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VALIDATION REPORT

KOPPAL GREEN POWER LIMITED

VALIDATION OF

KOPPAL GREEN POWER LIMITED BIOMASS POWER PROJECT

REPORT NO.5042S
REVISION NO. 08

CDM VALIDATION REPORT TEMPLATE
VERSION 5.0, NOVEMBER 2006

Date of first issue: 24/08/07	Project No.: 5042s
Approved by: Dr. Manfred Brinkmann	Organisational unit: Industrial Engineering Services Environment & Energy Technology
Client: Koppal Green Power Limited	Client ref.: 394789

Project Name: Koppal Green Power Limited Biomass Power Project
Country: India
Methodology: AMS-I.D, Grid connected renewable electricity generation
Version: 10
GHG reducing Measure/Technology: Grid Connected Biomass Based Power Plant
ER estimate: 30299 $tCO2_e$ per year (Actual case)
7689 $tCO2_e$ per year (with maximum coal usage)

Size
☐ Large Scale
☒ Small Scale

Validation Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status
☒ Corrective Actions Requested
☒ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is Validation team's opinion that the "Koppal Green Power Limited Biomass Power Project", in India, as described in the Revised Draft CDM PDD (January 2008), meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AMS-I.D. / Version 10. Validation team thus requests the registration of the project as a CDM project activity.

Report No.:	Date of this revision:	Rev. No.
5042s	28/01/08	08

Report title:
Koppal Green Power Limited Biomass Power Project

Work carried out by:
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Abbreviations

Abbreviation	Full Form
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
DG	Diesel Generator
DNA	Designated National Authority
DR	Document Review
EF	Emission Factor
EIA	Environment Impact Assessment
GHG	Greenhouse Gases
IETA	International Emissions Trading Association
INR	Indian Rupees
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kg	Kilogram
KERC	Karnataka Electricity Regulatory Commission
kWh	Kilo Watt Hour
KPTCL	Karnataka Power Transmission Corporation Limited
KGPL	Koppal Green Power Limited
KREDL	Karnataka Renewable Energy Development Limited
KSPCB	Karnataka State Pollution Control Board
MNES	Ministry of Non Conventional Energy Sources – Government of India
MVP	Monitoring and Verification Plan
MW	Mega Watt
MoEF	Ministry of Environment and Forest, Government of India
MoV	Means of Verification
ODA	Official Development Assistance
PDD	Project Design Document
tCO_2	Tonnes Carbon dioxide
SV	Site Visit
UNFCCC	United Nations Framework Convention on Climate Change

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

"TUV Rheinland Japan Ltd (TUV Rheinland)" has performed validation of "Koppal Green Power Limited Biomass Power Project". The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

Review of the project design documentation and the subsequent follow-up interviews have provided to Validation Team with sufficient evidence to determine fulfilment of stated criteria.

Host country for the proposed project activity is India and no Annex I country is involved in case of the proposed project activity. India fulfils the participation criteria and has approved the project and authorized the project participants. The DNA from Host country is confirmed that the project assists in achieving sustainable development.

The project correctly applies AMS I.D / Version 10 "Grid Connected Renewable Electricity Generation".

As part of validation process, the validation team has ascertained that the project design has followed the guidance provided in Attachment C of Appendix B and considered leakage. The proposed project activity is feeding electricity in fossil fuel dominated grid with carbon neutral renewable biomass. Thus, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 30299 tCO_2e when no fossil fuel is used as co-firing in the proposed project activity. However, the proposed project activity is also permitted to use 25 per cent coal. In case the proposed project activity uses the permitted amount of coal, the emission reduction will be 7689 tCO_2e per year over the 10-year fixed crediting period. These emission reductions are based on maximum permissible usage of coal (Indian coal having carbon per cent of 41.11) of 25 per cent of fuel. It may be noted that since commissioning of proposed project activity, the project participant has not used coal as fuel. Thus, the total emission reduction by the project activity may differ depending on the type and amount of coal used during the crediting period.

Adequate training and monitoring procedures have been implemented.

In summary, it is Validation Team's opinion that the "Koppal Green Power Limited Biomass Power Project", as described in the Revised Draft CDM PDD (January 2008) meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AMS-I.D. / Version 10, "Grid Connected Renewable Electricity Generation" Validation Team thus requests the registration of the project as a CDM project activity.

2 INTRODUCTION

Koppal Green Power Limited (KGPL) has commissioned TUV Rheinland Japan Limited (TUV Rheinland) to perform a validation of the "Koppal Green Power Limited Biomass Power Project" (hereafter called "the proposed project activity") at Karatagi Village, Gangavathi Taluka, Koppal District, Karnataka, in India. This report summarises findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

2.1 Objective

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

2.2 Scope

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

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

3 METHODOLOGY

The validation consists of the following three phases:

I A desk review of the project design documents

II Follow-up interviews with project stakeholders

III Resolution of outstanding issues and the issuance of the final validation report and opinion.

Following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

S.N.	Name of Document
/1/	Koppal Green Power Limited Biomass Power Project, Draft CDM PDD, dated August 30, 2006
/2/	Koppal Green Power Limited Biomass Power Project Revised Draft CDM PDD, dated January 25, 2008
/3/	R & A Associates Company Secretaries - minutes of meeting of the board of Directors regarding CDM benefits held on July 05, 2000, Letter No. Koppal/TUV-ref/Valid/4, dated November 23, 2006
/4/	M/s GANESHVENKAT & CO, Chartered accountants Certificate - indicating share of debt and equity from each source along with amount, Letter No. Koppal/TUV-ref/Valid/5, dated October 31, 2006
/5/	KREDL, Government of Karnataka, In Principle clearance of setting up Biomass power Plant, Letter No. KRED/03/KGPL/01/337, dated March 03, 2001
/6/	Government of Karnataka, Department of Energy in Principle clearance of setting up Biomass power Plant, Letter No. DE 185 NCE 2000, dated February 26, 2001
/7/	Government of Karnataka, Government of Secretary, Forest, Environment & Zoology Dept-Permission for installation of 6 MW Agro based power plant. Letter No. APG 12 EC 2001, dated April 21, 2003
/8/	Karnataka State Pollution Control Board, Consent for Establishment & clearance from Water & Air Pollution control, Letter No. CFE-CELL/KGPL/NE-231/2005-2006/475, dated May 09, 2005
/9/	Karnataka Power Transmission Corporation Ltd-Evacuation of 5.4 MW Power generations from Biomass based Cogeneration Plant, Letter No. CEE (G)/SEE (T)/EE (PSS)/AEE-1/F-69/15341-51, dated February 27, 2001
/10/	Karnataka Power Transmission Corporation Limited, Synchronization confirmation Letter. Letter No: EEE/TL&SS/AEEE (O)/MRB/5356, Dated January 07, 2005
/11/	KGPL & Thermax Limited, Agreement between KGPL and Thermax Limited for supply of boiler, dated March 12, 2003
/12/	IREDA, Request of IREDA to project participant for the implementation of CDM by TERI consultant, Letter no. IREDA/PTS/Cogen-Biomass/CDM dated November 04, 2003.
/13/	KGPL, Letter to IREDA for acceptance of TERI as consultant for implementation of CDM, Letter No. KGPL/IREDA/160/2003-04 dated November 08, 2003.
/14/	International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. http://www.ieta.org/ieta/www/pages/download.php?docID=259
/15/	Website of UNFCCC, http://unfccc.int/
/16/	Website of International Emission trading Association (IETA) http://www.ieta.org/
/17/	Website of Ministry of Power, Government of India http://www.powermin.nic.in/
/18/	Website of Ministry of Environment and Forest, Government of India http://envfor.nic.in/

/19/	Website of Ministry of New and Renewable Energy (MNRE), Government of India http://mnes.nic.in/
/20/	Website of Indian Renewable Energy Developement Agency (IREDA) http://www.ireda.in/default.asp
/21/	Website of Central Electric Authority of India http://www.cea.nic.in/
/22/	Website of Central Electricity Regulatory Commission of India http://www.cercind.gov.in
/23/	Website of GESCOM http://www.gescom.org/
/24/	Website of Karnataka Electricity Regulatory Commission http://www.kerc.org/english/index.html
/25/	Website of Karnataka Renewable Energy Development Limited http://www.kredl.kar.nic.in/
/26/	Website of Karnataka Power Transmission Corporation Limited http://www.kptcl.com/
/27/	Website of Karnataka Power Corporation Limited http://www.karnatakapower.com/

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

1. The version of the Draft CDM PDD template is changed to version 03 of the small scale PDD
2. Consideration of coal usage as project emission
3. Inclusion of HSD consumption due to DG set and other equipments in project boundary as project emission
4. Justification for the operating margin selection.
5. Inclusion of project -management structure and parameters for calculation of GHG emission reduction in monitoring plan.
6. Introduction of formulae in leakage emission calculation

3.2 Follow-up Interviews with Project Stakeholders

In order to reach a Validation Opinion a site visit was carried out on February 01, 2007. During the visit number of identified stakeholders were interviewed. Prior to the visit salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

S.N.	Date (YYYY-MM-DD)	Name	Topic
/1/	2007-02-01	Mr. Chandra Mohan, Managing Director, Koppal Green Power Limited	Discussion on additionality Organisational Structure
/2/	2007-02-01	Mr. Gopalkrishnan, General Manager – Corporate Affairs, Koppal Green Power Limited	Reporting structure Measurement and Record Keeping
/3/	2007-02-01	Mr. Kapil Suresan Consultant Ernst and Young	Discussiion on additionality Calculation of GHG emission reduction
/4/	2007-02-01	K. Sridramappa, Biomass supplier	Availability of biomass

S.N.	Date (YYYY-MM-DD)	Name	Topic
/5/	2007–02-01	B. Prasad, Farmer	Socio economic impact of the power project

Validation Team considered the views obtained in these interviews while arriving at Validation Opinion.

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues, which need be clarified prior to Validation Team's conclusion on the project design. In order to ensure transparency a validation protocol is used for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. Different columns in these tables are described in the figure below. The completed validation protocol for the project is enclosed in Appendix A to this report.

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

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

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

3.4 Internal Quality Control

The final validation report underwent internal review before requesting registration of the project activity. The internal review was performed by a technical reviewer qualified in accordance with Validation Team's qualification scheme for CDM validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country / Company
Team Leader – GHG Auditor	Mehta	Darshak	India / TUV Rheinland India
Team Member–(GHG Auditor under Training)	Patil	Ramkrishna	India / TUV Rheinland India
Internal Reviewer	Brinkmann	Manfred	Japan / TUV Rheinland Japan

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

Validation Protocol Table 2: Requirement checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in five different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification (CL) is used when the validation team has identified a need for further clarification. Open (OP) is used in the final validation report when, and in case, a justifiable exception is made in terms of pending clarifications residual to those identified in the Draft validation stage and those that do not affect the validation opinion.

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

4 VALIDATION FINDINGS

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

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

4.1 Participation Requirements

India - Host country is the party involved and Koppal Green Power Limited is the project participant of the proposed project activity. No Annex 1 party is involved in this project activity at this stage.

India has ratified the Kyoto Protocol. Ministry of Environment and Forest, Government of India (MoEF) is the DNA[1] for India for granting the host country approval for projects located in India. As per the website[2] of MoEF, DNA assesses the project activities. While granting host country approval, DNA of India notes that:

1. The project activity meets the national sustainable development priority and complies with the legal framework so as to ensure that the project activity is compatible with the local priorities and stakeholders have been duly consulted.

2. The project activity proposals do not involve diversion of ODA in accordance with the modalities and procedures

DNA of India has granted the host country approval to the project activity as per the requirements of the project activity vide letter number F. No. 4/19/2006-CCC, dated April 16, 2007. Thus, having been granted the host country approval, checked the criteria for sustainable development of India during site visit and considering discussion in the Draft Revised CDM PDD (January 2008), it is concluded that the project activity meets the above-mentioned criteria.

Sustainable Development

Observations on project activity with respect to India's sustainable development criteria are as follows -

• Social Well Being

The proposed project activity has claimed direct employment to indigenous people and also indirect employment for farmers, farm labours and other suppliers. The validation team had a discussion with the various stakeholders and understood that each truck having biomass carrying capacity of 10 T employed 4 to 5 persons per day. This indicated that the proposed project activity has increased employment generation in the area.

• Economic Well Being

KGPL intends to use the rice husk and other biomass from the surrounding areas. Thus, economic activities are generated because of the project activity. This activity will result in

[1] http://cdm.unfccc.int/DNA DNA of India, as per UNFCCC
[2] http://cdmindia.nic.in/host_approval_criteria.htm Criteria of approval of host country (India)

additional employment generation for the area. Local electricity grid is benefited due to presence of a power plant as was pointed out during meeting with the local stakeholders.

• Environmental Well-being

The project activity will generate electricity from rice husk and other biomass. This is expected to be carbon neutral and hence, the project activity is expected to reduce the CO_2 intensity of the grid.

• Technological Well Being

KGPL has employed a 67 kg / cm^2 steam pressure with temperature 490 ºC. This configuration of boiler is a high-pressure application, which is in power plants of this nature in India. (In bagasse based co generation projects higher pressure is applied). The validation team also took into account the financial incentives[3] given by government of India to biomass based power projects. The incentives indicated that this is one of the desirable technologies in India.

4.2 Project Design

The project activity is using a Rankine cycle based technology of converting energy in biomass to electrical energy. 67 kg / cm^2 at 490 °C steam will be generated for driving turbine generator set. The travelling grate has variable speed drive. Rated capacity of the power plant is 6 MW as per the various documents[4] available with Validation Team. In order to control emission of suspended particulate matter in the surroundings an Electrostatic Precipitator is installed. An Effluent Treatment Plant has for treating discharge is also installed. The project activity has made provision of fuel storage area along with fuel handling system.

Project Duration and Crediting Time

The project activity is designed for 20 (Twenty) years life. Starting date of the project activity (March 12, 2003) is confirmed through review of document no 11 in section 3.1 (KGPL & Thermax Limited, Agreement between KGPL and Thermax Limited for supply of boiler, March 12, 2003).

The promoters have opted for a fixed crediting period. Since the project activity was not published on UNFCCC website before December 31, 2005, the project activity is not eligible for retroactive credit as initially claimed.

The crediting period of the project activity will therefore start after registration of the proposed project activity. The expected date of crediting period start is as per Revised Draft CDM PDD (January 2008) is October 20, 2007. In case, the registration of the proposed project later than this date, the crediting period will start after that.

CDM Consideration

The proof of CDM consideration is presented in the form of minutes of meeting of Board of Directors of KGPL. The meeting was held on July 05, 2000. This was confirmed through appropriate documentary evidence. (Certified copy of minutes of meeting by R. Ramakrishna Gupta, R & A Associates, Company Secretary, CP No. 6696). The evidence suggests that CDM was seriously considered prior to start of the project activity on March 12, 2003.

[3] http://mnes.nic.in/frame.htm?majorprog.htm interest subsidy of 2 per cent for biomass based power projects having more than 60 bar pressure.

[4] KSPCB, Consent for Establishment & clearance from Water & Air Pollution control, Letter No. 67/KSPCB/CFE-CELL/DEO/AEO-3/KOPPAL/F-230 NE/RO-RCH/2000/2001/314, January 01, 2001

Government of Karnataka, Department of Energy in Principle clearance of setting up Biomass power Plant, Letter No. DE 185 NCE 2000, February 26, 2001

It was evident that the project proponent had considered CDM at the time of project conceptualization of project. It may be noted that there was learning phase on part of all the reputed consultants as well as project developers and help of a consultant was necessary to understand CDM procedures. Seriousness of CDM consideration was demonstrated by correspondence between the project proponent and IREDA for consultancy on CDM[5].

It may be noted that there was a learning phase on part of all the consultant as well as project developers. In-spite of approval by the project proponent to IREDA for making PDD on the project, the PDD was not prepared till late 2005. This was the time when as an alternative solution, the project proponent selected another consultant. Thus, there has been demonstration that the project proponent had started working on CDM process even before the first PDD was published on the UNFCCC site worldwide or when the first project was registered.

Above facts were taken into account to arrive at the conclusion that CDM was considered seriously by the project proponent.

4.3 Baseline Determination

The baseline for the project activity is selected on basis of methodology for 'Grid Connected Renewable Electricity Generation' (Methodology AMS-I.D. / Version 10).

In the application of the approved methodology, KGPL has taken combined margin approach, which is appropriate. Due to lack of data, dispatch data OM method is not applicable. Hence, as per methodology ACM 002/Version 06, simple operating margin is next option. Simple OM method can only be used where low-cost/must run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term normals for hydroelectricity production. Out of these two options the first option was selected. The validation team has verified the condition for use of simple operating margin by generation data of Central Electricity Authority and southern regional grid load dispatch center[6]. KGPL has taken the baseline EF from the "Baseline Carbon Dioxide Emission Database Version 2.0" published by CEA of India (http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm) The overall emission factor for Southern grid published by CEA is 0.857 kg CO_2/ kWh of electricity produced. This emission factor is thus, appropriate

In order to validate the project suitability for the given methodology the following validation checks were made

• Validation whether the project is small scale in line with the definition of the UNFCCC requirement

• Validation whether the project activity has selected correct baseline for the category it represents

As a detailed explanation on this acceptance, following is noted:

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[5] A. IREDA, National Strategy Study for Implementation of CDM, IREDA/PTS/Cogen-Biomass/CDM, November 04, 2003
B. Koppal Green Power Limited, CDM – TERI – NSS, KGPL / IREDA / 160 / 2003-05, November 08, 2003

[6] 1. TERI, Baseline for renewable energy projects under clean development mechanism, report to MNES (draft report) (for the year 2001 – 02)
2. CEA, All India Electricity Statistics General Review 2002 –03 (For the year 2003-03)
3. CEA, All India Electricity Statistics, General Review 2005, (For the data of 2003-04)
4. CEA, All India Electricity Statistics , General Review 2006 (For the data of 2004-05)
5. Southern Region Load Dispatch Centre, Annual Grid Report, 2005-2006 (For the year 2005-2006)

From various sources as mentioned in section 3.1 of this report, it is noted that the project activity is a grid connected biomass based power project having 6 MW capacities, which is less than 15 MW. Thus, it fulfills the applicability criteria of a small-scale CDM project activity category AMS-I.D. / Version 10.

De-bundling

It is also noted during site visit and during interview with the stakeholders and referring to the UNFCCC website that there is no CDM project activity or no application to register another CDM project activity within one kilometer of the proposed project activity by the same project proponent in previous two years.

Above validation is as per clarification[7] on determining the occurrence of bundling given in thirtieth meeting of the Executive Board.

This assertion ensures that the project activity is not de-bundled project activity of a large Project activity.

4.4 Additionality

Revised Draft CDM PDD (January 2008) has identified barriers to prove additionality of the project activity.

The validation team considered all the arguments presented in the Revised Draft CDM PDD (January 2008). Consideration of these arguments is presented in the following paragraphs and it is concluded that the proposed project activity faced barriers due to prevailing practice.

A. Barriers due to prevailing practices:

The project proponent has argued on additionality of the project stating a reason that the proposed project is not a common practice in the state of Karnataka. In order to validate this argument, the observations of the validation team are as follows:

KREDL, the renewable energy promotional agency of Karnataka had allotted 59 biomass based projects having cumulative capacity of 437.7[8] MW in Karnataka. Out of these only one project of 4.5 MW[9] was installed when decision to implement the proposed project activity was taken on March 12, 2003. The installed biomass based projects constituted only 1.03 per cent of those allotted within the Karnataka state when the proposed project activity was conceptualised.

Further to above fact it was also noticed that Karnataka has sanctioned 64 grid connected biomass based projects till date since the year 1999. However, only 11 projects have reached stage of commissioning so far.

Above information suggests that the proposed project activity is not a common practice in the state of Karnataka when the project activity was conceptualized.

In opinion of the validation team, since, the proposed project activity was not a common practice in the state of Karnataka at the time when decision to implement the project activity was taken. Setting up a biomass based power project at that point meant efforts in setting up infrastructure for collection of biomass, finding manpower to work on not so common electricity generation route, dealing with new authorities

B. Policy Related Barriers:

KGPL had signed the PPA in March 2001. The conditions of this tariff were:

[7] http://cdm.unfccc.int/Reference/Guidclarif/Clarifs_deter_occur_debundling.pdf clarification on determining occurrance of bundling
[8] http://www.kredl.kar.nic.in/List%20of%20Biomass%20Projects%20Alloted.xls
[9] http://www.kredl.kar.nic.in/Docs/Biomass%20-%20commissioned%20as%20on%20date.doc

- Rs. 2.25 per kWh
- 1994-95 as base year
- 5 per cent escalation per annum over the tariff applicable for previous year
- These tariff rates are applicable for 10 years from the date of signing agreement.
- From 11th year onward the rates are agreed by mutual negotiations.

Thus, the original PPA did have uncertainty on tariff after 10th year of operation.

The project proponent took a significant step towards implementation of the proposed project activity when it made a placed order for Boiler. (KGPL & Thermax Limited, Agreement between KGPL and Thermax Limited for supply of boiler, March 12, 2003).

Subsequent to this decision, the very basis for implementation of a project, i.e PPA, was cancelled on July 5, 2003 and new tariff was Rs. 2.80 per kWh with annual escalation of 2 per cent (not compounded) was introduced.

Interpretation of the barriers described in Revised Draft CDM PDD (January 2008) by the validation team is as follows:

1. Difficulty at the stage of implementation. The obstacles indicated in the PDD have come after the project was actually started. Thus, they are not considered to be prohibitive barrier to the project activity.

2. It is also noted that the proposed project activity faced uncertainty in tariff after 10 years of signing the contract. However, the project proponent at that time had option of selling at negotiated price to KPTCL or to a third party.

In the opinion of the validation team the project activity may still have gone ahead to implement the project in spite of the difficulties since, the difficulties were encountered after the project was started or were not prohibitive in nature.

C. Financial Barrier of the project activity

The project proponent has indicated that the proposed project activity faced financial barrier due to:

1. Increase in raw material cost from Rs 498 to Rs.1400 per Tonne of biomass
2. Low IRR of project activity
3. Tariff difference of to be paid as per initial PPA and actual paid after terminating PPA
4. A cheaper fossil fuel can replace biomass in normal circumstances can be used

However, a conclusive evidence to suggest that the financial barrier existed on account of increase in the raw material cost, low IRR or availability other cheaper fossil fuel was not available to the validation team. Hence, the validation team has not accepted existence of financial barrier to the project activity.

From the above discussion the validation team concludes that the proposed project activity is additional due to presence of A.) Barriers due to prevailing practice

Biomass Availability and Leakage

Source of data for determining biomass availability was 'Biomass Resources Assessment Study Karnataka State[10]', As per report, the total biomass available in the Koppal district is 818,629 tons per year. As against this, the biomass consumption in the area of collection is 650,188 t/year.

[10] Institute for Energy Studies, Anna University, Report Entitled by " District wise Biomass Resources Assessment Study Karnataka State, Data Analysis & Compilation Volume II" prepared by Institute for Energy Studies Anna University, Chennai-6000 February 26, 2002 and submitted to MNES.

Thus, availability of the biomass residue in the collection area of M/s Koppal Green Power Limited is 25 per cent more than the consumption[11].

The consumption and utilization pattern of the biomass is as follows. The assumptions of biomass consumption have been verified by validation team:

Biomass Assessment Koppal District			
Biomass Generation Source	**Generation**	**Utilisation**	**Surplus**
Field level residues	610864	350328	260536
Agro industrial residue	207765	104860	102905
Project activity utilisation		60000	
Other Biomass Project Utilization		135000	
Total	**818629**	**650188**	**363441**

As part of validation, it was confirmed that the proposed project activity would be using biomass residue or waste only[12]. In order to consider leakage that is likely to occur due to biomass based power plant, the biomass collection area is considered to be Koppal district. The project proponent has indicated[10] that they will be taking biomass from the district of operation only. Hence, Case C, competing use of biomass will be considered to determine occurrence of leakage in the project activity.

The project proponent would consider latest available data on biomass availability and consumption at the time of verification. All the formulae and monitoring parameters for such calculation are available within Revised Draft CDM PDD (January 2008)

In addition to above, the project proponent has also stated in the Annex 4 of the Revised Draft CDM PDD (January 2008) that a Biomass Assessment Study will be undertaken and consider the biomass availability in the region to determine leakage each year in case official data is not available. Appropriate formulae are given in section B 6.3 of the Revised Draft CDM PDD (January 2008).

The area of biomass consumption is of prime importance in validation of the project. The monitoring plan has made provision to check the distance of the biomass procurement. This distance will help in determining the boundaries for checking leakage as per Attachment C of Appendix B.

Further to above, the validation team has also checked the origin of the electricity generating equipments and documentary evidence[13] suggests that the equipments of the proposed project activity are new. They are not shifted from another project activity or from Non Annex 1 countries. Hence, no leakage is considered.

4.5 Monitoring

Referring to Part B and Annex 4 of the PDD.

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[11] Electricity produced
= 6 MW x 1000 kW / MW x 0.85 (plant load factor) x 8760 hours / year
= 446766000 kWh / year
Biomass consumptoin per kWh = 1.16 kg (As per KERC consideration in tariff determination for renewable energy sources, pg 29, January 18, 2005)
Thus, biomass consumption = 446766000 kWh / year x 1.16 kg / kWh
= 51,824 T/year
However, as a conservative practice, the biomass consumption is taken as 60,000 T/year.
Using same yardstick, the biomass consumption for remaining 13.5 MW biomass based power plants within Koppal district would be 135,000 T/year.

[12] KGPL, Declaration that only biomass residue will be used as fuel and no biomass plantation will be used', July 11, 2007,

[13] Documents on Annual Maintainance Contract for Boiler and Turbine and Validation Team Site Visit

4.5.1 Parameters determined ex-ante

The Emission Factor for baseline is not going to be monitored throughout the crediting period and remains same at the time of verification.

- Specific diesel consumption of fuel preparation equipments (Equipment suppliers Data or calculated value)[14]
- Emission factor for electricity as per CEA (”Baseline Carbon Dioxide Emission Database Version 2.0”)
- Emission factor of coal and HSD as per IPCC on conservative basis (“2006 IPCC Guidelines for National Greenhouse Gas Inventories”)
- Density and Calorific value of Diesel on conservative side (“Appendix B, User Guide, Version 2.0 of “CO_2 Baseline Database for the Indian Power Sector” published by CEA)

4.5.2 Parameters monitored ex-post

Monitoring of the project activity involves all the parameters necessary for calculation of GHG emission reduction by the proposed project activity. The parameters, which are to be monitored, are:

- Electricity generated,
- Electricity Export
- Electricity import from grid
- Quantity of biomass used for each type of biomass
- Net calorific value of each Biomass
- Quantity of coal
- Net calorific value of Coal
- Carbon percentage as per ultimate analysis of coal, (Monitored only at the time of coal usage)
- Diesel / fossil fuel consumption for all the stationary / mobile equipments used for operation of the plant within the project boundary,
- Total Biomass Generation
- Total Biomass consumption other than project activity
- Distance travelled by transportation of biomass

Implementation of this monitoring plan may be checked during next stage of verification and certification.

4.5.3 Management system and quality assurance

Section B 7.2 of Revised Draft CDM PDD (January 2008) mentions operational and management structure in order to monitor emission reductions. Organisational structure for the proposed CDM project activity is also mentioned in this section.

Annex 4 of the Revised Draft CDM PDD (January 2008) mentions the name and specification of specific instruments, which will be used to monitor the key parameters.

Further to above, KGPL has also submitted procedures for measurement of the parameters relevant for calculation of GHG emission reduction, calibration and maintenance of instruments, operation of the measuring instruments, handling of data and responsibilities of various officials and data adjustment as well as preservation. These procedures ensure that the project activity has made a plan, which will make GHG emission reduction monitoring

[14] Presently project participant is not using fuel preparation machines outside the project boundary hence specific fuel consumption is not considered in estimation of emission reduction. However, the emission can be considered if fuel preparation machines are used.

satisfactory. It may be noted here that while calculating project emission when a fossil fuel is used, the ultimate analysis should be used for determination of the Carbon percentage.

However the project participant has submitted the standard operating procedure the procedure will be followed during the crediting period.

4.6 Estimate of GHG Emissions

Project activity boundary is identified as physical boundary of the project activity. These boundaries are covering all the activities related to the project activity and will be sufficiently covering the GHG emission from the project activity.

Consideration of various Green House Gases are -

- CO_2 emission due to combustion of biomass, which is actually carbon neutral if biomass is used in a sustainable way
  Emission due to transportation of fuel to the power plant from the fuel supply source and emission due to transportation of ash is neglected under an argument that the conventional power projects are also emitting CO_2 due to transportation. Emission due to HSD consumption for DG set usage and other equipments within project boundary is accounted for.
- Perfluorocarbons (PFCs) are not used in the plant and hence, they are neglected
- Sulphur Hexafluoride (SF_6) is not used directly in the project activity
- Hydrofluorocarbons (HFCs) is not used directly in the project activity
- Nitrous Oxide (N_2O) emission is neglected since, other combustion technologies would also have led to N_2O emission and so, and net change can be considered as zero
- Methane (CH_4) is not used directly in the project activity. Since there is very less possibility of having storage of biomass for more than a year, the CH_4 generation due to storage is also negligible.

Calculation of GHG emission is based on following main parameters:

- Net electricity generation from project activity
- Emission factor of the Southern region grid of India being replaced

Estimation of the electricity generation is based on the following assumptions:

- The auxiliary consumption is 13.04 per cent of total electricity generation by project activity per year.
- The plant Load Factor is expected to be 85 per cent for 8000 hours of operation.
- Based on above assumptions, the project activity is expected to export 35.50 Million kWh electricity per year. The estimate has considered import of electricity from the Southern region grid of India to the proposed project activity and HSD consumption by DG set and other equipments within the project boundary.

The emission due to use of Coal is considered as project emission and will be accounted for while calculating emission reduction due to the project activity.

As per past records, M/s KGPL has not used coal for the proposed project activity in the year 2006 - 2007. Assuming that the same trend continues, estimated emission reduction for the proposed project activity would be 30,299 tCO_2e per year. KGPL has permission to use coal up to 25 per cent of fuel and with this assumption, estimated emission reduction due to the project activity would be 7,689 tCO_2e per year when Indian coal is used. Actual value of emission reduction can be different from the validation opinion if the estimated fossil fuel consumption and type is different from the assumptions made.

The monitoring plan has made provision to understand the type of fuel used in the project activity, which can be used for verifying use of permitted fuel during the crediting period.

While estimating the project emission due to coal, the carbon percentage is in coal considered as 41.11 per cent (Table 1.6 of http://www.energymanagertraining.com/GuideBooks/2Ch1.pdf). However at the time of verification, percent carbon should be calculated by ultimate analysis of coal that will be actually used during the crediting period.

Emission due to use of DG set and other equipments within the project boundary is considered as project emission and will be accounted for while calculating emission reduction due to the project activity. Algorithm of the calculation has already considered the emission due to operation of the DG set.

Presently the fuel preparation machines are not used in the project activity, hence the emissions due to these machines are not considered. In future if project participant uses such machines, emission need to be accounted for at the time of verification.

The emission factor for project activity is as per guidance of AMS I.D./ version 10, in line with the requirements of ACM0002 / Version 06 where combined margin of build margin and operating margin are used. KGPL has used emission factor for Southern region grid of India from " CO_2 Baseline Database for Indian Power Sector (Version 2.0) " published by CEA. The value for density and calorific value of diesel has been used from Appendix B, User Guide Version 2.0 of "CO_2 Baseline Database for Indian Power Sector"

The validation team has verified the algorithms as well as values used in the project activity for determination of GHG emission reduction during the preparation of the Validation Report.

4.7 Environmental Impacts

According to Ministry of Environment and Forests Environment, Government of India, Impact Assessment Notification S.O.60 (E), dated January 27, 1994 a new project having investment of less than INR 1000 million and which does not appear in schedule 1 of the notification is not required to carry out an Environment Impact Assessment (EIA) (http://www.envfor.nic.in/legis/eia/so-60(e).doc). The project activity is having an investment of less than INR 1000 million (Project capital cost is INR 257.69 million as per Chartered Accountants Certificate) hence; an EIA is not found necessary for the project activity as per the laws of India.

Type of biomass used is monitored in the monitoring plan of the proposed project activity. This information can be useful in determining permitted quantity of biomass for the proposed project activity. At the time of validation, the Corrigendum Consent to Operate (Karnataka State Pollution Control Board, Corrigendum Consent to Operate, CFE-CELL/KGPL/NE-231/2005-2006/G75, May 19, 2005) was seen. As per this consent to establish, the project proponent is permitted to use rice husk, groundnut shell, coconut shell, juliflora, bagasse, agricultural saw dust, Bengal gram stalk, black gram stalk and imported / indiginious coal (Upto maximum 25 per cent) as fuel. At the time of verification, the applicable version of consent to operate, consent to establish and an undertaking by the project proponent that they will be using only permitted biomass (no biomass plantation) should be taken in to consideration[15].

Validation Team has validated various clearances obtained by KREDL/KSPCB from the authorities and they are as per document number /6/, /7/ and /8/ in section 3.1 of this validation report.

[15] KGPL, Declaration on use of biomass, July 11, 207

4.8 Comments by Local Stakeholders

The comments are invited from local stakeholders like office bearers of neighbouring village bodies, Biomass suppliers, local village body representatives, Customers KPTCL, KSPCB, KREDL for comments for problems on environment and socio-economic effect.

The Draft CDM PDD is published on October 4, 2006 for public comments. A meeting was held on June 27, 2006 at project site on environment and solution. Thus, local stakeholders comments have been considered before the web hosting of Draft CDM PDD.

KGPL had invited stakeholders through letter to provide their general feedback on the project activity including its effect on the environment and it's socio-economic effect. Biomass suppliers were asked whether biomass is procured in a sustainable manner or not and whether there has been any improvement in the business opportunities in the area.

Considerations of the above comments are taken into account by KGPL. The process of invitation of stakeholder's comments as part of the regulatory requirements is discussed in detail in revised Draft CDM PDD (January 2008)

As a part of the validation process, interviews with some local stakeholders were conducted with the persons mentioned in section 3.2 of this report. The topics of discussion are also mentioned in the same section.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD of "04/10/2006" was made publicly available[16] . Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from "October 04, 2006" to "November 02, 2006".

During this period no comments were received.

How has considered the comment received in its validation:

No comments were received

[16] http://cdm.unfccc.int/Projects/Validation/DB/WEFQQEVXRTLM7DLEFOFP4G4QDTZ3X1/view.html

APPENDIX A

CDM VALIDATION PROTOCOL

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

S.N	Requirement	Reference	Conclusion
A	**About Parties**		
A.I	The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
A.II	The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
A.III	The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	~~CAR 04~~
A.IV	The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	~~CAR 04~~
A.V	In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2 CA Certificate, section 3.1	OK
A.VI	Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29 http://cdm.unfccc.int	OK
A.VII	The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a http://cdm.unfccc.int	OK
A.VIII	The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK No Annex I party involved in the proposed project activity at this stage

S.N	Requirement	Reference	Conclusion
A.IX	The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK No Annex I party involved in the proposed project activity at this stage.
B	**About additionality**		
B.I	Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	~~CL 04~~
C	**About forecast emission reductions and environmental impacts**		
C.I	The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
D	**For large-scale projects only**		
D.I	Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	NA
E	**About small-scale project activities (if applicable)**		
E.I	The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK
E.II	The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK

S.N	Requirement	Reference	Conclusion
E.III	If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c http://envfor.nic.in/	OK
F	**About stakeholder involvement**		
F.I	Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
F.II	Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
G	**Other**		
G.I	The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
G.II	A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
G.III	The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
G.IV	The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
G.V	Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	~~CL 07~~
G.VI	The PDD indicates all the parties involved in project development including source of baseline studies like monitoring methodology.	M & P para 37 f and Annex A, section 2	OK

Table 2 Requirements Checklist

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A	**General Description of Project Activity** The project design is assessed.					
1	**Project Boundaries** Project Boundaries are the limits and borders defining the GHG emission reduction project.					
A.1.1	Are the project's spatial boundaries (geographical) clearly defined?	PDD A 4.1.4	DR	Project activity boundary is identified as physical boundary of the project activity. These boundaries are covering all activities related to project and sufficiently covering the GHG emission from the project activity. KGPL has mentioned the detail physical location of project activity along with Latitude & longitude of site.		OK
A.1.2	Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	PDD B.3	DR	The project system boundary includes the terminal points of electricity generation; transport to KPTCL grid, and for the purpose of baseline emission calculation Southern region grid of India is also included in the project system boundary.		OK
2	**Participation Requirements** Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of					

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	Approval, Authorization and Project Participant.					
A.2.1	Which Parties and project participants are participating in the project?	PDD A.3	DR	India - Host country is a party and Koppal Green Power Limited is a Project Participants		OK
A.2.2	Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	PDD A.3	DR	KGPL has to provide the letter of approval for the involved party	~~CAR 04~~	OK
A.2.3	Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	Web site of UNFCCC [17]	DR	India has: 1. Ratified the Kyoto Protocol 2. Participated voluntarily 3. Designated National Authority		OK
A.2.4	Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	PDD A.3 Doc-3	DR	There is no diversion of ODA will be obtained through Host Country Approval for the proposed project activity.	~~CAR 04~~	OK
3	**Technology to be employed** Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is					

[17] http://cdm.unfccc.int

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	used.					
A.3.1	Does the project design engineering reflect current good practices?	Doc- 5 Doc-6 Doc- 7 Doc-8	DR	Yes, Project Design is following the rules laid by Indian Boiler Act No.V of 1923 for its most critical equipment, boiler. The project has also obtained statutory clearances from regulatory bodies like - KSPCB - KREDL So, it can be concluded that the project design engineering reflects current good practices		OK
A.3.2	Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD A.4.2	DR	No, the project activity using technology that is locally available in the country.		OK
A.3.3	Does the project make provisions for meeting training and maintenance needs?	PDD A.4	DR	Project proponent has to submit document for training and maintenance need.	~~CL 07~~	OK
4	**Contribution to Sustainable Development** The project's contribution to sustainable development is assessed.					
A.4.1	Has the host country confirmed that the project assists it in achieving sustainable development?	PDD A.2	DR	KGPL has to provide the approval of host country confirming that the project assists in achieving sustainable development.	~~CAR 04~~	OK
A.4.2	Will the project create other environmental or social benefits than GHG emission reductions?	PDD	DR / SV	The project activity has claimed direct employment to indigenous people and		OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
		A.2	SV	also indirect employment to farmers, farm labours, and other suppliers. This will result additional employment generation. The project creates business opportunities for local stakeholders such as consultants, transporters, suppliers, manufacturers, contractors etc.		
5	**Small scale project activity** it is assessed whether the project qualifies as small-scale CDM project activity					
A.5.1	Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	PDD A.4/A4.2	DR	KGPL is small-scale project activity as per the applicability criteria of small-scale modalities and procedures. The project activity is 6 MW rated capacity biomass based power plant thus it is below 15 MW, which is the limit for a small-scale project.		OK
A.5.2	Is the small-scale project activity not a debundled component of a larger project activity?	http://cdm.unfccc.int/ PDD A.4.5	DR	The project activity is not de-bundled component of larger project activity. Since there is no registered or no request for registration of CDM project activity in the same category by the same project proponent within 1 KM of the present activity in last two years.		OK
B	**Project Baseline** The validation of the project baseline establishes whether the selected baseline					

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
1	**Baseline Methodology** It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1	Does the project apply an approved methodology and the correct version thereof?	PDD B.1/B.2	DR	Draft CDM PDD (August 2006) should clearly indicate version of the methodology applicable to the proposed project activity in respective sections. The project activity applies approved methodology AMS-I.D.	~~CAR 02~~	OK
B.1.2	Are the applicability criteria in the baseline methodology all fulfilled?	PDD B.1/B.2	DR	Yes, the selected baseline is applicable to the project activity being considered. The proposed project activity is having capacity of less than 15 MW and hence, the applicability criteria of AMS-I.D/Version 10 is appropriate.		OK
2	**Baseline Scenario Determination** 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.					
B.2.1	What is the baseline scenario?	PDD	DR	Electricity supply through fossil fuel		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
		B.1/B.2		dominated grid of Southern India is the baseline scenario.		
B.2.2	What other alternative scenarios have been considered and why is the selected scenario the most likely one?	PDD B.1/B.2	DR	Selection of baseline is on basis of guidance in small-scale methodology AMS-I.D. The proposed project activity is expected to partially replace the operating margin and build margin electricity generation. Hence, the baseline selection is considered to be appropriate and in line with the requirement of the methodology.		OK
B.2.3	Has the baseline scenario been determined according to the methodology?	PDD B.2 / Published documents on electricity generation [18]	DR	The baseline scenario been determined according to the methodology.		OK
B.2.4	Has the baseline scenario been determined using conservative assumptions where possible?	PDD Annex 3	DR	Draft CDM PDD (August 2006) has calculated emission factor of Southern Region grid of India as 0.907. This	~~CAR 01~~	OK

[18] 1. TERI, Baseline for renewable energy projects under clean development mechanism, report to MNES (draft report) (for the year 2001 – 02)
2. CEA, All India Electricity Statistics General Review 2002 –03 (For the year 2003-03)
3. CEA, All India Electricity Statistics, General Review 2005, (For the data of 2003-04)
4. CEA, All India Electricity Statistics , General Review 2006 (For the data of 2004-05)
5. Southern Region Load Dispatch Centre, Annual Grid Report, 2005-2006 (For the year 2005-2006)
6. http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				should be aligned with the latest available official emission factor for southern region grid of India.		
B.2.5	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	PDD Annex 3	DR	The baseline scenario has sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations		OK
B.2.6	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	PDD Annex 3	DR	KGPL needs to determine the baseline scenario with the available data and all literature and sources has to clearly referenced	~~CAR 01~~	OK
B.2.7	Have the major risks to the baseline been identified?	PDD B.3	DR	No major risk to baseline has been identified. The baseline is as per guidance of AMS-I.D / Version 09, where an option of ex – ante data is given. The data are from official website and hence risk is likely to be minimum. Please refer to B.2.6 for further information. (The baseline remains same even in version 10 of AMS-I.D and hence, the statement in risk to the methodology remains valid)		OK
3	**Additionality Determination** The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.					
B.3.1	Is the project additionality assessed according to	PDD	DR	Project additionality is assessed as per		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	the methodology?	B.5		the methodology.		
B.3.2	Are all assumptions stated in a transparent and conservative manner?	PDD B.5	DR	Draft CDM PDD (August 2006) has indicated various policy related barriers and financial barriers faced by the proposed project activity. KGPL should clarify how these barriers are applicable to the proposed project activity when it was started.	~~CL 04~~	OK
B.3.3	Is sufficient evidence provided to support the relevance of the arguments made?	PDD B.5	DR/SV	Sufficient evidence is not provided to support the relevance of arguments.	~~CL 04~~	OK
B.3.4	If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	PDD C.1.1	DR	The evidence needs to be provided for the starting date of the project activity is before the date of validation. The sufficient evidence has been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity.	~~CL 03~~	OK
4	**Calculation of GHG Emission Reductions – Project emissions** It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.					
B.4.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	PDD Annex 3	DR	No, KGPL may ascertain if the usage of coal in section A.4, A.2 and E.1.2.1 of Draft CDM PDD is in line with the permitted use of coal by KREDL. In	~~CL 01~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				case the coal expected coal usage is not in line and correction should be made in the estimation of coal, project emission and estimated emission reduction by the proposed project activity.		
B.4.2	Have conservative assumptions been used when calculating the project emissions?	PDD Annex 3	DR	During site visit by the validation team, it was noticed that the following potential source of emissions within and outside the project boundary need to be accounted for in the project design: a) Emission due to potential use of coal as described by the local authorities. b) Emission due to potential usage of DG set to run the auxiliary operation of plant KGPL should identify the necessary parameters, introduce them in section D / monitoring plan and provide the necessary formulae of section E of the Draft CDM PDD	~~CAR 04~~	OK
B.4.3	Are uncertainties in the project emission estimates properly addressed?	PDD B 6	DR	No, uncertainties in the project emission estimates are not properly addressed	~~CAR 04~~	OK
~~5~~	**Calculation of GHG Emission Reductions – Baseline emissions** It is assessed whether the baseline emissions are stated according to the methodology and whether the					

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	argumentation for the choice of default factors and values – where applicable – is justified.					
B.5.1	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	PDD Annex 3	DR	KGPL needs to calculate baseline emission according to the approved methodology and in a complete and transparent manner	~~CAR 01~~	OK
B.5.2	Have conservative assumptions been used when calculating the baseline emissions?	PDD Annex 3	DR	Draft CDM PDD (August 2006) has calculated emission factor of Southern Region grid of India as 0.907. This should be aligned with the latest available official emission factor for southern region grid of India.	~~CAR 01~~	OK
B.5.3	Are uncertainties in the baseline emission estimates properly addressed?	PDD Annex 3	DR	KGPL has to address uncertainties in the baseline emission.	~~CAR 01~~	OK
€	**Calculation of GHG Emission Reductions – Leakage** It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.					
B.6.1	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	PDD B 6.3	DR	KGPL needs to do calculations as per approved methodology and it should be complete and transparent manner. KGPL needs to check leakage as per Attachment C of Appendix B.	~~CAR 03~~	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.6.2	Have conservative assumptions been used when calculating the leakage emissions?	PDD B 6.3	DR	Draft CDM PDD (August 2006) has calculated emission factor of Southern Region grid of India as 0.907. This should be aligned with the latest available official emission factor for southern region grid of India.	~~CAR 01~~	OK
B.6.3	Are uncertainties in the leakage emission estimates properly addressed?	PDD B 6.3	DR	KGPL should demonstrate how the proposed project activity meets the requirements of Attachment C of the Appendix B of the modalities and procedures. It needs to be established through available official data and the monitoring needs of meeting these requirements have to be introduced in the monitoring plan of the Draft CDM PDD. The monitoring plan should also introduce parameters which will help to ascertain that the biomass used is as per biomass permitted by the local authorities.	~~CAR 03~~	OK
7	**Emission Reductions** The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.					
B.7.1	Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	PDD B 6.3	DR	The emission reductions are real, measurable and give long-term benefits related to the mitigation of climate change.		OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
8	**Monitoring Methodology** It is assessed whether the project applies an appropriate baseline methodology.					
B.8.1	Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	PDD B.7	DR	KGPL should demonstrate how the proposed project activity meets the requirements of Attachment C of the Appendix B of the modalities and procedures. It needs to be established through available official data and the monitoring needs of meeting these requirements have to be introduced in the monitoring plan of the Draft CDM PDD. The monitoring plan should also introduce parameters, which will help to ascertain that the biomass used is as per biomass permitted by the local authorities.	~~CAR 03 CL 07~~	OK
B.8.2	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	PDD B.7	DR	All the monitored data required for verification and issuance kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later.		OK
9	**Monitoring of Project Emissions** It is established whether the monitoring plan provides for reliable and complete project emission data over time.					

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	PDD B.7	DR	KGPL needs to provide monitoring plan for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period.	~~CL 07~~	OK
B.9.2	Are the choices of project GHG indicators reasonable and conservative?	PDD Annex 3	DR	All the parameters which help to account for the project emission need to be monitored and indicated in the monitoring plan	~~CL 07~~	OK
B.9.3	Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	PDD B.7	DR	• CO_2 has been accounted for the measurement. • N_2O is not accounted for as in baseline calculations have not considered N_2O emission in conventional power plant. • PFCs, SF6, HFCs are not used in the current operation. • CH_4 emission can occur only if biomass is stored for more than 1 year.		OK
B.9.4	Is the measurement equipment described and deemed appropriate?	PDD Annex 4	DR	Current practice of measurement of biomass remains unclear. KGPL should make the same clearer and indicate the necessary formulae / instruments that will be used in estimation of the biomass used in production of electricity.	~~CL 08~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.5	Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	PDD Annex 4	DR	The KGPL has addressed the measurement accuracy and it is deem appropriate. KGPL needs to give procedure for erroneous measurements.	~~CL 07~~	OK
B.9.6	Is the measurement interval identified and deemed appropriate?	PDD B.7	DR	Measurement interval is identified and deemed appropriate		OK
B.9.7	Is the registration, monitoring, measurement and reporting procedure defined?	PDD B.7	DR	No, KGPL has to mention registration, monitoring, measurement and reporting procedure	~~CL 07~~	OK
B.9.8	Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	PDD Annex 4	DR	No, KGPL has to mention procedures identified for maintenance of monitoring equipment and installations. KGPL has to mention calibration interval	~~CL 07~~	OK
B.9.9	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	PDD Annex 4	DR	No, KGPL needs to identify day-to-day record handling procedure.	~~CL 07~~	OK
10	**Monitoring of Baseline Emissions** It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.					
B.10.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	PDD B.7	DR	Monitoring plan is provided for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period		OK
B.10.2	Are the choices of baseline GHG indicators	PDD	DR	The baseline GHG indicators are	~~CAR 01~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	reasonable and conservative?	Annex 3		reasonable but these are not conservative.		
B.10.3	Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	PDD B.7	DR	• CO_2 has been accounted for the measurement. • N_2O is not accounted for as in baseline calculations have not considered N_2O emission in conventional power plant. • PFCs, SF6, HFCs are not used in the current operation. • CH_4 emission can occur only if biomass is stored for more than 1 year.		OK
B.10.4	Is the measurement equipment described and deemed appropriate?	PDD Annex 4	DR	The measurement equipment is required to monitor the baseline emission. KGPL needs to provide the instrument- specifications.	~~CL 07~~	OK
B.10.5	Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	PDD Annex 4	DR	KGPL has addressed the measurement accuracy. Further information is expected relating to the instruments. KGPL needs to give procedure with erroneous measurement.	~~CL 07~~	OK
B.10.6	Is the measurement interval for baseline data identified and deemed appropriate?	PDD B.7	DR	Measurement interval is identified and deemed appropriate		OK
B.10.7	Is the registration, monitoring, measurement and reporting procedure defined?	PDD B.7	DR	KGPL needs to provide reporting, monitoring, measurement and reporting procedure	~~CL 07~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10.8	Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	PDD Annex 4	DR	KGPL needs to provide procedures identified for maintenance of monitoring equipment and installations. KGPL has to mention calibration interval	~~CL-07~~	OK
B.10.9	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	PDD Annex 4	DR	KGPL needs to identify day-to-day record handling procedure.	~~CL-07~~	OK
11	**Monitoring of Leakage** It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
B.11.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	PDD B.7 Annex 4	DR	During site visit by the validation team, it was noticed that the following potential source of emissions within and outside the project boundary need to be accounted for in the project design: a) Emission due to potential use of coal as described by the local authorities. b) Emission due to potential usage of DG set to run the auxiliary operation of plant KGPL should identify the necessary parameters, introduce them in section D / monitoring plan and provide the necessary formulae of section E of the Draft CDM PDD. KGPL needs to check Biomass	~~CAR 03~~ ~~CAR 05~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				Leakage as per Attachment C to appendix B.		
B.11.2	Are the choices of project leakage indicators reasonable and conservative?	PDD B.7 Annex 4	DR	KGPL has to consider conservative project leakage indicators	~~CAR 05~~	OK
B.11.3	Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	PDD B.7 Annex 4	DR	KGPL has to provide measurement method clearly stated for each leakage value to be monitored and deemed appropriate	~~CAR 05~~	OK
12	**Monitoring of Sustainable Development Indicators/ Environmental Impacts** It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.					
B.12.1	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	PDD D.1	DR	The monitoring of sustainable development indicators/ environmental impacts is not warranted by legislation in the host country		OK
B.12.2	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD D.1	DR	Monitoring plan is provided to maintain statutory requirements of environment. For social and economic impact, monitoring is not done by the project participant. However, these may be seen through census data of Government of India for this region or other official sources.		OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.12.3	Are the sustainable development indicators in line with stated national priorities in the Host Country?	PDD A.2 http://envfor.nic.in/	DR	DNA has indicated the sustainable criteria. However its indicators are not monitored. and they are not necessary to be monitored as per the methodology applied.		OK
13	**Project Management Planning** It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
B.13.1	Is the authority and responsibility of overall project management clearly described?	PDD Annex 1	DR	Mr. Chandra Mohan, Managing Director is the having authority and responsibility of project activity		OK
B.13.2	Are procedures identified for training of monitoring personnel?	PDD B.7	DR	KGPL is required to provide the training of monitoring personnel procedure as they are followed in the project activity	~~CL 07~~	OK
B.13.3	Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD B.7	DR	KGPL is required to provide the " Emergency Preparedness for the cases where emergencies can cause unintended emission" procedure as they are followed in the project activity	~~CL 07~~	OK
B.13.4	Are procedures identified for review of reported results/data?	PDD B.7	DR	KGPL is required to identify procedures for review of reported results/data as they are followed in the project activity	~~CL 07~~	OK
B.13.5	Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD B.7	DR	KGPL is required to identify procedures for corrective actions in order to provide for more accurate future monitoring and reporting as they are followed in the	~~CL 07~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				project activity		
C	**Duration of the Project/ Crediting Period** It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1	Are the project's starting date and operational lifetime clearly defined and evidenced?	PDD C 1.1	DR	As per PDD, KGPL has to submit the evidence for the starting date of the project activity. Operational lifetime of project activity is 20 years as stated in CDM PDD.	~~CL 03~~	OK
C.2	Is the start of the crediting period clearly defined and reasonable?	PDD C 2.2.1/2.2.2	DR	The starting date of crediting period should be clearly defined and reasonable.		OK
D	**Environmental Impacts** Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.					
D.1.1	Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD D.1 [19]	DR	KGPL may clarify requirements of India with respect to 'documentation on analysis of the environmental impacts' when the proposed project activity was implemented.	~~CL 10~~	OK
D.1.2	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD D.1 Web site of MoEF	DR	There are no host party requirements for an Environmental Impact Assessment for the proposed project activity. (EIA)		OK

[19] http://www.envfor.nic.in/legis/eia/so-60(e).doc

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.3	Will the project create any adverse environmental effects?	PDD D.1	DR	The project activity is not expected to create any adverse environmental effect provided that the biomass utilization in the project activity is in a sustainable manner. The proposed project activity is also required to follow the rules of the local (state) pollution control board, which would take care of other environmental effects.		OK
D.1.4	Are transboundary environmental impacts considered in the analysis?	PDD D.1	DR	Transboundary environmental impacts are considered in the analysis		OK
D.1.5	Have identified environmental impacts been addressed in the project design?	PDD D.1	DR	Project proponent has addressed the identified environmental impacts in the project design		OK
D.1.6	Does the project comply with environmental legislation in the host country?	PDD D.1	DR	The project complies with environmental legislation in the host country		OK
2	**For Small-scale projects**					
D.2.1	Does host country legislation require an analysis of the environmental impacts of the project activity?	PDD D.1	DR	The project activity does not require an analysis of environmental impacts of the project activity as per the host country legislation.		OK
D.2.2	Does the project comply with environmental legislation in the host country?	PDD D.1	DR	The project complies with environmental legislation in the host country		OK
D.2.3	Will the project create any adverse environmental effects?	PDD D.1	DR	The project activity is not expected to create any adverse environmental effect provided that the biomass utilization in		OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				the project activity is in a sustainable manner		
D.2.4	Have environmental impacts been identified and addressed in the PDD?	PDD D.1	DR	Project proponent has addressed the identified environmental impacts in the project design document.		OK
E	**Stakeholder Comments** The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.					
E.1	Have relevant stakeholders been consulted?	PDD E.1	DR	The following stakeholders were consulted as part of stakeholder consultation process: - Office bearers of neighbouring villages local bodies - Local villagers - Biomass suppliers - KPTCL - Licensing & regulatory authorities like KSPCB. These are relevant stakeholders		OK
E.2	Have appropriate media been used to invite comments by local stakeholders?	PDD E.1	DR	KGPL needs to show how un-expected incidences affecting local environment are proposed to be dealt with. It may also indicate the method of communicating with the local stakeholders on environmental issues and how is the top management of the	~~CL 09~~	OK

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S.N	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				company directly involved in the procedure of communication. KGPL should submit necessary procedures, which demonstrate pro-active interest in the matters related to environment and social responsibility.		
E.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD E.1/E.2	DR	Stakeholder consultation process is not required by the regulations/laws of India.		OK
E.4	Is a summary of the stakeholder comments received provided?	PDD E.2	DR/SV	The summary of comments received by stakeholder is provided		OK
E.5	Has due account been taken of any stakeholder comments received?	PDD E.2/E.3	DR/SV	There were no negative comment received from the local stakeholders.		OK

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Table 3 Resolutions of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 01: KGPL may ascertain if the usage of coal in section A.4, A.2 and E.1.2.1 of Draft CDM PDD is in line with the permitted use of coal by KREDL. In case the coal usage is not in line than correction should be made in the estimation of project emission and estimated emission reduction by the proposed project activity.	B 4.1 B 4.3	KGPL has received permission from Karnataka State Pollution Control Board (KSPCB) via the Consent for Establishment (CFE) [NO.CFE-CELL/KGPL/NE-231/2005-2006/475 dated 19 May 2005] to use fossil fuel up to 25% as supporting fuels. However as KGPL proposes to use coal in case of exigencies alone, hence usage of coal is zero. KGPL has calculated emission reduction on actual basis and usage of coal as per maximum permission in estimation of emission reduction. The same has been included in the monitoring plan and Whenever coal is used the project proponent will be monitored and recorded.	CL 01: KGPL has been incorporated the permitted coal usage (25 % of total fuel as per KSPCB letter of Consent for Establishment & clearance from Water & Air Pollution control, Letter No. 67/KSPCB/CFE-CELL/DEO/AEO-3/KOPPAL/F-230 NE/RO-RCH/2000/2001/314, dated 6/1/2001) in the project emission. The validation team has confirmed the calculation of emission reduction on basis of historical data as well as conservative estimate. However at the time of verification, actual usage of coal and actual carbon per centage would be considered for arriving at emission reduction of the proposed project activity. CL 01: is thus closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 02: Draft CDM PDD (August 2006) has given information on electricity generation mix of Karnataka state. KGPL may check if these data are correct and modify the same if found necessary. KGPL needs to provide evidence for the same.	B 3.2	KGPL has not considered the electricity generation mix data to indicate the prevailing practice barrier and has been removed in Revised Draft CDM PDD (January 2008). KGPL has used installed capacity data for prevailing practice barrier..	CL 02:Project Participant has removed information on electricity generation mix of Karnataka state from Revised Draft CDM PDD (January 2008) and changed the argument to indicate prevailing practice barrier in Revised Draft CDM PDD (January 2008). CL 02: is thus closed.
CL 03: KGPL has estimated year wise emission reduction for the proposed project activity in section A.4.3.1, section E.2 and Appendix C of the Draft CDM PDD (August 2006). This may be revised in light of the expected starting date of crediting period in section C.2.2.1.	C 1 C 2	The same referred to has been modified accordingly in the Revised Draft CDM PDD (January 2008)for the project activity. The start date of the Crediting Period has been revised to **October 20, 2007** (Expected date of registration). However, the Crediting Period would start only from the date of registration but not prior to this. The same has been updated in the Revised Draft CDM PDD (January 2008)for the project activity. The estimation of year-wise emission reductions for the project activity in Section A.4.3, section B 6.4,section C 2.2.1 and Appendix C are now in accordance with the start of the crediting period (October 20, 2007) in the PDD. The same has been incorporated in the monitoring plan	CL 03: KGPL has estimated year wise emission reduction for the proposed project activity in section A.4.3, section B 6.4,section C 2.2.1 and Appendix C of the Revised Draft CDM PDD (January 2008). The mentioned years are in line with crediting period. CL 03: is thus closed.

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		section B.7.1. Data and Parameters Monitored, of the Revised Draft CDM PDD (January 2008)for the project activity.	
CL 04: Draft CDM PDD (August 2006) has indicated other barriers (financial barriers) faced by the proposed project activity. KGPL should clarify how these barriers are applicable to the proposed project activity when it was started.	B 3.2	CDM funds have been already considered for this project activity at the conceptual stage to mitigate the financial risk arising from inflation of biomass prices due to various external factors. KGPL was aware of the risks due to increase in fuel price and change in the tariff. In order to mitigate the above risks, KGPL considered the CDM revenue and found project viable only with the CDM revenue in such circumstances. The same has come true as the raw material cost since the inception (say documented at Detailed Project Report (DPR) has increased from average Rs. 498 to Rs. 1400 per Metric Tone (MT) of biomass. This can mainly be attributed to cost incurred during collection transportation and storage of biomass. Exogenous uncontrolled conditions are modulating the quantity of biomass available (agriculture yield, weather patterns etc.) each year. The availability of each	CL 04: Project Participant has indicated low penetration of biomass based Power projects in Karnataka state before start of project activity.Project participant has taken the risk to continue project even after policy changes. The evidence for the increase in fuel cost and low IRR of project activity are not convincing . However the Prevaling practice barrier indicates that project is additional. CL 04 is thus closed.

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		biomass is confined to a months in a year. Suitable mix of different types of fuel is required for optimum fuel usage. This demonstrates the relative complexity of supply of biomass compared to standard fossil fuels. Transportation of biomass over large distances is not profitable and so, supply sources are confined into a strict local area. Hence the project proponent envisaged that in due time they would be is forced to procure the biomass at a higher price to meet the daily requirement of the plant. Hence in spite of the abundant supply of biomass in the region, the complexity involved in collection transportation and storage of biomass further inflation in the prices of the biomass. In the absence of CDM funds the project proponent's fear would be materialize into reality and would be forced to use coal as alternate fuel to the maximum extent allowed for sustaining the project activity as it would prove to be financially more viable.KGPL has demonstrated the low penetration of biomass based power plants.	

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 05: KGPL needs to have further clarity on proposed reporting structure and procedure for reporting GHG emission reduction. The roles and responsibilities of each person, their qualifications and reporting formats should be made available.	B 8.1	The parameters to be monitored have already been updated in section B.7.1. Data and Parameters Monitored, of the Revised Draft CDM PDD (January 2008)for the project activity. A Standard Operating Procedure (SOP) is being developed for KGPL and current data formats and monitoring schemes will be incorporated into the same.	CL 05: KGPL has incorporated the operation and management structure for the CDM team along with organisational chart.The procedure for reporting GHG emission reduction, the role and responsibilities of each person has incorporated in section B.7.2 of Revised Draft CDM PDD (January 2008) CL 05: is thus closed.
CL 06: KGPL needs to make certain that the formulae used to determine the emission factor of the southern region grid are as per the formulae used in the official sources for arriving at the emission factor.	B 2.4, B 4.2, B 5.2, B 6.1, B 6.2	The Baseline emission factor for the southern grid used in the Revised Draft CDM PDD (January 2008)has been modified to the latest available emission factor of 0.857 kg/kWh for the southern region grid published by CEA.	CL 06: Revised Draft CDM PDD (January 2008) has used the latest available baseline emission factor published by CEA with the values of southern grid for the year 2005-06 as per guidance from AMS-I.D/ Version 10. This has been further crosschecked with " Baseline Carbon Dioxide Emission Database Version 2.0 " published by CEA and the CEA website[20]. The overall emission factor for the southern region of India is 0.857 kg/kWh as per above reference and the same emission factor taken by the

[20] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			project proponent and this is acceptable. CL 06 is thus closed.
CL 07: The available documentation does not make the following procedures clear. KGPL needs to submit them so as to ensure that the design of the proposed project activity can measure the emission reduction by the project activity: a. Emergency preparedness for cases where emergencies can cause unintended emissions b. Calibration of monitoring equipment c. Maintenance of monitoring equipment and installations related to GHG emission d. Monitoring, measurements and reporting of GHG emission e. Day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) f. Dealing with possible monitoring data adjustments and uncertainties related to measurement of GHG emission g. Review of reported results/data related to GHG emission h. Internal audits of GHG project	B 9.7.9.8,9.9 B 10.5,10.7,10.8,10.9 B 13.2,13.3,13.4,13.5	A copy of the Onsite Emergency Plan prepared by Genex Energia Limited (Report No. GEL/DMP/KGPL/01 dated October 2002) for KGPL has been enclosed herewith for your ready reference. The parameters to be monitored have already been updated in section B.7.1. Data and Parameters Monitored, of the Revised Draft CDM PDD (January 2008)for the project activity. A Standard Operating Procedure (SOP) is being developed for KGPL and current data formats and monitoring schemes will be incorporated into the same.	CL 07: KGPL has been submitted standard operating procedure for the proposed project activity. KGPL has been incorporated Instrument specification sheet in Annex 4 of Revised Draft CDM PDD (January 2008) CL 07: is thus closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
compliance with operational requirements where applicable i. Project activity performance reviews before data is submitted for verification, internally or externally Corrective actions in order to provide for accurate future monitoring and reporting			

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 08: Current practice of measurement of biomass remains unclear. KGPL should make the same clearer and indicate the necessary formulae / instruments that will be used in estimation of the biomass used in production of electricity.	B 9.4	The parameters to be monitored such as the type and quantity of biomass used by the project activity have already been updated in section B.7.1. Data and Parameters Monitored, of the Revised Draft CDM PDD (January 2008)for the project activity. This would also help in ascertain that the biomass used is as per the biomass permitted by the local authorities. The plant only accepts biomass that is permitted by KSPCB. In this regard, a notice board has been displayed at the plant entrance stating that only permitted fuels are procured. When a supplier supplies fuel, the fuel is checked at the main gate. Only if the fuel is permitted, an entry is made in the Material Inward Register. An entry is made in the weighbridge register. Then the vehicle is sent to the fuel yard where the yard staff inspects the fuel to ensure that only permitted fuel is accepted and unloaded. KGPL measures the daily fuel consumption by calculating the difference of the daily incoming fuel and stock at KGPL. This is periodically verified by cross checking with the conveyer capacity	CL 08: KGPL has been mentioned the biomass monitoring method in section B.7. The procedure for biomass measurement,instrument used for measurement and check for use of only permitted type of biomass is clearly stated. CL 08: is thus closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		and operating hours of the conveyer.	
CL 09: KGPL needs to show how un-expected incidences affecting local environment are proposed to be dealt with. It may also indicate the method of communicating with the local stakeholders on environmental issues and how is the top management of the company directly involved in the procedure of communication. KGPL should submit necessary procedures, which demonstrate pro-active interest in the matters related to environment and social responsibility.	E 2	A copy of the Environmental Management Plan prepared by Genex Energia Limited (Report No. GEL/EMP/KGPL/01 dated August 2002) and a copy of the Onsite Emergency Plan prepared by Genex Energia Limited (Report No. GEL/DMP/KGPL/01 dated October 2002) for KGPL has been enclosed herewith for your ready reference.	CL 09: KGPL has explained the procedure of inviting the stakeholders, involvement of management with environmental issue. KGPL has submitted necessary procedures, which demonstrate pro-active interest in the matters related to environment and social responsibility. CL 09: is thus closed.
CL 10: KGPL may clarify requirements of India with respect to 'documentation on analysis of the environmental impacts' when the proposed project activity was implemented		The project being a renewable energy biomass based power project it does not fall under the purview of the Environmental Impact Assessment (EIA) notification of the Ministry of Environment and Forest, Government of India. As per the government of India notification dated June 13, 2002 based on environment protection rule, 1986, applicable at the time of implementation of the project, public hearing and EIA is required for those industries/projects which are listed in the predefined list of ministry of environment and forest. Thermal power projects with investment	CL 10: KGPL uses the permitted biomass as per KSPCB and the availability of biomass in region is abundant. The report entitled " Districtwise Biomass Resources Aassessment Study,Karnataka State " submitted by Institute of Energy Studies,Anna University Chennai indicates that there is surplus biomass available in the Koppal district. The proposed project activity is biomass based power plant and its investment is less than Rs. 100 crore and not involved in Schedule-1 of the notification.Thus it does not require the Environmental Impact Assessment as

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		Thermal power projects with investment of less than Rs. 100 crores have been excluded from the list. Hence, it is not required by the host party. However the project has in place the following measures to mitigate any likely impact on the local environment. 1. Electrostatic precipitator is provided to keep the SPM emissions from boiler under 150 mg/Nm^3. 2. The ash collected from the ESP is utilized for brick manufacturing. 3. The boiler blow down due to its higher pH is neutralized before mixing with other effluent streams. 4. The effluent generated in the plant will be treated using sand filters for removing the residual fly-ash from the wastewater. 5. The treated effluent is utilized for green belt (3.0 Ha) development within the plant premises. Periodic visits, usually once in three	per (EIA) notification of the Ministry of Environment and Forest, Government of India[21]. CL 10: is thus closed.

[21] http://www.envfor.nic.in/legis/eia/so-60(e).doc

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		months, are conducted by PCB officials to ensure compliance to prescribed norms.	

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 01: Draft CDM PDD (August 2006) has calculated emission factor of Southern Region grid of India as 0.907. This should be aligned with the latest available official emission factor for southern region grid of India.	B 2.4, B 4.2, B 5.2, B 6.1, B 6.2	The Baseline emission factor for the southern grid used in the Revised Draft CDM PDD (January 2008) has been modified to the latest available emission factor of 0.857 kg/kWh for the southern region grid published by CEA.	CAR 01: Revised Draft CDM PDD (January 2008) has used the latest available baseline emission factor from the publication " Baseline Carbon Dioxide Emission Database Version 2.0 " published by CEA[22] . The project proponent has used the values of southern grid for the year 2005-06 in section B.6, annex 3 and Appendix C as per guidance from AMS-I.D/ Version 10. The overall emission factor for the southern region of India is 0.857 kg/kWh as per above reference and the same emission factor is taken by the project proponent and this is acceptable. CAR 01 is thus closed.
CAR 02: Draft CDM PDD (August 2006) should clearly indicate version of the methodology applicable to the proposed project activity in respective sections.	B 1.1	The same referred to has been modified accordingly in the Revised Draft CDM PDD (January 2008) for the project activity.	CAR 02: Revised Draft CDM PDD (January 2008) has used version 10 in section A 4.1.4 and section B.2. CAR 02 is thus closed
CAR 03: KGPL should demonstrate how the proposed project activity meets the requirements of Attachment C of the	B 8.1	The parameters to be monitored such as the type and quantity of biomass used by the project activity have	CAR 03: Revised Draft CDM PDD (January 2008) meets the requirements of Attachment C of the

[22] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Appendix B of the modalities and procedures. It needs to be established through available official data and the monitoring needs of meeting these requirements have to be introduced in the monitoring plan of the Draft CDM PDD. The monitoring plan should also introduce parameters which will help to ascertain that the biomass used is as per biomass permitted by the local authorities.		already been updated in section B.7.1. Data and Parameters Monitored, of the Revised Draft CDM PDD (January 2008)for the project activity. This would also help in ascertain that the biomass used is as per the biomass permitted by the local authorities. The plant only accepts biomass that is permitted by KSPCB. In this regard, a notice board has been displayed at the plant entrance stating that only permitted fuels are procured. When a supplier supplies fuel, the fuel is checked at the main gate. Only if the fuel is permitted, an entry is made in the Material Inward Register. An entry is made in the weighbridge register. Then the vehicle is sent to the fuel yard, where the yard staff inspects the fuel once again to ensure that only permitted fuel is accepted and unloaded.	Appendix B of the modalities and procedures. KGPL monitors the all type of biomass and used the biomass which is permitted by local authorities.KGPL has calculated the leakage condition as per Attachment C of the Appendix B of the modalities and procedures CAR 03 is thus closed
CAR 04: During site visit by the validation team, it was noticed that the following potential source of emissions within and outside the project boundary need to be accounted for in the project design: a) Emission due to potential use of	B 4.1	Emission due to the usage of DG set has been deducted from electricity exported to the grid. The same is reflected in the Emission Reduction Calculation in the Revised Draft CDM PDD (January 2008) for the project activity. Presently there is no utilisation	CAR 04: Revised Draft CDM PDD (January 2008) has incorporated formulae for leakage emission due to fuel preparation in Section B.6.3 and project emission due to potential use of coal in Appendix C . The emission due

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
coal as described by the local authorities. b) Emission due to potential usage of DG set to run the auxiliary operation of plant KGPL should identify the necessary parameters, introduce them in section D / monitoring plan and provide the necessary formulae of section E of the Draft CDM PDD.		activity. Presently there is no utilisation of fuel preparation machines , hence emission due to fuel preparation machines are not considered, but calculation formula is incorporated If in future it is used. KGPL has received permission form Karnataka State Pollution Control Board (KSPCB) via the Consent for Establishment (CFE) [NO.CFE-CELL/KGPL/NE-231/2005-2006/475 dated 19 May 2005] to use fossil fuel up to 25% as supporting fuels. However as KGPL proposes to use coal in case of exigencies alone, the use of coal has not been considered for estimation of project emissions to arrive at conservative figure of GHG emission reductions. Also KGPL has estimated emission reductions as per permitted coal usage in the project activity.Whenever coal/diesel is used, the project proponent will be monitor.The emission due to DG set is considered. Calculation of emission from this source is incorporated in section B.7.1 of Revised Draft CDM	to use of DG set is accounted in Section B.6.3. The necessary formulae are mentioned. These parameters are monitored in monitoring plan. CAR 04 is thus closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		PDD (January 2008)for the project activity.	
CAR 05: Following corrections are needed in the Draft CDM PDD (September 2006) a.) Section E.1.2.4 paragraph (f) Import of electricity from the southern region grid should be deducted from electricity exported to the grid. b.) Section E.1.2.4 paragraph (g) Emission reduction by the project emission formulae should include project emission in the emission reduction determination by the project activity. The formulae used for estimation of the project emission should be clearly written.	B 5 B 6	Import of electricity from the southern region grid has been deducted from electricity exported to the grid. The same is reflected in the Emission Reduction Calculation in the Revised Draft CDM PDD (January 2008) for the project activity. The formulae used for estimation of the project emission are incorporated.	CAR 05: Revised Draft CDM PDD (January 2008) has incorporated import of electricity from southern grid and project emission in the calculation of emission reduction by project activity. The formulae is in line with methodology. CAR 05 is thus closed

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 06: KGPL has to provide the letter of approval for the involved party. The KGPL has to provide the approval of host country confirming that the project assists in achieving sustainable development.	A 2.2, A 2.3, A 2.4	Host Country Approval Has been Received. F.No.4/19/2006-CCC dated 16 April 2007	CAR 06: DNA of India has granted the host country approval to the project activity as per the requirements of the project activity wide letter number F. No. 4/19/2006 – CCC dated April 16, 2007. Thus, Validation Team is able to confirm that the proposed CDM project activity contributes to the sustainable development of the host country. CAR 06: is thus closed

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