.in</a>	Ministry of Environment and forests (DNA of India)
/ipcc/	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications
/rbi/	<a href="http://www.rbi.org">www.rbi.org</a>	Reserve Bank of India

**Table 7-4: List of interviewed persons**

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Rakesh kumar Gupta	Chief Operating Officer, Lanco Kondapalli Power Private Limited
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	A. Srinivasa Rao	Executive Director (Projects) Lanco Kondapalli Power Private Limited
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	K Satyanarayana	Vice president(F) & Company Secretary Lanco Kondapalli Power Private Limited
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	A. Suresh Babu	Asst General Manager (Finance) Lanco Kondapalli Power Private Limited
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	K.Hari Krishna Rao	General Manager / Plant Head Lanco Power Private Limited. (O&M)

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Deeksha Vats	Price water House Coopers Consultants
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Sourish rajgupta	Price water House Coopers Consultants
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nasib Kafle	Price water House Coopers Consultants
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	K Suryaprakash Rao	Director Mac Society, Kondapalli toys manufacturer
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	K Guravariah	Sarpanch, Kondapalli Village

<sup>1)</sup> 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.
<b>A. General Description of Project Activity</b>				
<b>A.1. Approval</b> <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>	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/PDD/(A.3)	CAR A1	OK
A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website?	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.	/PDD/ /	CAR A1	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, §§ 44, 47, 48, 49 (b), 49 (c), 53) <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>	<i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1			
A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol?  (EB 55 Annex 1, § 45(a))	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/ /PDD/	CAR A1	OK
A.1.4. Do the written approvals confirm that the participation is voluntary?  (EB 55 Annex 1, § 45(b))	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/PDD/	CAR A1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
A.1.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the country?  (EB 55 Annex 1, § 45(c))	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/PDD/	<del>CAR</del> A1	OK
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)	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/PDD/	<del>CAR</del> A1	OK
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6?  (EB 55 Annex 1, § 46)	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document	/PDD/	<del>CAR</del> A1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<i>Conclusion:</i> Subject to closure of CAR A1			
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?  (EB 55 Annex 1, § 51)	<i>Description:</i> Details of project participants provided in the PDD are consistent  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Validation team has reviewed PDD and confirmed that the details of the project participants are consistent in Annex-1 and section A.3 of the PDD.	/PDD/	OK	OK
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved?  (EB 55 Annex 1, § 51) <i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.</i>  <i>Describe the means of validation employed to draw this conclusion.</i>	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document  <i>Conclusion:</i> Subject to closure of CAR A1	/PDD/	<del>CAR</del> A1	OK
A.1.10. Are any other project participants approved but not listed in the PDD?  (EB 55 Annex 1, § 52)	<i>Description:</i> Host country approval is not provided by the Project Participants for the project activity.  <i>Justification of evidences:</i> Project Design Document	/PDD/	<del>CAR</del> A1	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>Conclusion:</i> Subject to closure of CAR A1			
<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)  <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>	<p><i>Description:</i> Contractual agreement with TÜV-NORD and Lanco Kondapalli Power Private Limited (project participants)</p> <p><i>Justification of evidences:</i> Signed Service proposal dated 27/01/2010 between PP and DOE<sup>/SP/</sup>.</p> <p><i>Conclusion:</i> As confirmed from the service proposal dated 27/01/2010 that the DOE has direct contractual agreement with PP.</p>	/HCA/ /SP/	OK	OK
<p><b>A.2. Contribution to Sustainable Development</b></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)  <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> Host country approval is not provided by the Project Participants for the project activity.</p> <p><i>Justification of evidences:</i> Project Design Document</p> <p><i>Conclusion:</i> Subject to closure of CAR A1</p>	/PDD/	CAR A1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 55 Annex 1, §§ 125–127) <i>Describe the other positive aspects not related to GHG emission reduction on the environment.</i></p>	<p><i>Description:</i> Contribution by renewable source of energy generation other than GHG emission reduction</p> <p><i>Justification of evidences:</i> The validation team had conducted interview during the on-site visit.</p> <p><i>Conclusion:</i> The project will lessen the power shortage in the region, generate locale employments and will bring benefits to the local community around the project site.</p>	<p>/PDD/ /IM01/</p>	<p>OK</p>	<p>OK</p>
<p><b>A.3. PDD editorial aspects</b> <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> In cover page of PDD written the utilized version is version 03 dated 22/12/2006.</p> <p><i>Justification of evidences:</i> During visited UNFCCC official website found that the latest version is version 03 as per EB 28 Annex 34.</p> <p><i>Conclusion:</i> It evidenced that latest version of PDD for is utilized and applied accordingly.</p>	<p>/PDD-T/ /PDD/ /UNFCCC/ C/</p>	<p>OK</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)	<p><i>Description:</i> Yes, the PDD has been duly filled in accordance with the latest guidance for completing CDM -PDD version 07 except for section A.4.3</p> <p><i>Justification of evidences:</i> During visited UNFCCC official website found that the latest version is version 07 as per EB 47 Annex 12</p> <p><i>Conclusion:</i> By means UNFCCC website it is convinced that the PDD is filled as per latest guidance for completing CDM-SSC-PDD. However CAR A2 was raised.</p>	/PDD/ /UNFCCC/ C/	CAR A2	OK
<b>A.4. Technology to be employed</b> <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? (EB 55 Annex 1, §§ 58–59,64) <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> <i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i>	<p><i>Description:</i> The project description is given in various parts of the PDD (esp. In sections A.2 and A.4.2 and A.4.3).</p> <p><i>Justification of evidences:</i> The validation team has verified the relevant sections of the PDD and compared the observation during site visit against the applied methodology.</p> <p><i>Conclusion</i> By means of site visit and document review it is</p>	/PDD/ /IM01/	OK	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>§64 (a) Describe the process undertaken to validate the accuracy and completeness of the project description.</p> <p>§64 (b) Contain the DOE's opinion on the accuracy and completeness of the project description.</p>	confirmed that the description of the project activity along with its technical aspects has been filled adequately in the PDD.			
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><i>Description:</i> Description of the project activity is based on the real situation.</p> <p><i>Justification of evidences:</i> Document review of PDD and interview with project participants during on site visit.</p> <p><i>Conclusion:</i> The project is not yet commissioned and it has been verified during site visit that the project will be implemented according to the project description in the PDD.</p>	/PDD/ /IM01/	OK	OK
<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) Describe the steps taken to validate this issue.</p>	<p><i>Description:</i> Project does not involve alteration of the existing installation</p> <p><i>Justification of evidences:</i> Document review of PDD and interview with project participants during on site visit.</p> <p><i>Conclusion:</i> As verified, project activity is a installation of new natural gas based Grid connected CCPP and is a Greenfield project and does not involve any alteration of the existing installations.</p>	/PDD/ /IM01/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<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> The project description is given in various parts of the PDD (esp. In sections A.2 and A.4.2 and A.4.3).</p> <p><i>Justification of evidences:</i> By means of interview during the site visit and review of the technical specification of the project equipments by the validation team.</p> <p><i>Conclusion:</i> By means of knowledge of the validation team and document check it can be assessed that the project design and technology reflects current good practice.</p>	<p>/PDD/ /IM01/  /TS/</p>	<p>OK</p>	<p>OK</p>
<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> The project description is given in various parts of the PDD (esp. In sections A.2 and A.4.2 and A.4.3).</p> <p><i>Justification of evidences:</i> During the site visit the technology and engineering of the project activity was verified. Project equipments involved in the project activity are supplied by renowned suppliers and is a proven technology.</p> <p><i>Conclusion:</i> By means of knowledge of the validation team and document review it can be confirmed that the project will use state of the art technology.</p>	<p>/PDD/ /TS/ /IM01/</p>	<p>OK</p>	<p>OK</p>
<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> Operation and maintenance of the project is to be done by the project team assigned by the project participant.</p> <p><i>Justification of evidences:</i> This was confirmed by the validation team during the site visit and interview with the project management team.</p> <p><i>Conclusion:</i> By document review and interview conducted</p>	<p>/PDD/ /IM01/</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.
	during site visit it is evident that the operation and maintenance of the project is looked after trained and skilled staff of project team.			
<b>A.5. Small scale project activity</b> <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> Project activity is an installation and operation of a new natural gas fired grid-connected Combined Cycle Power Plant (CCPP) of 366 MW capacities at Kondapalli near Vijayawada, Andhra Pradesh by Lanco Kondapalli Power Private Limited (LKPPL).</p> <p><i>Justification of evidences:</i> The justification of chosen project type and category of the project activity is provided under the section B.2 of PDD in an adequate manner and project activity is greater than 15 MW and is a large scale project activity.</p> <p><i>Conclusion:</i> By document review it is confirmed that the project does not fall under small scale project as per the criteria defined by UNFCCC.</p>	/PDD/	OK	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</i>	<i>Refer to section A.5.1</i>	/PDD/	OK	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>guidance to the methodologies<sup>5</sup>, which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.</i>				
A.5.3. Is the small scale project activity not a debundled component of a larger project activity?  (EB 55 Annex 1, § 136 (c)) <i>Describe the steps taken to validate this issue. PI refer to the Compendium of guidance on debundling (EB 36, Annex 27 54, Annex 13).</i>	<i>Refer to section A.5.1</i>	/PDD/	OK	OK
A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party?  (EB 55 Annex 1, § 136 (d))	<i>Refer to section A.5.1</i>	/PDD/	OK	OK
<b>B. Project Baseline, Additionality and Monitoring Plan</b>				
<b>B.1. Application of the Methodology</b>				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid	<i>Description:</i> Project activity applies approved methodology AM0029 version 3.0.	/PDD/ /AM0029	OK	OK

<sup>5</sup> <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.
version thereof? (EB 55 Annex 1, § 65) <i>Describe the steps taken to validate this issue.</i>	<i>Justification of evidences:</i> Visited the UNFCCC official website and confirmed that the latest version is version 3.0 of approved methodology AM0029.  <i>Conclusion:</i> By document review it is confirmed that the PP has correctly applied approved methodology AM0029 and is valid.	/		
B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? (EB 55 Annex 1, §§ 65, 70) <i>Describe the steps taken to validate this issue.</i>	<i>Description:</i> Project activity applies approved methodology AM0029 version 3.0.  <i>Justification of evidences:</i> Checked the UNFCCC official website and found that the latest version is version 3.0 of approved methodology AM0029.  <i>Conclusion:</i> By document review it is confirmed that the PP has correctly applied approved methodology AM0029 version 3.0 and is valid and identical with the version available on UNFCCC website.	/PDD/ /UNFCCC/ C/	OK	OK
B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? (EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76) <i>Describe for each applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i>	<i>Description:</i>  As described in section B.2 of the PDD, the applicability criteria of the approved methodology AM0029 version 3.0 are as below:  <b>Applicability Criteria 1</b>  <i>The project activity is the construction and operation of a new natural gas fired grid-connected electricity generation plant. Natural gas should be the primary fuel. Small amounts of other start up or auxiliary fuels can be used, but can</i>	/PDD/ /TS/ /IM01/ /DPR/ /EPC/ /CEA/	CAR B1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p><i>comprise no more than 1% of total fuel use, on energy basis.</i></p> <p>Justification: The project activity involves construction and operation of a new natural gas fired grid-connected electricity generation plant, of 366 MW capacity. The only fuel used is natural gas and no auxiliary fuels are used.</p> <p><b>Applicability Criteria 2</b></p> <p><i>The geographical/ physical boundaries of the baseline grid can be clearly identified and information pertaining to the grid and estimating baseline emissions is publicly available.</i></p> <p>Justification: The baseline grid is southern<sup>6</sup> regional electricity grid, whose geographical/ physical boundaries can be clearly identified and information pertaining to the grid and estimating baseline emissions is available in public domain on the website of the Central Electric Authority of India <a href="http://cea.nic.in">http://cea.nic.in</a>.</p> <p><b>Applicability Criteria 3</b></p> <p><i>Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity. In some situations, there could be price-inelastic supply constraints</i></p>			

<sup>6</sup> Southern regional grid is used as the default grid in pursuance with the CDM EB recommendations on grid selection.

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p><i>(e.g. limited resources without possibility of expansion during the crediting period) that could mean that a project activity displaces natural gas that would otherwise be used elsewhere in an economy, thus leading to possible leakage. Hence, it is important for the project proponent to document that supply limitations will not result in significant leakage as indicated here.</i></p> <p>Justification: Natural gas requirement by gas based power station in the Southern region including the project activity is 1994 million SCM per year against an availability of 39914.29 million SCM per year. And this is clearly substantiated in section B.4 of the PDD to conclude that natural gas is sufficiently available in the region and future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity.</p> <p><i>Justification of evidences: EPC contract, Detailed project report, onsite visit, interview, technical specifications, CEA CO2 database</i></p> <p><i>Conclusion: Based on the document review and information collected during interview and by conducting on site visit it is concluded that all the applicability criteria are met with the requirement of the methodology. However CAR B1 was raised in reference to include additional references in the</i></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>PDD.</i>			
<p>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?</p> <p>(EB 55 Annex 1, §§ 72–75)</p>	<p><i>Description:</i> Please refer section B.1.3; All the applicability criteria are met.</p> <p><i>Justification of evidences:</i> Please refer section B.1.3</p> <p><i>Conclusion:</i> Please refer section B.1.3</p>	/PDD/	OK	OK
<p>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?</p> <p>(EB 55 Annex 1, § 69, 71)</p> <p><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></p>	<p><i>Description:</i> In the approved methodology, no specific stipulation or requirements are indicated.</p> <p><i>Justification of evidences:</i> The stipulation/ requirements of the methodology were checked.</p> <p><i>Conclusion:</i> It can be confirmed that the project is in accordance to every other stipulation or requirement of the methodology.</p>	/PDD/ /AM0029 /	OK	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>B.2. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i>				
<p>B.2.1. Are the project's spatial boundaries (geographical) clearly defined?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><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><i>Description:</i> The spatial extent of the project boundary includes the project equipment i.e. Gas Turbine Generator, Steam Turbine Generator, GT/ST Generator and other plant auxiliary equipments. This has been clearly shown in the section B.3 of the PDD</p> <p><i>Justification of evidences:</i> Validation team has performed site visit and reviewed CO<sub>2</sub> database of Central Electricity Authority<sup>/CEA/</sup> Project design Document<sup>/PDD/</sup> and cross checked the geographical boundary of the project.</p> <p><i>Conclusion:</i> It can be confirmed that the project boundary of the proposed CDM project activity are clearly identified and is in conformity with the approved methodology AM0029. However CAR B2 was raised</p>	/PDD/ (B.3.) /IM01/	CAR B2	OK
B.2.2. Are all sources and GHGs included in the project boundary as required in the applied	<i>Description:</i> As required by approved methodology CO <sub>2</sub> which is emitted from the electricity generation in fossil fuel	/PDD/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>methodology?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><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>fired power plants is the only GHG included in the project boundary to calculate the baseline emission.</p> <p><i>Justification of evidences:</i> Same is verified by validation team by reviewing approved methodology available on UNFCCC web site<sup>UNFCCC</sup> and details provided in the PDD</p> <p><i>Conclusion:</i> Based on above it can be confirmed that all sources and GHG are included as per approved methodology.</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> The methodology does not allow choosing a source and/or gas is to be included, hence this question is not applicable for this project activity.</p> <p><i>Justification of evidences:</i> Not applicable</p> <p><i>Conclusion:</i> Not applicable</p>	/PDD/ /AM0029 /	OK	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>B.3. Baseline Identification</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
<b>B.3.1. What possible baseline scenarios have been considered?</b> (EB 55 Annex 1, §§ 67(b), 83) <i>Fill in all alternatives in table A-2.</i>	<i>Description:</i> Please refer table A-2  <i>Justification of evidences:</i> Please refer table A-2  <i>Conclusion:</i> As per the approved methodology AM0029, version 0.3, PP has correctly identified the baseline. CAR B3, B4 were raised.	/PDD/ /AM0029 /	CAR B3  CAR B4	OK
<b>B.3.2. Is the list of alternatives complete?</b> (EB 55 Annex 1, §§ 67(b), 83) <i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i>	<input checked="" 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.  <input type="checkbox"/> The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued	/PDD/  /AM 0029/	OK	OK
<b>B.3.3. What has been identified as the baseline</b>	<i>Description:</i> Coal based power generation alternative using	/PDD/	OK	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.
scenario? (EB 55 Annex 1, §§ 81–82, 86) <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>	subcritical technology is identified as the most plausible baseline for the Project activity.  <i>Justification of evidences:</i> Assessment of the baseline scenarios given in section B.4 of the PDD by means of document review and information links.  <i>Conclusion:</i> Economically most attractive option out of the selected alternative scenarios Coal based power generation alternative using subcritical technology is selected as the baseline for the project activity.	/AM0029 /		
B.3.4. Has the baseline scenario been determined according to the methodology? (EB 55 Annex 1, §§ 82, 87(e)) <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>	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. <input checked="" type="checkbox"/> The determination has been carried out as per the procedure contained in the applied methodology. <input type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario:	/AM0029 / /PDD/	OK	OK
B.3.5. Has any plausible alternative scenario been excluded? (EB 55 Annex 1, § 83) <i>Describe how it is validated that no plausible alternative scenario has been excluded.</i>	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. <input checked="" type="checkbox"/> No plausible baseline scenario has been excluded. <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:	/PDD/	OK	OK
B.3.6. Is the identified baseline scenario reasonable and has the baseline scenario been	<input checked="" type="checkbox"/> The baseline scenario is reasonable and has been determined using conservative assumptions where	/PDD/		OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>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>possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above.</p> <p><input type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative</p>		OK	
<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> Consideration of national and sectoral policies ,macro-economic trends and political aspirations for baseline scenario</p> <p><i>Justification of evidences:</i> Based upon it local and sectoral expertise validation team has reviewed Central electricity Authority<sup>/CEA/</sup>, Ministry of Power<sup>/MOP/</sup>.</p> <p><i>Conclusion:</i> Validation team has reviewed Central electricity Authority<sup>/CEA/</sup>, Ministry of Power<sup>/MOP/</sup> and confirm that baseline scenario has taken into account prevailing national law of India.</p>	/PDD/ /CEA/ /MOP/	OK	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</i></p>	<p><i>Description:</i> Compatibility of baseline scenario with available data and referenced sources in the PDD.</p> <p><i>Justification of evidences:</i> Document review of PDD.</p>	/PDD/ /CEA/ /MOP/	OK	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>the PDD are correctly quoted and clearly referenced.</i>	<i>Conclusion:</i> Validation team is convinced that the sources and data are properly referenced in the PDD for the determination of the baseline scenario			
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. (EB 55 Annex 1, § 86)	<i>Description:</i> Under the section B.4 of the PDD there is a verifiable description of the identified baseline scenario including the description of the technology that would be employed and/or that would take place in absence of the proposed CDM project activity.  <i>Justification of evidences:</i> Validation team has reviewed Technical specifications <sup>/TS/</sup> , PDD, and conducted site visit.  <i>Conclusion:</i> As per the approved methodology AM0029, version 3.0, PP has correctly identified the baseline as the product of electrical energy baseline produced by renewable generating unit multiplied by an emission factor.	/PDD/	OK	OK
<b>B.4. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>				
<b>B.4.1. Methodology</b>				
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	<i>Description:</i> PDD does not describe additionality of the project and additionality justifications as per the requirements of the	/PDD/ /UNFCCC/	GAR 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.
methodological tools?  (EB 55 Annex 1, §§ 67(d), 94–95) <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>	Additionality Tool (Ver 06).  <i>Justification of evidences:</i> <ul style="list-style-type: none"> <li>• Additionality Tool (Ver 06)</li> <li>• Annex 5, EB 62</li> <li>• PDD.</li> </ul> <i>Conclusion:</i> Subject to closure of CAR B5			
<b>B.4.2. Consideration of CDM before project start</b>				
B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms?  (EB 55 Annex 1, § 99,104(a)) <i>Assess why the chosen starting date can be considered as the earliest date at which either the implementation or construction or real action of a project has begun or will begin.</i>  <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. Appropriate evidence should be given.</i>	<i>Description:</i>  Start date of the project is not defined correctly as per CDM glossary of terms.  <i>Justification of evidences:</i>  Notice to proceed with commencement date as 01/02/2008 EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited  <i>Conclusion:</i> Subject to closure of CL B2	/PDD/ /NTP/ /EPC/	CL B2	OK
B.4.2.2. In case the project start date is on or after 2 <sup>nd</sup> August 2008 has the PP informed the	<i>Description:</i> Not applicable  <i>Justification of evidences:</i>			

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>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</p> <p><i>Conclusion:</i></p> <p>Not applicable</p>			
<p>B.4.2.3. In case the project start date is before commencing of validation and 2<sup>nd</sup> 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>Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p>	<p><i>Description:</i></p> <p>Yes, the PP had seriously considered CDM benefits at the time of taking investment decision and it is transparently described in the PDD.</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>• The extract of the minutes of Board resolution dated 15/10/2007</li> <li>• PDD</li> </ul> <p><i>Conclusion:</i></p> <p>The Board resolution reveals that the CDM benefits were considered seriously at the time of taking investment decision and the CDM benefits were the decisive factor in decision making. However CL B3 was raised for chronology of events</p>	<p>/PDD/ /MD/</p>	<p>CL-B3</p>	<p>OK</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></p> <p>Please refer section B.4.2.1</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>• The extract of the minutes of Board resolution dated</li> </ul>	<p>/PDD/ /MD/ /NTP/ /EPC/</p>	<p>CL-B4 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.
	<p>15/10/2007</p> <ul style="list-style-type: none"> <li>• PDD</li> <li>• Notice to proceed with commencement date as 01/02/2008</li> <li>• EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited</li> </ul> <p><i>Conclusion: Subject to closure of CL B2 and CL B4</i></p>			
<p>B.4.2.5. Is the project start date consistent with the available evidences? (EB 55 Annex 1, § 102)</p> <p><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></p>	<p><i>Description:</i> Please refer section B.4.2.1</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>• The extract of the minutes of Board resolution dated 15/10/2007</li> <li>• PDD</li> <li>• Notice to proceed with commencement date as 01/02/2008</li> <li>• EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited</li> </ul> <p><i>Conclusion:</i> Subject to closure of CL B2</p>	<p>/PDD/ /MD/ /NTP/ /EPC/</p>	CL B2	OK
<p>B.4.2.6. Was the decision to proceed with the project taken by a person which has the</p>	<p><i>Description:</i></p>	/MD/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>authority to do so? (EB 55 Annex 1, § 102(a)) <i>Describe the steps taken to validate this issue.</i></p>	<p>Yes, the decision to proceed with the project was taken by the Board of Directors of M/s Lanco Kondapalli Power Projects Limited. on 15/10/2007</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>The extract of the minutes of Board resolutions dated 15/10/2007</li> </ul> <p><i>Conclusion:</i></p> <p>Validation team checked the Board resolution and observed that decision is taken by the directors of the company having authority to take decisions.</p>			
<p>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></p>	<p><i>Description:</i></p> <p>The decision to proceed with the project was taken by the Board of Director on 15/10/2007 after taking into consideration CDM benefits.</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>The extract of the minutes of Board resolutions dated 15/10/2007</li> </ul> <p><i>Conclusion:</i></p> <p>Validation team checked the Board resolution and observed that CDM was a decisive factor in decision making.</p>	/MD/	OK	OK
<p>B.4.2.8. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM</p>	<p><i>Description:</i></p> <p>PDD contains chronology of events, which prove doubtlessly</p>	/PDD/ /MD/ /LSHC/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
status? (EB 55 Annex 1, § 102; EB 62 Annex 13 § 7)	<p>that continuous and real actions were taken in order to secure the CDM status.</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>• The extract of the minutes of Board resolution dated 15/10/2007</li> <li>• PDD</li> <li>• Notice to proceed with commencement date as 01/02/2008</li> <li>• EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited</li> <li>• Appointment of CDM consultant dt. 05/06/2008 and 26/10/2009</li> <li>▪ Minutes of local stake holders' meeting held on 06/01/2009</li> <li>▪ Host Country Approval dated .18/06/2010</li> <li>▪ Appointment of TUV Nord dated 29/01/2010</li> </ul> <p><i>Conclusion:</i></p> <p>The chronology of events given in the PDD and the documentary evidence submitted prove that the gap between any two CDM activity was less than two years. Hence, as per paragraph 6 and 8 of Annex 13, EB 62, the project had taken continuous and real action to secure CDM status in parallel with the implementation of the project activity</p>			
B.4.2.9. Is the gap of documented evidences to secure the CDM status less than 3 years	<i>Description:</i>	/PDD/ /MD/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>and are the evidences relevant for substantiating the action taken, credible, reliable and complete?</p> <p>(EB 62 Annex 13 § 8)</p>	<p>The gap between the documented evidences to secure CDM status is less than 2 years.</p> <p><i>Justification of evidences:</i></p> <ul style="list-style-type: none"> <li>• The extract of the minutes of Board resolution dated 15/10/2007</li> <li>• PDD</li> <li>• Notice to proceed with commencement date as 01/02/2008</li> <li>• EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited</li> <li>• Appointment of CDM consultant dt. 05/06/2008 and 26/10/2009</li> <li>▪ Minutes of local stake holders' meeting held on 06/01/2009</li> <li>▪ Host Country Approval dated .18/06/2010</li> <li>▪ Appointment of TUV Nord dated 29/01/2010</li> </ul> <p><i>Conclusion:</i></p> <p>The chronology of events given in the PDD and the documentary evidence submitted prove that the gap between any two CDM activity was less than two years. All the evidences submitted are reliable, credible and complete. The documents reveal that the gap between any two CDM activity has been less than 2 years.</p>	/CON/ /LSHC/		
B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after	<p><i>Description:</i></p> <p>No, the implementation of the project did not cease after its</p>	/PDD/ /EPC/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
consideration of the CDM?  (EB 62 Annex 5, § 7) <i>Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.</i>	commencement  <i>Justification of evidences:</i> <ul style="list-style-type: none"> <li>▪ PDD</li> <li>• EPC contract dated 30/01/2008 issued to M/s Lanco Infratech limited</li> <li>▪ Certificate of commissioning dated 01/08/2010</li> </ul> <i>Conclusion:</i>  Chronology of events forming part of Sec. B.5. of PDD and documentary evidence submitted relating to purchase order and commencement of the project prove that the project implementation did not cease after its commencement.	/CC/		
B.4.2.11. Can the CDM involvement in the decision assessed as serious?  (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>	<i>Description:</i>  Yes, the CDM involvement in the decision making was serious The CDM incentive was considered imperative by the Board of Directors to make the project economically viable and financially sustainable.  <i>Justification of evidences:</i> <ul style="list-style-type: none"> <li>▪ Extract of the of Board resolution dated 15/10/2007</li> <li>▪</li> </ul> <i>Conclusion:</i>  Validation team checked the minutes of the board meeting and observed that CDM was seriously considered in decision making process.	/MD/	OK	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>B.4.3. Identification of alternatives Step 1</b> (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>	<p><i>Description:</i> List of the alternatives contains a status quo situation, the project not considered as a CDM project as well as alternatives as per the approved methodology AM 0029.</p> <p><i>Justification of evidences:</i> PDD Approved methodology</p> <p><i>Conclusion:</i> All plausible alternatives as per the approved methodology were considered by the PP.</p>	/PDD/ /AM 0029/	OK	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>	<p><i>Description:</i> All realistic alternatives to the project activity are considered.</p> <p><i>Justification of evidences:</i> PDD AM 0029</p> <p><i>Conclusion:</i> All plausible alternatives as per the approved methodology were considered by the PP.</p>	/PDD/	<del>CL-B1</del>	OK
<p>B.4.3.3. Do all identified alternatives comply with enforced legislations?</p>	<p><i>Description:</i> All alternatives comply with enforced legislations</p> <p><i>Justification of evidences:</i></p>	/PDD/	OK	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, §§ 106(c)) <i>Describe the steps taken to validate this issue. Refer to the legislations.</i>	PDD AM 0029 <i>Conclusion:</i> Detail assessment is given in table A-2 of this report.			
<b>B.4.4. Investment analysis Step 2</b> <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 additonal details of the 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)	<i>Description:</i> Yes, the PDD provides evidence to the effect that the project activity is not financially attractive without CER revenues <i>Justification of evidences:</i> Excel worksheet providing the detailed computation of levelised cost, Annex 5, EB 62 and Annex 1, EB 55 <i>Conclusion:</i> Evidence to the effect that the project activity is not financially attractive has been provided.	/PDD/ /IRR/	OK	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</i>	<i>Description:</i> Benchmark analysis with levelised cost as a financial indicator has been chosen to demonstrate additionality of the project. Further same is also cross checked with considering project IRR as a financial indicator.	/PDD/ /IRR/	CAR B6	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.</i>	<i>Justification of evidences:</i>  Excel worksheet, providing detailed computation of levelised cost, Annex 5, EB 62 and Annex 1, EB 55  <i>Conclusion:</i>  Since benchmark analysis considering LUCE and project IRR as financial indicator is one of the financial analysis accepted by the Additionality Tool and the methodology for demonstrating additionality it is considered appropriate.			
<b>B.4.4.3.</b> 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>	<input checked="" type="checkbox"/> Yes, a clear, viewable and unprotected Excel spreadsheet is available.  <input type="checkbox"/> No, a respective Excel spreadsheet needs to be made available for investment calculation.  In this context the following additional findings have been identified:  N/A	/PDD/  /IRR/	OK	OK
<b>B.4.4.4.</b> 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?	<i>Description:</i>  The period chosen for investment analysis reflects the technical lifetime of the project activity.  <i>Justification of evidences:</i>  Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55	/PDD/  /XLS/  /ELT/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
(EB 55 Annex 1, § 109; EB 62 Annex 5, § 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>	Letter from EPC contractor regarding technical life time of the project activity <i>Conclusion</i> Financial analysis has been carried out for 20 years, which reflects the technical lifetime of the project activity			
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> (EB 50 Annex 15)	<i>Description:</i> Not applicable as it is a green-field project <i>Justification of evidence</i> Not applicable <i>Conclusion:</i> Not applicable	/PDD/ /IRR/	OK	OK
B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? (EB 55 Annex 1, § 109; EB 62 Annex 5., § 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 mismatches between regulations and the approach applied for calculating the fair value.</i>	<i>Description:</i> Additionality has been demonstrated using Levelized Unit cost of generation. Hence, accounting of fair value in the terminal year does not arise. However for calculation of project IRR fair value is considered. <i>Justification of evidence:</i> Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55 <i>Conclusion:</i>	/PDD/ /IRR/	<del>CAR</del> <del>B12</del> <del>CAR</del> <del>B13</del>	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p>Since the project activity has demonstrated additional using LUCE as financial indicator, salvage value does not arise.</p> <p>However for calculating Project IRR, fair value is considered appropriately.</p>			
<p>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?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5,, § 4)</p>	<p><i>Description:</i></p> <p>Additionality has been demonstrated using Levelized Unit cost of generation. Hence, accounting of fair value in the terminal year does not arise</p> <p><i>Justification of evidence:</i></p> <p>Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55</p> <p><i>Conclusion:</i></p> <p>Since the project activity uses LUCE, salvage value does not arise.</p>	<p>/PDD/ /IRR/</p>	<p>OK</p>	<p>OK</p>
<p>B.4.4.8. Are depreciation and other non-cash related items only considered in the tax calculation and not as cash outflow?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5,, § 5)</p>	<p><i>Description:</i></p> <p>Additionality has been demonstrated using Levelized Unit cost of generation. Hence, adding back depreciation and other non-cash related items to net profits does not arise. For calculating project IRR, PP has considered depreciation and other non-cash related items like interest in calculation.</p> <p><i>Justification of evidence:</i></p> <p>Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55</p>	<p>/PDD/ /IRR/</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><i>Conclusion:</i></p> <p>Since the project activity uses LUCE to demonstrate additionality, depreciation and non-cash related items have to be treated as expenditure in computing LUCE.</p> <p>Project IRR is calculated considering depreciation and other non-cash related items. Same is correctly applied in the calculations.</p>			
<p>B.4.4.9. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?</p> <p>(EB 55 Annex 1, § 109,112; EB 62 Annex 5, § 6)</p> <p><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 FSR and PDD.</i></p>	<p><i>Description:</i></p> <p>Input values used in the investment analysis are based on DPR and other documentary evidences and the values were valid at the time of investment decision</p> <p><i>Justification of evidence:</i></p> <ul style="list-style-type: none"> <li>• Excel worksheet providing detailed calculations of investment analysis,</li> <li>• Detailed Project Report<sup>/DPR/</sup></li> <li>• Gas Supply Agreement<sup>/GSA/</sup></li> <li>• Companies Act, 1951</li> <li>• Income Tax Act, 1961</li> <li>• Reserve Bank of India</li> <li>• Annex 58, EB 51 and</li> <li>• Annex 3, EB 51</li> </ul> <p><i>Conclusion:</i></p> <p>The input values are based on DPR, Since the investment decision was taken in October 2007, the input values were valid at the time of investment decision;</p>	<p>/PDD/ /IRR/ /GSA/ /DPR/ /RBI /IT/</p>	<p><del>CAR-B7</del> <del>CAR-B8</del> <del>CAR-B9</del> <del>CAR-B10</del> <del>CAR-B11</del> CL-B5 CL-B6 CL-B7 CL-B8 CL-B10</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.
B.4.4.10. 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)	<p><i>Description:</i></p> <p>PLF is based on Detailed Project Report prepared by FICHTNER India</p> <p><i>Justification of evidence:</i></p> <ul style="list-style-type: none"> <li>• DPR</li> <li>• Annex 11, EB 48</li> </ul> <p><i>Conclusion:</i></p> <p>PLF assumed in the additionality demonstration conforms to the value specified in the DPR and approved by the government prior to installation of the project.</p>	/PDD/ /IRR/ /DPR/	OK	OK
B.4.4.11. 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 62 Annex 5, § 9)	<p><input type="checkbox"/> N/A</p> <p><input checked="" type="checkbox"/> Yes, the costs of financing expenditures have been included.</p> <p><input type="checkbox"/> No, this requirement is not met.</p> <p>In this context the following additional findings have been identified: N/A</p>	/PDD/ /IRR/ /DPR/	OK	OK
B.4.4.12. 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 62 Annex 5, § 11)	<p><input type="checkbox"/> N/A</p> <p><input checked="" type="checkbox"/> Yes, the interest has been taken into account.</p> <p><input type="checkbox"/> No, this requirement is not met.</p> <p>In this context the following additional findings have been identified:</p>	/PDD/ /IRR/ /DPR/	OK	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>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>	N/A			
B.4.4.13. 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 cash outflow?  (EB 55 Annex 1, § 109; EB 62 Annex 5, § 10)	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes, in- and outflows have been considered correctly. <input type="checkbox"/> No, this requirement is not met. In this context the following additional findings have been identified: N/A	/PDD/ /IRR/	OK	OK
B.4.4.14. 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 62 Annex 5, §§12 – 18) <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>	<i>Description:</i> The project activity uses investment comparison analysis and considered lowest value of levelised cost of generation of all the baseline alternatives as a benchmark and is considered appropriate. For project IRR PP has correctly considered WACC as a benchmark. <i>Justification of evidence:</i> Levelised cost calculation sheet <sup>/IRR/</sup> , PDD,  <i>Conclusion:</i> Type of the benchmark chosen is in line with EB 62, Annex	/PDD/ /IRR/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	05			
<p>B.4.4.15. 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?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, §§13 – 18)</p> <p><i>Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.</i></p>	<p><i>Description:</i></p> <p>PP has considered lowest value of levelised cost of generation of all the baseline alternatives</p> <p>The benchmark – WACC – considered for alternative check of the additionality through project IRR is suitable for the project activity</p> <p><i>Justification of evidence:</i></p> <p>PDD, IRR,</p> <p><i>Conclusion:</i></p> <p>For benchmark, under Section 6 of the Sub-step 2 b of additionality tool, version 06, option 6(a) to 6(c) is not applicable to the project activity as it is not related to LUCE. Also option 6 (d) is not applicable in absence of any Government / official approved benchmark for this type of project activity in India. Hence under option 6(e), using any other benchmark PP has considered lowest value of levelised cost of generation of all the baseline alternatives as a benchmark and is considered appropriate</p> <p>For alternative check : WACC has been chosen as the</p>	/PDD/ /IRR/	OK	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.
	benchmark and the data has been sourced from BSE website, RBI Weekly Statistical supplement and RBI Bulletin—all authentic and credible publications. Since project IRR has been chosen as the financial indicator as per guidance 12 and 13 of Annex 05, EB 62, the benchmark value is suitable			
<p>B.4.4.16. Is it ensured that the project cannot be developed by other developers than the PP?</p> <p>(EB 55 Annex 1 § 109; EB 62 Annex 5, §§ 13 – 14)</p> <p><i>Describe why the benchmark does not include the subjective 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></p>	<p><i>Description:</i></p> <p>The project can be developed by other developers also</p> <p><i>Justification of evidence:</i></p> <p>Not applicable</p> <p><i>Conclusion:</i></p> <p>Since it is a green-field project, it can be developed by other developers also</p>	/PDD/	OK	OK
<p>B.4.4.17. Was the benchmark consistently used in the past for similar projects with similar risks?</p> <p>(EB 55 Annex 1, § 112(c))</p>	<p><i>Description:</i></p> <p>Not applicable as internal benchmark has not been used</p> <p><i>Justification of evidence:</i></p> <p>Not applicable</p> <p><i>Conclusion:</i></p> <p>Since internal benchmark has not been used, this is not applicable</p>	/PDD/	OK	OK
<p>B.4.4.18. Does the PDD and related spreadsheets contain a sensitivity analysis and does the same contain variation of parameters</p>	<p><i>Description:</i></p> <p>The PDD and related spreadsheets contain sensitivity analysis and they contain variation in parameters which may</p>	/PDD/ /IRR/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>which may vary throughout the project lifetime,</p> <p>(EB 55 Annex 1, §§ 109–110(e); EB 62 Annex 5, § 20-21)</p> <p><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></p>	<p>vary throughout the project lifetime</p> <p><i>Justification of evidence:</i></p> <p>Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55</p> <p><i>Conclusion:</i></p> <p>Sensitivity analysis has been conducted by varying project cost, PLF and fuel cost to 10% variation on either side. The sensitivity analysis is in conformity with guidance 17 and 18 of Annex 5, EB 62.</p>			
<p>B.4.4.19. Were only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 20)</p>	<p><i>Description:</i></p> <p>No. Variable that constitute less than 20% of total project revenue was also subjected to reasonable variation</p> <p><i>Justification of evidence</i></p> <p>Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1 EB 55</p> <p><i>Conclusion:</i></p> <p>Heat rate, which accounts for less than 20% of total project revenue has also been subjected to sensitivity analysis.</p>	/PDD/ /IRR/	OK	OK
<p>B.4.4.20. 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 62 Annex 5, § 20)</p>	<p><i>Description:</i></p> <p>Yes. Variable that constitute less than 20% of total project revenue was also subjected to reasonable variation</p> <p><i>Justification of evidence</i></p>	/PDD/ /IRR/	OK	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 whether those parameters are considered in the sensitivity analysis?</i>	Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55  <i>Conclusion:</i> Heat rate, which accounts for less than 20% of total project revenue, has also been subjected to sensitivity analysis.			
B.4.4.21. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector?  (EB 55 Annex 1, § 109; EB 62 Annex 5, § 21) <i>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.</i>	<i>Description:</i> Range of variation considered is reasonable for the project activity considering the historic trends  <i>Justification of evidence:</i> Excel worksheet providing detailed calculations of investment analysis, Annex 5, EB 62 and Annex 1, EB 55  <i>Conclusion:</i> The variation considered is appropriate for the business sector.	/PDD/ /IRR/	OK	OK
<b>B.4.5. Barrier analysis Step 3 or SSC additionality assessment</b>				
B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project?  (EB 55 Annex 1, §§ 115, 134, 137) <i>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</i>	<i>Description:</i> Not Applicable  <i>Justification of evidence:</i> PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable  <i>Conclusion:</i>	/PDD/	OK	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>	Not applicable			
<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></p> <p>Not Applicable</p> <p><i>Justification of evidence:</i></p> <p>PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i></p> <p>Not applicable</p>	/PDD/	OK	OK
<p>B.4.5.3. Has the unavailability of means of finance 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><i>Description:</i></p> <p>Not Applicable</p> <p><i>Justification of evidence:</i></p> <p>PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i></p> <p>Not applicable</p>	/PDD/	OK	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></p> <p>Not Applicable</p> <p><i>Justification of evidence:</i></p> <p>PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i></p>	/PDD/	OK	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.
	Not applicable			
<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> Not Applicable</p> <p><i>Justification of evidence:</i> PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i> Not applicable</p>	/PDD/	OK	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> Not Applicable</p> <p><i>Justification of evidence:</i> PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i> Not applicable</p>	/PDD/	OK	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> Not Applicable</p> <p><i>Justification of evidence:</i> PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable</p> <p><i>Conclusion:</i></p>	/PDD/	OK	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.
	Not applicable			
<b>B.4.5.8.</b> Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated?  (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>Description:</i> Not Applicable  <i>Justification of evidence:</i> PP has not used barrier analysis to demonstrate project's additionality. Hence, this is not applicable  <i>Conclusion:</i> Not applicable	/PDD/	OK	OK
<b>B.4.6. Common practice analysis Step 4</b> (in case of SSC projects skip this step)				
<b>B.4.6.1.</b> 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>	<i>Description:</i> Southern region (SR grid) has been defined as region for the common practice analysis  <i>Justification of evidence:</i> Tool for the demonstration and assessment of Additionality, ver 06.  <i>Conclusion:</i> Considering the 'comparable environment with respect to regulatory framework and investment climate', selection of southern grid as region is considered appropriate	/PDD/	OK	OK
<b>B.4.6.2.</b> To what extent similar projects have been	<i>Description:</i> Common practice analysis is not carried out as	/PDD/	CAR	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
undertaken in the relevant region? (EB 55 Annex 1, § 120(b))	per step 4 of additionality tool <i>Justification of evidences:</i> PDD CEA database version 02 available at the time of decision making <i>Conclusion:</i> Subject to closure of CAR 14 and B 15	/CEA/	<del>B15</del> CAR <del>B14</del>	
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))	<i>Description:</i> Common practice analysis is not carried out as per step 4 of additionality tool <i>Justification of evidences:</i> PDD CEA database version 02 available at the time of decision making <i>Conclusion:</i> Subject to closure of CAR 14 and B 15	/PDD/ /CEA/	CAR <del>B15</del> CAR <del>B14</del>	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>B.5. Ex-Ante Calculation of GHG Emission Reductions</b>  <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>				
<b>B.5.1. Are the equations applied correctly according to the applied approved methodology?</b>  (EB 55 Annex 1, §§ 67(c), 89–90, 92) <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>	<input checked="" type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology. <input type="checkbox"/> The following mistakes have been identified in this context:  <i>Description:</i> The applied equations for calculations of the baseline emission are in line with the requirements of the approved methodology AM0029.  <i>Justification of evidences:</i> Project emission and leakages are considered as appropriate for emission reduction calculation in project activity. This is as per approved monitoring methodology of AM0029 version 3.0.  <i>Conclusion:</i> All values and data used by PP in the PDD are relevant and properly referenced. However CAR B16 was raised.	/PDD1/ /PDD2/ /AM0029 /	CAR B16	OK
<b>B.5.2. In case the methodology allows for different methodological choices, are the equations</b>		/PDD/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>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>Methodology does not allow for different methodological choices.</p>			
<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> The calculations for project emissions, baseline emissions and leakages are considered conservatively as per the AM0029 Version 3.0.</p> <p><i>Justification of evidence:</i> Approved methodology AM0029 Version 3.0</p> <p><i>Conclusion:</i> As per the approved methodology AM0029 Version 3.0, the project emissions will be calculated based on the quantity of natural gas monitored and the CO2 emission coefficient of the natural gas and same is validated by document review by the validation team.</p>	/PDD/	OK	OK
<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><i>Description:</i> Project activity does not expect to contribute more than 1 % of overall expected average annual emission which is not addressed by the methodology.</p> <p><i>Justification of evidence:</i> Approved methodology AM0029.</p> <p><i>Conclusion:</i> Project activity is installation of natural gas</p>	/PDD/	OK	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, § 77)	based grid connected CCPP and does not lead to GHG emission within the project boundary more than 1 % of expected average annual emission reduction. Same is verified by document review by the validation team.			
<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><i>Description:</i> Plant load factor is defined ex-ante for determination of baseline emissions.</p> <p><i>Justification of evidences:</i> PP has taken into consideration PLF mentioned in the Detailed Project Report of the project activity.</p> <p><i>Conclusion:</i> Validation team is convinced that the PLF is correctly and conservatively assessed to be 80% as per the DPR of the project activity. Ex-ante Baseline emissions are calculated based on the same PLF. Detail assessment is given in section 5 of this report.</p>	/PDD/ /DPR/	OK	OK
<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 reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i></p>	<p><i>Description:</i> As verified by the validation team, data and parameters that are available at validation which remains fixed throughout the crediting period and are considered for emission reduction calculation are correct, reasonable conservative.</p> <p><i>Justification of evidences:</i> Approved monitoring methodology AM0029 version 3.0.</p> <p><i>Conclusion:</i> Validation team is convinced that the data source and assumptions made by the PP is appropriate to calculate correct and conservative emission reductions.</p>	/PDD/ /AM0029 /	OK	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.5.6. 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 checked="" 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 type="checkbox"/> The following mistakes have been identified in this context:</p>	/PDD/	OK	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> Emission reduction generated from the project activity are real measurable and will provide long term benefit related to the mitigation of climate change.</p> <p><i>Justification of evidences:</i> The project is a green field natural gas based grid connected CCPP project. The emission reduction occurred from the project are calculated as per the Approved baseline methodology AM0029 version 3.0.</p> <p><i>Conclusion:</i> Validation team has reviewed Purchase orders<sup>/PO/</sup>, CO<sub>2</sub> database of Central electricity authority<sup>/CEA/</sup> to validate the same.</p>	/PDD/	OK	OK
<p><b>B.6. Monitoring of Emission Reductions</b></p> <p><i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i></p>				
<p>B.6.1. Are all monitoring parameters required by the applied methodology contained in the</p>	<p><i>Description:</i> As per approved methodology, all monitoring parameters are included in the monitoring plan.</p>	/PDD/ /AM0029	<del>CAR-B</del> 17	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>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>Justification of evidences:</i> Validation team has reviewed, PDD, Methodology for same.</p> <p><i>Conclusion:</i> As verified, from the document review and site visit all applicable monitoring parameters are as per the applied methodology. This has been clearly mentioned in the monitoring plan of the PDD<sup>/PDD/</sup>. However CAR B17 and CL B9 were raised.</p>	/	CL B9	
<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 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"> <li>a) <i>Label (name of the data / parameter)</i></li> <li>b) <i>data unit</i></li> <li>c) <i>description</i></li> <li>d) <i>source of data</i></li> <li>e) <i>measurement equipment / method / procedure</i></li> <li>f) <i>monitoring frequency</i></li> </ul>	<p><i>Description:</i> Feasibility of means of monitoring for monitoring parameter are not in accordance with approved methodology.</p> <p><i>Justification of evidences:</i> Validation team has reviewed PDD, PPA, and approved methodology to assess the same. Same is also cross verified by conducting site visit.</p> <p><i>Conclusion:</i></p> <p>Subject to closure of CAR B 18 to B20</p>	/PDD/ /AM0029 /	CAR B18 CAR B19 CAR B20	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.
g) <i>QA/QC procedures are appropriately described and in compliance with the requirements of the methodology..</i>				
<p>B.6.3. Are all parameters presented as per international standards?</p> <p>a) <i>Format: Standard format (e.g. 1,000 representing one thousand and 1.0 representing one)</i></p> <p>b) <i>Units: Values shall be directly given in SI units – or additionally to original units transferred to SI.</i></p> <p>c) <i>Short scale naming system: (Only) million = 10<sup>6</sup> and billion 10<sup>9</sup> shall be used.</i></p> <p><i>Please refer to the International System of Units (SI) as published within Guidance 11/08.</i></p>	<p><input checked="" type="checkbox"/> Standard formats have been used</p> <p><input type="checkbox"/> SI units were used – or added</p> <p><input type="checkbox"/> The short scale naming is correct</p> <p>In this context the following additional findings have been identified: N/A</p>	/PDD/	OK	OK
<p>B.6.4. 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 necessary to calculate auxiliary parameters.</i></p>	<p><i>Description:</i> PDD contains all the required equations for ex-ante emission reduction calculations.</p> <p><i>Justification of evidences:</i> Validation team has reviewed PDD, Methodology for assessment.</p> <p><i>Conclusion:</i> As described under section B.6.1, all the required equations for calculating ex-ante emission reductions are included as per the approved methodology.</p>	/PDD/ /AM0029 /	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>B.6.5. 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))  <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> Implementation of monitoring arrangement described in the PDD will be implemented during project commissioning.</p> <p><i>Justification of evidences:</i> PDD, PPA, AM0029</p> <p><i>Conclusion:</i> Validation team has verified the document Power purchase agreement<sup>/PPA/</sup> and concluded that the Monitoring arrangement as described in the PDD will be implemented at the project location. However CAR B22 was raised.</p>	<p>/PDD/ /AM0029 /</p>	<p><del>CAR</del> B22</p>	<p>OK</p>
<p>B.6.6. 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))  <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> QA/QC procedures as described in the PDD is sufficient to ensure ex-ante emission reduction</p> <p><i>Justification of evidences:</i> Validation team has reviewed PDD, purchase agreement and AM0029 version 3.0.</p> <p><i>Conclusion:</i> It is concluded by the validation team that all the QA/QC procedures are appropriate and sufficient to reporting of emission reduction achieved from the project activity. And hence it is confirmed that emission reduction achieved from the project activity can be reported ex-post and easily be verified.</p>	<p>/PDD/ /IM01/</p>	<p>OK</p>	<p>OK</p>
<p>B.6.7. Are procedures identified for data</p>	<p><i>Description:</i> Organisation chart and responsibility are defined</p>	<p>/PDD/</p>	<p><del>CAR</del></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.
management?  (EB 55 Annex 1, § 124(b)) <i>Check whether appropriate provisions are considered for data management including responsibilities, what records to 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>	in the PDD section B.7  <i>Justification of evidences:</i> Validation team has reviewed, Purchase orders and Power purchase agreement <sup>VPPA/</sup> .  <i>Conclusion:</i> Validation team has reviewed, Purchase orders, and Power purchase agreement and confirmed that Roles and responsibilities are properly defined in PDD. Also data archiving provisions are made in the PDD.		B21	
<b>C. Duration of the Project/ Crediting Period</b>  <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 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 assessment, if applicable.</i></p>	<p><i>Description:</i> Operational lifetime of 20 years is identified for the project activity.</p> <p><i>Justification of evidences:</i> Validation team has reviewed EPC contract and letter form EPC contractor.</p> <p><i>Conclusion:</i> As verified, operational life time is correctly applied as 20 years for Project activity.</p>	/PDD/ /EPC/ /ELT/	OK	OK
<p>C.2. Is the start of the crediting period clearly defined and reasonable?</p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.</i></p>	<p>Crediting period chosen is the fixed crediting period of 10 years. Start of the crediting period stated is The 1st year of crediting will start from the date of registration of this project activity or 31/03/2012 whichever is later. under section C.2.2.1 of the PDD<sup>/PDD2/</sup> is correct and realistic.</p> <p>The validation was conducted by document review.</p>	/PDD/	OK	OK
<p><b>D. Environmental Impacts</b></p> <p><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></p>				
<p>D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)?</p> <p>(EB 55 Annex 1, §§ 131–133)</p> <p><i>Check the host party regulations, regarding EIA.</i></p>	<p><i>Description:</i> As per Environment Impact Assessment Notification Ministry of Environment and Forests EIA is required to be conducted for gas based power projects in host country. ( India)</p>	/PDD/ /MOEF/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p><i>Justification of evidences:</i> Environment Impact Assessment Notification Ministry of Environment and Forests and Environmental Clearance from MoEF and Consent for Establishment from Andhra Pradesh Pollution Control Board (APPCB).</p> <p><i>Conclusion:</i></p> <p>As per the requirement PP has carried out environment Impact Assessment for the project and obtained environmental clearances from Ministry of Environment and Forests..</p>			
<p>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?</p> <p>(EB 55 Annex 1, §§ 131–133)</p> <p><i>Check the EIA and its approval, if applicable.</i></p>	<p><i>Description:</i> EIA is carried out for the project activity required for obtaining environmental clearance from MoEF.</p> <p><i>Justification of evidences:</i> Environmental Impact Assessment report, Environment clearances</p> <p><i>Conclusion:</i></p> <p>EIA is carried out as per the statutory requirement of the host country. Environmental clearance is obtained from MoEF.</p>	<p>/PDD/ /MOEF/ /SC/</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>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?</p> <p>(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></p>	<p><i>Description:</i>  Environmental impacts of the gas based power projects is described in the PDD based on the EIA carried out.</p> <p><i>Justification of evidences:</i> EIA report, PDD, Statutory clearances.</p> <p><i>Conclusion:</i> Various environmental impacts due to project activity is sufficiently described in the PDD with mitigation measures.</p>	/PDD/ /MOEF/	OK	OK
<p>D.1.4. Are transboundary environmental impacts considered in the analysis?</p> <p>(EB 55 Annex 1, §§ 131–133)  <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i></p>	<p><i>Description:</i> Refer section D.1.1</p> <p><i>Justification of evidences:</i></p> <p><i>Conclusion:</i></p>	/PDD/ /MOEF/	OK	OK
<b>E. Stakeholder Comments</b>				

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<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>				
<p>E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?</p> <p>(EB 55 Annex 1, § 128)</p> <p><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></p>	<p><i>Description:</i> Local stakeholders were invited by giving invitation letters dated 22/12/2008 for the meeting prior to the publication of the PDD for web hosting.</p> <p><i>Justification of evidences:</i> Validation team had reviewed the copy of the invitation and conducted the interview with the local stakeholder to ascertain the same.</p> <p><i>Conclusion:</i> As verified local stakeholder consultation meet was held on 06/01/2009 and various stakeholder from nearby village have attended the same.</p>	/PDD/ /LSHC/	OK	OK
<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><i>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity,</i></p>	<p><i>Description:</i> As stated in the PDD local stakeholder concerns are invited during stakeholder meeting on 06/01/2009.</p> <p><i>Justification of evidences:</i> Same is confirmed by conducting interview with local stakeholder during site visit and reviewing minutes of meeting and by reviewing minutes of meeting</p>	/PDD/ /PDD/ /LSHC/ /IM03/	OK	OK



<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p><i>have been invited;</i></p> <p><i>(b) The summary of the comments received as provided in the PDD is complete;</i></p> <p><i>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</i></p>	<p><i>Conclusion:</i> Stakeholder consultation process was properly undertaken to invite the concerns of the local stakeholders.</p> <p>Validation team has verified the public notice and conducted interview during site visit. Based on this validation team is convinced that stakeholder consultation process was adequately completed</p>			

## ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

**Table A-2:** Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

<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)
Power generation using natural gas as fuel and combined cycle technology without CDM revenues	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario		<input type="checkbox"/>	Project activity not implemented as a CDM project i.e. Power generation using natural gas as fuel and combined cycle technology without CDM revenues has been correctly identified as a plausible baseline scenario
Power generation using Natural Gas as fuel and open cycle technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open cycle technology has a very low efficiency as compared to the project activity.	/T-GT/	<input checked="" type="checkbox"/>	Gas turbine in simple cycle has efficiency which is less as compared to combined cycle. This kind of technology is mainly used for the peak-load electricity generation <sup>/IEA-CHP/,T-CHP/,T-GT1/</sup> . Hence the justification that the same is not plausible alternative is acceptable
Power generation using coal as fuel – sub critical technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario	/CEA/ /MOP/	<input type="checkbox"/>	Power generation using coal as a fuel with sub critical technology was correctly identified as a plausible scenario as it delivers the similar service i.e. base load power

Power generation using coal (imported) as fuel with super-critical technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario	/CEA/ /MOP/	<input type="checkbox"/>	Power generation using coal ( Imported) as a fuel with super critical technology was correctly identified as a plausible scenario as it delivers the similar service i.e. base load power
Power generation using coal (domestic) as fuel with super-critical technology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario	/CEA/ /MOP/	<input type="checkbox"/>	Power generation using coal (domestic) as a fuel with super critical technology was correctly identified as a plausible scenario as it delivers the similar service i.e. base load power
Power generation using lignite as fuel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario	/CEA/ /MOP/	<input type="checkbox"/>	Power generation using lignite as fuel was also correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.
Power generation using naphtha as fuel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Plausible baseline scenario	/CEA/ /MOP/	<input type="checkbox"/>	Power generation using lignite as fuel was also correctly identified as a plausible scenario as it delivers the similar service i.e. base load power.
Power generation using hydro power	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	As hydro power is intermittent source of energy thus it does not provide continuous power and does not deliver services as the project activity i.e. in base load	/CEA/ /MOP/	<input checked="" type="checkbox"/>	It is evident that these technologies are based on renewable sources of energy and cannot deliver base load power. The project activity delivers base load and the hydro power delivers the peak load. .Hence exclusion of alternatives is justified
Power generation using wind energy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	As wind is intermittent source of energy thus it does not provide continuous power and does not deliver services as the project activity i.e. in base load	/CEA/ /MOP/	<input checked="" type="checkbox"/>	It is evident that these technologies are based on renewable sources of energy and cannot deliver base load power. The project activity delivers base load and the wind power delivers the peak load. .Hence exclusion of alternatives is justified
Power generation using nuclear energy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	As per the prevailing regulations this alternative is not available to any companies in India.	/ACT/	<input checked="" type="checkbox"/>	Due to regulatory requirement, no company in India is allowed to construct nuclear based power station. Hence exclusion of the alternative power generation using nuclear energy is appropriate
Import of electricity from connected grids, including the possibility of new interconnections	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	As the inter-regional grid of India are mostly power deficit thus power demand-supply mismatch doesn't provide the services as the project activity	/CEA/	<input checked="" type="checkbox"/>	Import of electricity from connected grid is correctly excluded from the plausible baseline scenario because of the fact that there is frequency mismatch of the transmission network and also in southern region grid where project activity is going to export the power was always a power deficit grid



### ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

**Table A-3:** Assessment of Financial Parameters (EB 55 Annex 1, §§ 111, 112, 114/ in case financial parameters stem from FSR §113,)

**1. For Power plant based on natural gas using CCPP technology**

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
1	Capacity of Plant	366	MW	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	The value is based on DPR. Same is confirmed by reviewing the purchase orders. Validation team examined the documents and observed that the capacity of the project is 366 MW.  Hence, the value is correct and appropriate for the project.
2	Total Project Cost (including IDC, Financing Charges and WC margin)	11880	INR Million	Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Project cost is based on the DPR and the value is correct and appropriate at the time of decision making. This also confirms to guidance 6 of Annex 58, EB 51. Validation team has reviewed the DPR and confirms the same.  Further project cost works out to Rs 32.45 mn/ MW which is comparable with the other similar gas based projects as verified by the validation team. Actual project cost for Gautami CCPP, Koenseema CCPP and Valuthur Phase-II gas based project as verified from CEA web site is Rs 41.70 mn/MW, Rs 45.73 mn/MW,

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							Rs 38.55 mn/MW. Project cost considered by the PP for the project activity is comparable with actual project cost of the other gas based projects. Hence validation team is convinced that the value considered is appropriate and valid.
3	Technical Life time	20	Years	As per Detailed Project Report Letter from EPC contractor dated 21/04/2010	DPR ELT	<input checked="" type="checkbox"/>	Technical lifetime of the main equipments of the Project is as per DPR and the value is found to be correct and appropriate by the validation team.  Same is also verified by the validation team from the letter from EPC contractor and confirmed that value considered is appropriate.
4	Return on Equity (ROE)	14	%	Detailed project report  Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>	DPR CERC	<input checked="" type="checkbox"/>	Value considered by the PP is based on the detailed project report which is available at the time of decision making and confirms to guideline 6 of EB 62, Annex 05. Validation team has also cross verified the value from CERC tariff order for its appropriateness
5	Debt: Equity	75:25	--	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR which is available at the time of decision making confirming to guideline 6 of EB 62, Annex 05 and is in conformity with normally accepted debt equity ratio of infrastructure projects..

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>However as verified by the validation team PP has availed 100 % debt for the project activity in actual. Validation team has cross checked the project IRR by replacing debt component to 100 % in IRR sheet and revealed that the project IRR come down to 11.16 % from 11.80 % and project remains additional.</p> <p>Hence ration considered at the time of decision making is more conservative and hence acceptable.</p>
6	Plant Load Factor	80	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	<p>As verified from the DPR of the Project the value is correct. Also CERC tariff order has fixed a PLF of 80% for gas based thermal power plants. Hence, this value is correct and acceptable.</p> <p>Same is also cross verified from the CERC guidelines and ensured that value considered is appropriate.</p>
8	Cost of Natural gas	7.86	INR/SCM	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	<p>Cost of the Natural gas includes supply cost of the gas plus transportation cost, applicable taxes. Landed cost as per the DPR works out to Rs 7.86 / SCM.</p> <p>Validation team has also cross checked the gas supply</p>



<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>agreement, gas transportation agreement and confirmed that the landed cost of the natural gas works out to Rs 8.14 / SCM.</p> <p>The cost of fuel considered is as per DPR and the value is correct and appropriate at the time of decision making. Same is also cross checked with the prevailing rates as per the gas supply agreement<sup>/GSA/</sup> and confirmed that the value considered is conservative and applicable at the time of decision making.</p>
9	Calorific value of Natural Gas	8553	Kcal/SCM	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	<p>The value considered by the PP is as per DPR which is available at the time of decision making and the value is correct and appropriate</p> <p>Validation team has cross checked the value from gas sales and purchase agreement and ensured that value considered in the analysis is conservative. Minimum Net heat value considered in gas supply agreement is 7700 kcal / scm.</p> <p>The value considered is correct , conservative and acceptable.</p>
10	Gross Heat Rate	1850	Kcal/Kwh	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	<p>The value considered by the PP is as per DPR which is available at the time of decision making and the value is correct and appropriate.</p> <p>The value is based on the detailed project report. This is available at the time of decision making confirming to</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>guideline 06 of EB 62, Annex 05. As verified, project activity is an installation of the advanced class gas turbines having good heat rate.</p> <p>DOE has cross verified the value of heat rate considered by the other registered project and observed that, Vemagiri (4334) and Gautami (4828) has considered heat rate of 1850 KcalKwh. While Hazira (2915) and Bhandar (1300) has considered heat rate of 1950 Kcal/Kwh.</p> <p>TÜV NORD also observed that the assumed value is in conformity to the heat rate recommended by CERC for advanced class combined cycle gas power plants (1850 Kcal/kWh). Hence, this value has been accepted correct and appropriate for the project activity</p>
11	Auxiliary consumption	3	%	As per Detailed Project Report CERC order	DPR CERC	<input checked="" type="checkbox"/>	The value considered by the PP is as per DPR which is available at the time of decision making . Same is also in conformity with CERC tariff order and the value is correct and appropriate.
12	O & M expenses	2.8	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	O&M expenses considered for the project activity is based on the detailed project report. O&M cost considered in the DPR is INR 0.91 million / MW. Considering the installed capacity of the project activity as 366 MW, total O&M

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>expenditure works out to INR 333.06 million which is equivalent to 2.8 % of the capital cost for the project activity.</p> <p>Other registered projects have assumed O&amp;M cost at much higher level. Bhandar Power (1300), for example has considered O&amp;M cost at 4.26%; Torrent power (1116) has reckoned this cost at 3.25%; Bhandar Power (2915) has taken O&amp;M cost at 3.26%. Though this cost compares well with those of other registered projects, it is marginally higher than CERC recommended rate of 2.5%. TÜV NORD observed that even if the O&amp;M cost is reduced to 2.5%, the project does not become attractive, in that the Levelised cost comes down to Rs. 2.66/kWh in contrast to the levelised cost of Rs. 2.12/kWh in respect of coal based power plant. Since the value is based on DPR, compares well with the cost of other registered projects and does not affect the additionality, TÜV NORD accepted this cost as correct and appropriate.</p>
13	O & M escalation	4	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Escalation in O&M cost is considered as 4 % is based on the detailed project report prepared for the project activity and is also in conformity with CERC tariff order available at the time of decision making confirming to guideline 06 of EB 62, Annex 05.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							DOE cross verified the escalation in O&M cost assumed by other registered projects and observed that Gautami (4828) has taken a value of 6 %, Vemagiri (4334) has taken a value of 4% , Hazira CCPP (2915) has taken value of 6 %, Torrent Power (1116) has considered a value of 4 %. This is comparable to 4 % assumed by the candidate project.  Since the escalation is based on DPR, in conformity with CERC order and compares well with other projects, TÜV NORD accepted this cost as correct and appropriate.
14	Interest rate for Term Loan	13	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.
15	WC Receivables Fuel O&M expenditure Maint. Spare	2 1 1 1	Month Month Month %	<b>CERC:</b> <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-">http://indiabudget.nic.in/ub2000-</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				<a href="#">01/mem/mem1.pdf</a>			
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
18	Tariff	2.6819	Rs/kWh	<a href="#">Detailed project report</a>	/DPR/	<input checked="" type="checkbox"/>	<p>Tariff is based on the levelised cost worked out for the project activity based on the fixed cost and variable cost. Same is sourced from various input vales considered from the detailed project report confirming to guideline 06 of EB 62, Annex 05.</p> <p>Levelised cost of tariff used for the IRR calculaion is based on the fixed cost and variable cost considered as per the Central Electricity Regulatory Commisison guidelines dated 26/03/2004 for utility scale power projects. Same is also form the basis in Detailed project report available at the time of decision making. As per the guideline the levelised cost of generation for power projects will be derived based upon total fixed (including return on equity) and variable cost as incurred by the project activity.</p> <p>DOE has also cross checked the recently registered project GSEG (4419) and ensured that levelised cost of tariff was used for the calculation of the IRR as per the CERC</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>guidelines.</p> <p>Based on above DOE has accepted the levelised cost for tariff used for IRR calculation.</p> <p>PP has also not considered escalation in natural gas price while calculating tariff. As per the present scenario gas prices are more prone to be increased during the project life span. Hence validation team has accepted the tariff as a effective revenue to be realised and considered as appropriate.</p> <p>Further validation team has also cross checked the future power scenario in the host country and convinced that there will be a surplus power<sup>/MOP/</sup> and hence tariff trend in future will be competitive. Availability based tariff ( ABT), scenario will lead the gas based power plant to sold power more competitive rates.</p>
19	Repayment period	12	years	<u>Detailed project report</u>	/DPR/	<input checked="" type="checkbox"/>	<p>Repayment period considered for the project activity by the PP is 12 years based on the value presented in Detailed project report which is available at the time of decision making and hence confirming to guideline 06 of EB 62 , Annex 05.</p> <p>Same is also cross checked with the actual loan sanction letters and ensured that value considered is appropriate.</p>
20	Moratorium	6	months	<u>Detailed project report</u>	/DPR/	<input checked="" type="checkbox"/>	<p>Moratorium period considered for the project activity by the PP is 06 months based on the value presented in Detailed project report which is available at the time of decision making and hence</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							confirming to guideline 06 of EB 62 , Annex 05. Same is also cross checked with the actual loan sanction letters and ensured that value considered is appropriate.
21	Density of NG	0.75	Kg/m3	<a href="http://www.engineeringtoolbox.com/gas-density-d_158.html">http://www.engineeringtoolbox.com/gas-density-d_158.html</a>	--	<input checked="" type="checkbox"/>	Density of the natural gas is ranging from 0.7 to 0.9 as verified from the web link by validation team. Value considered is appropriate.
22	Book Depreciation	3.6	%	CERC: <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	/CERC/	<input checked="" type="checkbox"/>	Depreciation rate is sourced from the CERC tariff order which is available at the time of decision making. Same is considered appropriate for the project activity and confirming guideline 6 of EB 62 Annex 05.
23	Risk free rate (Government Bond rate)	7.89	%	Reserve Bank of India records <a href="http://www.rbi.org.in/scripts/PublicationsView.aspx?id=12810">http://www.rbi.org.in/scripts/PublicationsView.aspx?id=12810</a>	/RBI/	<input checked="" type="checkbox"/>	For calculating WACC, risk free rate are correctly sourced from the details available from Reserve Bank of India and is applicable at the time of decision making.
24	Market return	19.65	%	BSE sensex of INdia	/BSE/	<input checked="" type="checkbox"/>	The value is based on BSE stock exchange data and Market return are correctly calculated.
25	Prime Landing Rate	13	%	Reserve Bank of India records <a href="http://www.rbi.org.in/scripts/WSSView.aspx?l">http://www.rbi.org.in/scripts/WSSView.aspx?l</a>	/RBI/	<input checked="" type="checkbox"/>	Value is sourced from the weekly statistics published by Reserve Bank of India during decision making time. Average PLR rate is appropriately considered considering the risk associated with the large scale bas based power project.



<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				d=11982			
26	Service tax	12.24	%	<a href="http://www.indiataxes.com/Information/ServiceTax/Introduction.htm">http://www.indiataxes.com/Information/ServiceTax/Introduction.htm</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

## 2. Power plant based on coal using sub-critical technology

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
1	Capacity of Plant	500	MW	Commercial available size of the coal based plants		<input checked="" type="checkbox"/>	Capacity of the plant considered is based on the available capacity of the plants in India. Based on local and sectoral expertise same is considered to be appropriate. For calculation of levelised cost this does not have an impact whether capacity considered by the PP as per available size in the market 500 MW or 366 MW ( Same as the project activity)
2	Cost per MW	40	INR Million/MW	<a href="http://www.cea.nic.in/thermal/Special_reports/Report%20of%20the%20expert%20committee%20on%20fuels%20for%20power%20generation.pdf">http://www.cea.nic.in/thermal/Special_reports/Report%20of%20the%20expert%20committee%20on%20fuels%20for%20power%20generation.pdf</a>	/CEA/	<input checked="" type="checkbox"/>	The value is as per the special reports of the CEA expert committee for power generation report on fuel pricing. The value is found be correct and acceptable by the DOE.
3	Total Project Cost (including IDC , Financing Charges and WC margin)	20,000	INR Million	Estimated Cost/MW from	/CEA/	<input checked="" type="checkbox"/>	<p>The project cost is calculated from per MW cost multiplied by the installed capacity considered for the baseline alternative i.e. 500 MW x 40 INR million/MW = 20,000 INR million.</p> <p>Per MW cost of the coal based sub critical technology i.e. 40 INR million / MW is sourced from the Central Electricity</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							<p>Authority Report of the Expert Committee on Fuels for Power Generation which is based on the approved projects.</p> <p>The website referred in the earlier submission is not working now, however the location of the document on the web is changed. The correct web site address is <a href="http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf">http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf</a></p> <p>DOE also cross verified the cost assumed by other registered projects for coal based power plants using sub critical technology as an alternative and observed that they have assumed the cost of Rs. 40 mn. /MW as in the case of registered projects Gautami( 4828), Vemagiri (4334) and Hazira ( 2915) Gas based combined cycle power project.</p> <p>Since the cost is based on the approved cost of various coal based power plants and the cost compares well with other projects, DOE accepted the cost as valid and appropriate for the project activity</p>
4	Return on Equity (ROE)	14	%	Central Electricity Regulatory	CERC	<input checked="" type="checkbox"/>	As per CERC regulation and same is verified by the DOE and thus is correct and appropriate. Value considered for this baseline

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>			alternative is as per the value considered for project activity
5	Debt: Equity	75:25	--	As per Project activity	DPR	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR and is in conformity with normally accepted debt equity ratio of infrastructure projects. Hence, the ratio is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
6	Plant Load Factor	80	%	As per Project activity	DPR	<input checked="" type="checkbox"/>	As verified from the DPR of the Project the value is correct and acceptable. This is based on tariff notification issued by Ministry of Power and recommended by CERC. The PLF is correct and acceptable. This value has been applied for all considered alternatives. Value considered for this baseline alternative is as per the value considered for project activity
7	Technical Life time	20	Years	As per project activity	DPR	<input checked="" type="checkbox"/>	As per EB 50, Annex-15, "Tool to determine remaining lifetime of the equipment" life time of the boiler and steam turbine is 25 years, however for levelised cost it is considered as 20 years similar to life time of project activity.
8	Cost of Coal	1.2849	INR/Kg	CERC Tariff petition (140/2005 ; page no 25 of 34) <a href="http://cercind.gov.in/03">http://cercind.gov.in/03</a>	CERC	<input checked="" type="checkbox"/>	The cost of the coal is based on the tariff petition no 140/2005 for Ramagundam Thermal Power station stage-III ( 500 MW) and is sourced from the Central Electricity Regulatory Commission (CERC) <sup>7</sup> As this value is sourced

<sup>7</sup> <http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				<a href="#">022007/No-140-05-doh-22-5-07.pdf</a>			<p>from the document available from Central Electricity Regulatory Commission which is a government regulatory Authority, value considered is authentic and appropriate.</p> <p>DOE cross verified the cost assumed by other registered projects and observed that Gautami (4828) has taken a cost of Rs 1357/ MT for GCV of 4760 kcal/kg, Vemagiri (4334) has taken cost of Rs 1173/MT for GCV of 4000, Torrent Power (1116) has considered a cost of Rs.1150/MT for 3755 kcal/kg CV. This is comparable to Rs.1284/MT assumed by the candidate project for 4093 kcal/kg GCV.( 3946 NCV)</p> <p>In the above background, DOE considered the cost as appropriate and correct for the project activity.</p> <p>The cost of the coal is as per the CERC tariff order which was applicable at the time of investment decision. Hence, it is correct and acceptable.</p>
9	Calorific value of Coal	3946	Kcal/Kg	CERC Tariff petition (140/2005 ; page no 25 of 34) <a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20</a>	CERC	<input checked="" type="checkbox"/>	<p>Net Calorific value of the coal is worked out considering GCV of the coal as 4093 kcal/kg and GCV to NCV conversion factor.</p> <p>The GCV of the coal is based on the tariff petition no</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				<a href="#">India%20website.htm</a>			<p>140/2005 for Ramagundam Thermal Power station stage-III ( 500 MW) and is sourced from the Central Electricity Regulatory Commission (CERC)<sup>8</sup>As this value is sourced from the document from Central Electricity Authority, value considered is authentic and appropriate.</p> <p>GCV to NCV conversion factor of 3.6 % is sourced from CEA CO2 database; version 02 dated 21st June, 2007  <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a></p> <p>DOE cross verified the cost and corresponding calorific value assumed by other registered projects and observed that Gautami (4828) has taken a cost of Rs 1357/ MT for GCV of 4760 kcal/kg, Vemagiri (4334) has taken cost of Rs 1173/MT for GCV of 4000, Torrent Power (1116) has considered a cost of Rs.1150/MT for 3755 kcal/kg CV. This is comparable to Rs.1284/MT assumed by the candidate project for 4093 kcal/kg GCV.( 3946 NCV)  Hence, this value has been accepted correct and appropriate for the project activity</p>

<sup>8</sup> <http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
10	Gross Heat Rate	2450	Kcal/Kwh	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
11	Auxiliary consumption	7.5	%	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
12	O & M expenses	1.184	INR million/mw	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
13	O & M escalation	4	%	Same as project activity	DPR	<input checked="" type="checkbox"/>	Escalation is appropriately considered same as project activity for baseline tariff calculation.
14	Interest rate for Term Loan	13	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.
15	WC Receivables Fuel O&M Maint. Spare	2 2 1 1	Month Month Month %	<b>CERC:</b> <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.



<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf">http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

### 3. Power plant based on coal (Imported fuel) with super-critical technology

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
	Parameter	Value	Unit	Source of	Reference	DOE ASSESSMENT	

S.N		applied		Information (please indicate document and page)		Correctness of value applied	Comment
1	Capacity of Plant	660	MW	As per commercial size available in the market.		<input checked="" type="checkbox"/>	Capacity of the plant considered is based on the available capacity of the plants in India. Based on local and sectoral expertise same is considered to be appropriate. For calculation of levelised cost this does not have an impact whether capacity considered by the PP as per available size in the market 500 MW or 366 MW ( Same as the project activity)
2	Cost per MW	47.47	INR Million/mw	British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151		<input checked="" type="checkbox"/>	Value is based on the British High Commission Report on UMPP Risk Analysis, April 2007. Cost considered is USD 1227 per kW ; exchange rate USD @ 40.23 INR Same is verified by the validation team and is appropriate.
3	Total Project Cost (including IDC , Financing Charges and WC margin)	31331	INR Million	calculated		<input checked="" type="checkbox"/>	<p>The project cost is calculated from per MW cost multiplied by the installed capacity considered for the baseline alternative i.e. 660 MW x 47.47 INR mn /MW = 31,331 INR Mn.</p> <p>Value of 47.47 INR million /MW is based on the British High Commission Report on UMPP Risk Analysis, April 2007. Cost considered for imported coal based supercritical power plant is USD 1180 per kW which is wrongly presented as USD 1227 per kW in FVR during earlier submission. DOE regrets the typographical mistake; exchange rate considered is USD @ 40.23 INR. Same is verified by the validation team and is appropriate.</p> <p>DOE also cross verified the cost assumed by other registered projects for imported coal based power plant using super critical technology as an alternative and observed that they have assumed the cost of Rs. 45.22 mn. /MW as in the case of registered project Hazira (2915) Gas</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							based combined cycle power project. While Gautami (4828), Vemagiri (4334) projects have not considered the supercritical as an alternative scenario.  Since the cost is based on the authentic report published by British high commission on ultra mega power projects and the cost compares well with other project, DOE accepted the cost as valid and appropriate for the project activity
4	Return on Equity (ROE)	14	%	Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>	CERC	<input checked="" type="checkbox"/>	As per CERC regulation and same is verified by the DOE and thus is correct and appropriate. Value considered for this baseline alternative is as per the value considered for project activity
5	Debt: Equity	75:25	--	As per Project activity	/DPR/	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR and is in conformity with normally accepted debt equity ratio of infrastructure projects. Hence, the ratio is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
6	Plant Load Factor	80	%	As per Project activity	DPR	<input checked="" type="checkbox"/>	As verified from the DPR of the Project the value is correct and acceptable. This is based on tariff notification issued by Ministry of Power and recommended by CERC. The PLF is correct and acceptable. This value has been applied for all considered

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							alternatives.
7	Technical Life time	20	Years	As per Project activity	DPR	<input checked="" type="checkbox"/>	As per EB 50, Annex-15, "Tool to determine remaining lifetime of the equipment" life time of the boiler and steam turbine is 25 years, however for levelised cost it is considered as 20 years similar to life time of project activity.
8	Cost of Imported Coal	1.925	INR/Kg	CEA expert committee report on fuel pricing (Page 4 of 17)	CEA	<input checked="" type="checkbox"/>	<p>The cost of the imported coal is as per CEA<sup>9</sup> expert committee report on fuel pricing.</p> <p>Same is verified by the validation team. The value is correct and acceptable.</p> <p>DOE also cross verified the cost assumed by other registered projects for imported coal based power plant using super critical technology as an alternative and observed that they have assumed the cost of Rs. 2020 Rs / MT for GCV of 5400 Kcal/Kg as in the case of registered project Hazira (2915) Gas based combined cycle power project. While Gautami( 4828), Vemagiri (4334) projects have not considered the supercritical as an alternative scenario. This is comparable to Rs.1925/MT assumed by the candidate project for 5400 kcal/kg GCV.( 5206 NCV)</p>

<sup>9</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							In the above background, DOE considered the cost as appropriate and correct for the project activity.
9	Calorific value of Imported Coal	5206	Kcal/Kg	CEA expert committee report on fuel pricing (Page 4 of 17) Weblink: <a href="http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm">http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm</a>	CEA	<input checked="" type="checkbox"/>	<p>Net Calorific value of the coal is worked out considering GCV of the imported coal as 5400 kcal/kg and GCV to NCV conversion factor of 3.6 %.</p> <p>The GCV of the coal is based on the CEA<sup>10</sup> expert committee report on fuel pricing.</p> <p>GCV to NCV conversion factor of 3.6 % is sourced from CEA CO2 database; version 02 dated 21st June, 2007 <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a></p> <p>Further value considered is also comparable with other registered project. GCV of 5400 Kcal/Kg for imported coal is considered in the case of registered project Hazira (2915) Gas based combined cycle power project.</p> <p>As this value is sourced from the document of Central</p>

<sup>10</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							Electricity Authority, value considered is authentic and appropriate.
10	Heat Rate	2167	Kcal/Kwh	British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151		<input checked="" type="checkbox"/>	Heat rate is calculated from efficiency of 39.69%. The efficiency value has been referred from British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151 (Corresponding to Indian coal under Indian condition, LHV, for low super critical technology). The value is correct and acceptable
11	Auxiliary consumption	9	%	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
12	O & M expenses	1.184	INR million/mw	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
13	O & M escalation	4	%	As per Project activity	/DPR/	<input checked="" type="checkbox"/>	Escalation is appropriately considered same as project activity for baseline tariff calculation.
14	Interest rate for Term Loan (IFCI)	13	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
15	WC Receivables Fuel O&M Maint. Spare	2 2 1 1	Month Month Month %	<u>CERC:</u> <a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf">http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.



#### 4. Power plant based on coal (Domestic fuel) with super-critical technology

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
1	Capacity of Plant	660	MW	As per commercial size available in the market		<input checked="" type="checkbox"/>	Capacity of the plant considered is based on the available capacity of the plants in India. Based on local and sectoral expertise same is considered to be appropriate. For calculation of levelised cost this does not have an impact whether capacity considered by the PP as per available size in the market 660 MW or 366 MW ( Same as the project activity)
2	Cost per MW	49.36	INR Million/mw	British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151		<input checked="" type="checkbox"/>	Value is based on the British High Commission Report on UMPP Risk Analysis, April 2007. Cost considered is USD 1227 per kW ; exchange rate USD @ 40.23 INR Same is verified by the validation team and is appropriate.
3	Total Project Cost (including IDC , Financing Charges and WC margin)	32579	INR Million	Calculated value		<input checked="" type="checkbox"/>	<p>The project cost is calculated from per MW cost multiplied by the installed capacity considered for the baseline alternative i.e. 660 MW x 49.36 INR mn /MW = 32,579 INR Mn.</p> <p>Value of 49.36 INR million /MW is based on the British High Commission Report on UMPP Risk Analysis, April 2007.</p> <p>Cost considered for domestic coal based supercritical power plant is USD 1227 per kW; exchange rate considered is USD @ 40.23 INR. Same is verified by the validation team</p>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							and is appropriate.  Since the cost is based on the authentic report published by British high commission on ultra mega power projects, DOE accepted the cost as valid and appropriate for the project activity
4	Return on Equity (ROE)	14	%	Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>	CERC	<input checked="" type="checkbox"/>	As per CERC regulation and same is verified by the DOE and thus is correct and appropriate. Value considered for this baseline alternative is as per the value considered for project activity
5	Debt: Equity	75:25	--	As per Detailed Project Report	/DPR/	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR and is in conformity with normally accepted debt equity ratio of infrastructure projects. Hence, the ratio is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
6	Plant Load Factor	80	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	As verified from the DPR of the Project the value is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
7	Technical Life time	20	Years	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Technical lifetime of the Project is as per DPR and the value is found to be correct and appropriate by the DoE.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
8	Cost of Domestic Coal	1.2849	INR/Kg	CERC Tariff petition (140/2005 ; page no 25 of 34) <a href="http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf">http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf</a>	CERC	<input checked="" type="checkbox"/>	<p>The cost of the coal is based on the tariff petition no 140/2005 for Ramagundam Thermal Power station stage-III ( 500 MW) and is sourced from the Central Electricity Regulatory Commission (CERC)<sup>11</sup>As this value is sourced from the document available from Central Electricity Regulatory Commission which is a government regulatory Authority, value considered is authentic and appropriate.</p> <p>DOE cross verified the cost assumed by other registered projects and observed that Gautami (4828) has taken a cost of Rs 1357/ MT for GCV of 4760 kcal/kg, Vemagiri (4334) has taken cost of Rs 1173/MT for GCV of 4000, Torrent Power (1116) has considered a cost of Rs.1150/MT for 3755 kcal/kg CV. This is comparable to Rs.1284/MT assumed by the candidate project for 4093 kcal/kg GCV.( 3946 NCV)</p> <p>In the above background, DOE considered the cost as appropriate and correct for the project activity.</p>
9	Calorific value of Domestic Coal	3946	Kcal/Kg	CERC Tariff petition (140/2005 ; page no 25 of 34) <a href="http://www.cea.nic.in/pl">http://www.cea.nic.in/pl</a>	CERC	<input checked="" type="checkbox"/>	<p>Net Calorific value of the coal is worked out considering GCV of the coal as 4093 kcal/kg and GCV to NCV conversion factor.</p>

<sup>11</sup> <http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				anning/c%20and%20e/Government%20of%20India%20website.htm			<p>The GCV of the coal is based on the tariff petition no 140/2005 for Ramagundam Thermal Power station stage-III ( 500 MW) and is sourced from the Central Electricity Regulatory Commission (CERC)<sup>12</sup>As this value is sourced from the document from Central Electricity Authority, value considered is authentic and appropriate.</p> <p>GCV to NCV conversion factor of 3.6 % is sourced from CEA CO2 database; version 02 dated 21st June, 2007 <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a></p> <p>DOE cross verified the cost and corresponding calorific value assumed by other registered projects and observed that Gautami (4828) has taken a cost of Rs 1357/ MT for GCV of 4760 kcal/kg, Vemagiri (4334) has taken cost of Rs 1173/MT for GCV of 4000, Torrent Power (1116) has considered a cost of Rs.1150/MT for 3755 kcal/kg CV. This is comparable to Rs.1284/MT assumed by the candidate project for 4093 kcal/kg GCV.( 3946 NCV)</p>

<sup>12</sup> <http://cercind.gov.in/03022007/No-140-05-doh-22-5-07.pdf>

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							Hence, this value has been accepted correct and appropriate for the project activity
10	Heat Rate	2186	Kcal/Kwh	British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151		<input checked="" type="checkbox"/>	Calculated from efficiency of 39.35%. The efficiency value has been referred from British High Commission Report on UMPP Risk Analysis, April 2007 ; Page no 10 of 151 (Corresponding to Indian coal under Indian condition, LHV, for low super critical technology)
11	Auxiliary consumption	9	%	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
12	O & M expenses	1.184	INR million/mw	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
13	O & M escalation	4	%	As per Project activity	/DPR/	<input checked="" type="checkbox"/>	Escalation is appropriately considered same as project activity for baseline tariff calculation.
14	Interest rate for Term Loan (IFCI)	13	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
15	WC Receivables Fuel O&M Maint. Spare	2 2 1 1	Month Month Month %	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf">http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

## 5. Power plant (s) based on lignite

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
	Parameter	Value	Unit	Source of	Reference	DOE ASSESSMENT	

S.N		applied		Information (please indicate document and page)		Correctness of value applied	Comment
1	Capacity of Plant	500	MW			<input checked="" type="checkbox"/>	Capacity of the plant considered is based on the available capacity of the plants in India. Based on local and sectoral expertise same is considered to be appropriate. For calculation of levelised cost this does not have an impact whether capacity considered by the PP as per available size in the market 500 MW or 366 MW ( Same as the project activity)
2	Cost per MW	40.60	INR Million/mw	<a href="http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf">http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf</a>	CEA	<input checked="" type="checkbox"/>	Value is based on the data available on CEA web site. Same is verified by the validation team and is appropriate.
3	Total Project Cost (including IDC , Financing Charges and WC margin)	20,307	INR Million	<a href="http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf">http://www.cea.nic.in/thermal/project_monitoring/BS%20NLC.pdf</a>	CEA	<input checked="" type="checkbox"/>	<p>As per the CEA publication on "broad status of thermal power project in the country" the estimated approved cost of the thermal power station (unit 1 &amp; unit 2 : 250 MW each) of Neyveli Lignite Corporation is INR 20307.80 million. This amounts to per MW project cost of INR 40.62 Million (INR 20307.80 million/500 MW)</p> <p>Reference : <a href="http://www.cea.nic.in/reports/proj_mon/broad_status.pdf">http://www.cea.nic.in/reports/proj_mon/broad_status.pdf</a></p> <p>DOE also cross verified the cost assumed by other registered projects for lignite based power plant as an alternative and observed that they have assumed the cost ranging from Rs. 43 mn. /MW as in the case of 165 MW Gas based combined cycle power project at Hazira (1300) to Rs. 50 mn. as in the case of Grid-connected Combined Cycle Power Plant of capacity 219.067 MW using Natural Gas/ R-LNG as fuels at Gujarat, India (1352). DOE also observed that the project activity does not become non additional, even if the cost is considered at Rs.50 mn./Mw in as much as the Levelized cost of generation goes up from</p>



<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							Rs.2.24/kwh to Rs.2.46/kWh in reference to the levelized cost of generation of Rs.2.68/kWh in the case of the project activity. Since the cost is based on the approved cost of one of the lignite based power plant and the cost compares well with other projects, DOE accepted the cost as valid and appropriate for the project activity
4	Return on Equity (ROE)	14	%	Detailed project report  Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>	DPR  CERC	<input checked="" type="checkbox"/>	Value considered is from DPR and as per CERC regulation and same is verified by the DOE and thus is correct and appropriate. Value considered for this baseline alternative is as per the value considered for project activity
5	Debt: Equity	75:25	--	As per Detailed Project Report	/DPR/	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR and is in conformity with normally accepted debt equity ratio of infrastructure projects. Hence, the ratio is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
6	Plant Load Factor	80	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	As verified from the DPR of the Project the value is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
7	Technical Life time	20	Years	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Technical lifetime of the Project is as per DPR and the value is found to be correct and appropriate by the DoE.
8	Cost of Lignite	0.80	INR/Kg	CEA expert committee report on fuel for power generation; page 4 Of 17	CEA	<input checked="" type="checkbox"/>	<p>The cost of the imported coal is as per CEA<sup>13</sup> expert committee report on fuel pricing.</p> <p>Same is verified by the validation team. The value is correct and acceptable.</p> <p>DOE also cross verified the cost assumed by other registered projects for lignite based power plant as an alternative and observed that they have assumed the cost of Rs. 876 / MT for GCV of 2673 Kcal/Kg as in the case of registered project Hazira (2915) Gas based combined cycle power project and Bhandar gas based CCPP (1300) This is comparable to Rs.800 /MT assumed by the candidate project for 2800 kcal/kg GCV.( 2699 NCV)</p> <p>In the above background, DOE considered the cost as appropriate and correct for the project activity.</p>
9	Calorific value of Lignite	2699	Kcal/Kg	CEA expert committee report on fuel for power generation; page 4 Of 17	CEA	<input checked="" type="checkbox"/>	Net Calorific value of the coal is worked out considering GCV of the lignite as 2800 kcal/kg and GCV to NCV

<sup>13</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
				17			<p>conversion factor of 3.6 %.</p> <p>The GCV of the coal is based on the CEA<sup>14</sup> expert committee report on fuel pricing.</p> <p>GCV to NCV conversion factor of 3.6 % is sourced from CEA CO2 database; version 02 dated 21st June, 2007  <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a></p> <p>DOE also cross verified the cost and corresponding calorific value assumed by other registered projects for lignite based power plant as an alternative and observed that they have assumed the cost of Rs. 876 / MT for GCV of 2673 Kcal/Kg as in the case of registered project Hazira (2915) Gas based combined cycle power project and Bhandar gas based CCPP (1300) This is comparable to Rs.800 /MT assumed by the candidate project for 2800 kcal/kg GCV.( 2699 NCV)</p> <p>As this value is sourced from the document of Central Electricity Authority, value considered is authentic and</p>

<sup>14</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							appropriate.
10	Heat Rate	2695	Kcal/Kwh	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
11	Auxiliary consumption	9.5	%	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
12	O & M expenses	1.316	INR million/mw	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The value is as per the Central Electricity Regulatory Commission (CERC) regulation No. L-7/25(5)/2003-CERC dated 26/03/2004 which was applicable at the time of investment decision. Hence, it is correct and acceptable.
13	O & M escalation	4	%	As per project activity	DPR	<input checked="" type="checkbox"/>	Escalation is appropriately considered same as project activity for baseline tariff calculation.
14	Interest rate for Term Loan (IFCI)	12	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
15	WC Receivables Fuel O&M Maint. Spare	2 2 1 1	Month Month Month %	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf">http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

## 6. Power plant (s) based on naphtha

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
	Parameter	Value	Unit	Source of	Reference	DOE ASSESSMENT	

S.N		applied		Information (please indicate document and page)		Correctness of value applied	Comment
1	Capacity of Plant	366	MW	As per the project activity		<input checked="" type="checkbox"/>	Capacity of the plant considered is as per the project activity. Hence is correct and appropriate.
2	Cost per MW	32.459	INR Million/mw	As per the project activity		<input checked="" type="checkbox"/>	Project cost is considered is as per the project activity. Hence is correct and appropriate.
3	Total Project Cost (including IDC , Financing Charges and WC margin)	11880	INR Million	As per the project activity		<input checked="" type="checkbox"/>	Input values of project cost for alternative of Naphtha based power plant is considered same as per the project activity considering only change of fuel type.  Capacity of the power plant is also considered same as 366 MW as per the project activity.  As input values for alternative of power generation through Naphtha are considered same as per the project activity, is considered appropriate for calculation of levelised cost of generation by validation team.
4	Return on Equity (ROE)	14	%	Detailed project Report  Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 available on <a href="http://cercind.gov.in">http://cercind.gov.in</a>	DPR  CERC	<input checked="" type="checkbox"/>	Value is based on the DPR and as per CERC regulation and same is verified by the DOE and thus is correct and appropriate. Value considered for this baseline alternative is as per the value considered for project activity
5	Debt: Equity	75:25	--	As per Detailed Project Report	/DPR/	<input checked="" type="checkbox"/>	Debt equity ratio is as per DPR and is in conformity with normally accepted debt equity ratio of infrastructure projects. Value considered for this baseline alternative is as per the value considered for project activity

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							Hence, the ratio is correct and acceptable.
6	Plant Load Factor	80	%	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	As verified from the DPR of the Project the value is correct and acceptable. Value considered for this baseline alternative is as per the value considered for project activity
7	Technical Life time	20	Years	As per Detailed Project Report	DPR	<input checked="" type="checkbox"/>	Technical lifetime of the Project is as per DPR and the value is found to be correct and appropriate by the DoE.
8	Cost of Naphtha	17.40	INR/Kg	<a href="http://www.cea.nic.in/thermal/Special_reports/Report%20of%20the%20expert%20committee%20on%20fuels%20for%20power%20generation.pdf">http://www.cea.nic.in/thermal/Special_reports/Report%20of%20the%20expert%20committee%20on%20fuels%20for%20power%20generation.pdf</a>	CEA	<input checked="" type="checkbox"/>	The cost of the Naphtha is as per CEA <sup>15</sup> expert committee report on fuel pricing.  DOE also cross verified the cost assumed by other registered projects for Naphtha based power plant as an alternative and observed that they have assumed the cost of Rs 18,000 / MT for GCV of 11360 Kcal/Kg for registered project Hazira (2915) Gas based combined cycle power project and cost of Rs. 30,000 / KL (equivalent to Rs 22,500 / Kg considering specific gravity of 750 kg/m3) for GCV of 11000 Kcal/Kg as in the case of registered project Bhandar gas based CCPP (1300). This is comparable to Rs.17,400 /MT assumed by the candidate project for 10,500 kcal/kg GCV ( 9975 NCV)

<sup>15</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							In the above background, DOE considered the cost as appropriate and correct for the project activity.
9	Calorific value of Naphtha	9975	Kcal/Kg	CEA expert committee report on fuel for power generation; page 4 Of 17	CEA	<input checked="" type="checkbox"/>	<p>Net Calorific value of the Naphtha is worked out considering GCV of the Naphtha as 10,500 kcal/kg and GCV to NCV conversion factor of 5 %.</p> <p>The GCV of the coal is based on the CEA<sup>16</sup> expert committee report on fuel pricing.</p> <p>GCV to NCV conversion factor of 5 % is sourced from CEA CO2 database; version 02 dated 21st June, 2007 <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a></p> <p>DOE also cross verified the cost and corresponding calorific values assumed by other registered projects for Naphtha based power plant as an alternative and observed that they have assumed the cost of Rs 18,000 / MT for GCV of 11360 Kcal/Kg for registered project Hazira (2915) Gas based combined cycle power project and cost of Rs. 30,000 / KL (equivalent to Rs 22,500 / MT considering specific gravity of</p>

<sup>16</sup> [http://www.cea.nic.in/reports/articles/thermal/expert\\_committee\\_report\\_fuel.pdf](http://www.cea.nic.in/reports/articles/thermal/expert_committee_report_fuel.pdf)



<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
							750 kg/m3) for GCV of 11000 Kcal/Kg as in the case of registered project Bhandar gas based CCPP (1300). This is comparable to Rs.17,400 /MT assumed by the candidate project for 10,500 kcal/kg GCV ( 9975 kcal/kg NCV)  As this value is sourced from the document of Central Electricity Authority, value considered is authentic and appropriate.
10	Heat Rate	1850	Kcal/Kwh	Assumed to be same as the project	/DPR/	<input checked="" type="checkbox"/>	Heat rate considered is same as project activity hence it is correct and appropriate.
11	Auxiliary consumption	3	%	<a href="http://www.cercind.gov.in/oper7.htm">http://www.cercind.gov.in/oper7.htm</a>	CERC	<input checked="" type="checkbox"/>	Same is sourced from CERC web site and is appropriate.
12	O & M expenses	2.5	%	<a href="http://www.thegef.org/gef/sites/thegef.org/files/repository/09.PAD.Annex_9.pdf">http://www.thegef.org/gef/sites/thegef.org/files/repository/09.PAD.Annex_9.pdf</a>		<input checked="" type="checkbox"/>	Same is sourced from GEF web site and information is available on public domain.
13	O & M escalation	4	%	As per project activity	DPR	<input checked="" type="checkbox"/>	Escalation is appropriately considered same as project activity for baseline tariff calculation.
14	Interest rate for Term Loan (IFCI)	13	%	<a href="http://www.rbi.org.in">http://www.rbi.org.in</a>	RBI	<input checked="" type="checkbox"/>	The interest rate taken is in line with the commercial lending rates as provided by the Reserve Bank of India, India's central bank. Value is average of prevailing interest rate at the time of investment decision making The applied value has been verified and found correct.

<input type="checkbox"/>		No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>		Assessment of all financial parameters see below					
S.N	Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
						Correctness of value applied	Comment
15	WC Receivables Fuel O&M Maint. Spare	2 1 1 1	Month Month Month %	<a href="http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf">http://www.cercind.gov.in/13042007/Terms_and_conditions_of_tariff.pdf</a>	CERC	<input checked="" type="checkbox"/>	The working capital is in conformity with CERC Order. Same is verified by the validation team and confirmed that values are correct and acceptable.
16	Income tax	33.99	%	<a href="http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf">http://indiabudget.nic.in/ub2000-01/mem/mem1.pdf</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.
17	Minimum Alternate Tax	11.33	%	<a href="http://pib.nic.in/archive/budget2000/budget2000sm2.html">http://pib.nic.in/archive/budget2000/budget2000sm2.html</a>	/IT/	<input checked="" type="checkbox"/>	This is as per the prevailing income tax rules and regulations in India. The same is verified by DOE and found correct.

## ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

**Table A-4:** Assessment of Barrier Analysis (EB 55 Annex 1, §118 )

<input checked="" type="checkbox"/>		No barrier parameters are used for additionality justification		
<input 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
			<input checked="" type="checkbox"/>	

## ANNEX 5: OUTCOME OF THE GSCP

**Table A-5:** Outcome of the Global Stakeholder Consultation Process

(§§ 40-42, VVM Version 1.2)

<input type="checkbox"/>	No comments were received during the global stakeholder consultation period					
<input checked="" 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:	Insert ed on:	Subject	Comment <sup>*)</sup>	Action taken by the validation team to take due account on the comment <sup>*)</sup>	Conclusion (incl. CARs CLs or FARs)
1	Mr. Gautam Kumar		Baseline	<p>The project proponent has chosen the baseline as lignite based power plant. The baseline for power generation in India, as of now is coal based power plants – sub critical or supercritical which are connected to the grid. The PP has chosen lignite as baseline which has increased the CERs from the project when compared to choosing the grid as the baseline. If lignite is the most economic alternative, the DOE should also analyze the portfolio of PP's power projects and understand as to how many projects have they themselves installed or are planning to install.</p> <p>If lignite is most economic baseline, then PP should provide list of lignite power plants in India and the recent capacity additions. According to data from CEA, only 3580 MW lignite power plants are commissioned, out of which only 500 MW are with private players. Then how was it concluded that lignite is the baseline? The DOE should do a thorough check to understand whether lignite is really the baseline, keeping in mind the capacity additions using coal, and the other CDM registered NG power projects in India.</p>	Validation team has raised the CAR in regard to input values considered for lignite based alternative and coal based alternative considered as a plausible alternatives. In response PP has revised the calculation and now coal is	CAR is closed successfully and DOE is convinced with the corrections made in the calculation sheet.

				The price of lignite is given as 0.78 Rs/kg in the PDD whereas the Minister of State for Industries, Gujarat said in a press article that the rates of lignite being produced from the Rajpardi and Tadkeshwar mines are fixed at Rs. 1500 and Rs. 1400 per MT respectively, while that of being mined in Bhavnagar and Matano Madh is Rs. 1250 and Rs.1000 per MT in that order! ( <a href="http://www.expressindia.com/latest-news/govt-slashes-lignite-prices-by-rs-150-per-metric-tonne/413343/">http://www.expressindia.com/latest-news/govt-slashes-lignite-prices-by-rs-150-per-metric-tonne/413343/</a> ). The DOE should independently verify as to what were the prevailing prices of lignite rather than relying on the DOE to establish authenticity. The PP being a major operator in the power sector may find it relatively easy to obtain a quotation for Lignite from some small time supplier.	considered as a baseline alternative for the project activity.	
2	Mr. Gautam Kumar		Additionality	<p>The methodology considers a project additional under the following circumstances</p> <p>a) There is a more economically attractive and GHG intensive alternative available to the project activity (lower levelized cost when compared to the project activity); and</p> <p>b) The project on a standalone basis is not financially attractive (low IRR as compared to standard industry benchmark)</p> <p>While the PP has demonstrated that there is a more economically attractive option available as compared to the project activity, it has not demonstrated that the project on a standalone basis is not financially viable. As the project activity involves displacement of power on the grid and the alternative can be set up by any other entity as well, it needs to undertake a benchmark analysis. In order to perform benchmark analysis, the PP needs to take into account the tariff that it receives from the sale of power.</p> <p>The plant is being setup as a Merchant Power Plant (MPP) and hence may not enter into a long term PPA. It is a well known fact that merchant power plants are very attractive, because they get higher tariff than PPA based power plants. An article in Povernomics is quoted here.</p>	Please refer assessment on additionality section of this report.	OK

				<p>“Returns for pure merchant power plants, in the short to medium term, are expected to be significantly higher than the return of projects under long-term supply agreements. This is abundantly apparent from the fact that the weighted average short-term power price was around Rs. 7/KwH (April–Sept. 2008) and the levelized tariff quoted by various bidders for supplying power on long-term basis to state electricity boards (SEBs), in the same period, was in the region of Rs 2.50 - 3 /KwH (for coal linkage projects). The higher returns have prompted private developers to develop both peak load plants and base load plants as merchant power plants. An example is Jindal Power Limited’s 1000 MW coal based thermal plant (merchant) at Raigarh, Chhatisgarh. Based on the data available publicly, it appears that the plant generated a profit after tax of Rs 575 cr in Q3 of the fiscal year 2008-2009 (i.e. the first quarter after the commissioning of all units of the plant). Hence, it appears that profit after tax (PAT) for merely two quarters for this project would be perhaps more than the entire equity invested (<a href="http://www.constructionupdate.com/products/powertoday/2009/May2009/002.html">http://www.constructionupdate.com/products/powertoday/2009/May2009/002.html</a>).”</p> <p>A search on the internet for the tariff of merchant power plants in India shows that the tariff is Rs. 8-10/ unit (<a href="http://myiris.com/shares/research/ESSBL/POWEROTH_20090401.pdf">http://myiris.com/shares/research/ESSBL/POWEROTH_20090401.pdf</a>/ <a href="http://www.mptradeco.com/short-term-oct08-dec08.pdf">http://www.mptradeco.com/short-term-oct08-dec08.pdf</a>). The PP should take note of the returns the project will get on account of merchant sales and make sure a proper financial indicator like IRR/ NPV is chosen which reflects revenue also.</p> <p>The website of Lanco mentions that Lanco has a power trading unit called Lanco Power Trading Limited which has been awarded the National Power Trading Licence of CERC. It also says that on 21st May 2008, LPTL transacted 19.81 MUs, the highest for any single day transaction since its inception (<a href="http://www.lancogroup.com/power/powertrading/powertrading.html">http://www.lancogroup.com/power/powertrading/powertrading.html</a>). The DOE should strictly verify the documentary evidence behind the statement</p>		
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				made by the PP that the “project activity is quite susceptible to issues like nature of its sale contracts, pricing of merchant power and regulatory risk, development of adequate transmission corridor for evacuation of merchant power...”		
3	Mr. Gautam Kumar		Debt Equity	<p>The project is apparently, 100% debt funded as is the case with most MPPs (<a href="http://www.lancogroup.com/Lanco_News_Is27.pdf">www.lancogroup.com/Lanco_News_Is27.pdf</a>). This is contrary to the debt equity ratio of 75:25 assumed in the PDD. Apparently, the PP has used standard parameters rather than project specific value. Additionality has to be project specific and each and every parameter should be project specific. The DOE should verify</p> <p>a) The assumptions used by the banks for project appraisal in particular the tariff and the PLF for the plant. Since the loan has already been sanctioned, the plant load factor should be taken from the project report submitted to the banks based on which the term loan has been sanctioned. (The PLF should essentially be verified as there is a chance that the PP would reduce the PLF claiming uncertainty in sales on a short term basis).</p> <p>b) Was the debt funding approved after taking into account CDM and if so, is there an explicit mention of it in the loan agreement signed with the 21 banks. It would be a little difficult to believe that the bank sanctioned the loan assuming CDM funds and then fails to incorporate anything related to CDM in the loan agreement)</p>	Please refer assessment on additionality section of this report.	OK
4	Mr. Gautam Kumar		Common Practice	The table in Page 24 of the PDD giving list of NG power plants in Southern Grid does not include the 469 MW NG power project by Gautami Power Limited (Mentioned in Page 9 of the PDD). This project was commissioned in 2006, and is being operated since then without CDM funds. The PP needs to justify how this plant is operational.	Please refer assessment on common practice section of this report.	OK
5	Mr. Gautam Kumar		Gas Availability	At the time when Lanco was conceptualizing the project activity, it was running its existing project on Naphtha. The cost of Naphtha is multiple times that of Natural Gas. Still Lanco chose to run its power on Naphtha rather than on Natural Gas. The reason for this most likely should be non availability of Natural Gas. There are multiple other power plants which could	Please refer assessment on additionality section of this report.	OK

				not be operational for want of gas. In such an event, the applicability of the methodology itself would need to be questioned.	report.	
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<sup>7)</sup> In case clarifications have been requested by the validation team corresponding rows shall be added



## ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Pankaj Patel**


SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor	2013-06-21
Validation, Verification		
VCS	Lead Assessor	2013-06-21

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
2.2	Heat Distribution
3.1	Energy Demand

031– Rev. 0, Date: 2011-03-23

031\_S01-F003\_2011-03-23\_rev0 S01-F003 rev0 / 2010-04-19



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Hemang Shah**


SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor	2014-06-22
Validation, Verification		
VCS	Lead Assessor	2014-06-22

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation
1.2	Renewable Energies
2.1	Electricity Distribution
2.2	Heat Distribution
3.1	Energy Demand
13.1	Waste handling and disposal

087 – Rev. 1, Date: 2011-06-23

087\_S01-F003\_2011-06-23\_rev1 S01-F003 rev0 / 2010-04-19



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Saroj Kumar Sahoo**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor	2014-08-02
VCS	Lead Assessor	2014-08-02

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

088 – Rev. 2, Date: 2011-08-03

088\_S01-F003\_2011-08-03\_rev2 S01-F003 rev0 / 2010-04-19

**Statement of Competence**Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program**Mr. Stefan Winter**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-06-30
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2014-06-30

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 2, Date: 2011-08-10

163\_S01-F003\_2011-08-10\_rev2

S01-F003 rev1 / 2011-08-02

**Statement of Competence**Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program**Mr. Alexander Richter**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor Technical Reviewer	2014-03-13
VCS	Lead Assessor Technical Reviewer	2014-03-13

136 – Rev. 1, Date: 2011-08-29

136\_S01-F003\_2011-08-29\_rev1

S01-F003 rev0 / 2010-04-19

**Statement of Competence**Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program**Mr. Indrapal Parmar**

SCHEME	STATUS	VALID UNTIL
CDM	Assessor	2014-03-27
VCS	Assessor	2014-03-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

191 – Rev. 1, Date: 2011-06-16

191\_S01-F003\_2011-06-16\_rev1

S01-F003 rev0 / 2010-04-19



**Statement of Competence**

Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Sanjay Kandari**

SCHEME	STATUS	VALID UNTIL
CDM	Assessor	2014-05-09
Validation, Verification	Assessor	2014-05-09
VCS	Assessor	2014-05-09

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

192 – Rev. 1, Date: 2011-05-10

192\_S01-F003\_2011-05-10\_rev1

S01-F003 rev0 / 2010-04-19



**Statement of Competence**

Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. David Lubanga**

SCHEME	STATUS
CDM	Trainee
VCS	Trainee

251 – Rev. 0, Date: 2011-09-26

251\_S01-F003\_2011-09-26\_rev0.doc

S01-F003 rev1 / 2011-08-02