Verification Report

TONK BIOMASS PROJECT, INDIA

Gold Standard Verification
“TONK BIOMASS PROJECT, INDIA”

GS PROJECT # 628
Monitoring period: 07-10-2007 to 06-10-2008

Report No.1308427

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TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstrasse 199 - 80686 Munich - GERMANY

Industrie Service

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Subject:			Gold Standard Verification	
Executing Operational Unit:				
TÜV SÜD Industrie Service GmbH, Carbon Management Service Westendstrasse 199 - 80686 Munich, Federal Republic of Germany				
Project Participant (client):				
Kalpataru Power Transmission Limited				
Registration number / Project Title			Project 628: "Tonk Biomass Project, India"	
Monitoring period:			07-10-2007 to 06-10-2008	
First Monitoring Report (version/date)			Version 01 / 01-07-2009	
Final Monitoring Report (version/date)			Version 1.6 / 21-09-2009	

Summary:

TÜV SÜD Industrie Service GmbH has performed the verification of the Gold Standard project: "Tonk Biomass Project, India". The project involves implementation of a biomass based power plant by Kalpataru Power Transmission Limited (KPTL) with direct combustion boiler at the plant in Uniara, Tonk district of Rajasthan, India. The plant utilizes mustard crop residues, a renewable biomass that is abundantly available in the region. The electricity generated is supplied to the Rajasthan state electricity grid.

The management of KPTL is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.

A document review, followed by a site visit was conducted to verify the information submitted by the project participant regarding the present verification period. Based on the assessment carried out, the verifier confirms the following:

- The project has been implemented and operated in accordance with the description given in the UNFCCC registered PDD (version 05, 02-10-2008) and Gold Standard Annex (version 05, 16-06-2009).
- The project is completely implemented as described in registered PDD and GS Annex.
- The monitoring plan complies with the applied methodology (AMS I.D, Version 11- Grid connected renewable electricity generation) and the monitoring has been carried out as exactly following the monitoring plan. Installed equipments essential for generating emission reductions run reliably and the meters are calibrated appropriately. The project is generating emission reductions as a GS-CDM project.

The verifier can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion refers to the project's GHG emissions and resulting GHG emission reductions reported, both determined due to the valid and registered project's baseline, its monitoring plan and its associated documents.

Based on the information we have seen and evaluated we confirm that the implementation of the project resulted in 40146 t CO_{2e} of emission reductions during the verification period 07-10-2007 to 06-10-2008.

Verification team:	Internal Quality Control:
• Bratin Roy (Assessment Team Leader) • Sandeep Kanda (GHG Auditor) • Eswar Murty (GHG Auditor)	Thomas Kleiser

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Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_{2e}	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
KP	Kyoto Protocol
KPTL	Kalpataru Power Transmission Limited
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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Main Documents (referred to in this report)

Methodology (name / version)	AMS I.D version 11- Grid connected renewable electricity generation	
Registered PDD:	Version 05, 02-10-2008	
	Version	Date
GS Monitoring Report	01	01-07-2009
Revised Monitoring Report	1.6	21-09-2009
Project documentation link:	http://www.cdmgoldstandard.org/ https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=628	

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1 INTRODUCTION

1.1 Objective

Kalpataru Power Transmission Limited (KPTL) has commissioned an independent verification by TÜV SÜD Industrie Service GmbH (TÜV SÜD) of its registered GS-VER project: "Tonk Biomass Project, India".

The objective of the verification work is to check compliance with GS version 1 requirements according to which the verifier shall:

- ensure that the project activity has been implemented and operated as per the UNFCCC registered PDD "Electricity generation from mustard crop residues: Tonk, India" Version 05/02-10-2008, and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the Gold Standard MR and other supporting documents provided are complete and verifiable and in accordance with applicable GS requirements,
- ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology,
- evaluate the data recorded and stored as per the methodology AMS I.D version 11- Grid connected renewable electricity generation.

1.2 Scope

The verification scope is defined as an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Designated Operational Entity. The verification is based on the submitted monitoring report, the validated project design documents including its monitoring plan and validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and rules and guidance of Gold Standard.

TÜV SÜD has, based on the requirements in the VVM applied a rule-based approach. The principles of accuracy and completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 GHG Project Description

Project activity:	Tonk Biomass Project, India
GS VER registration number:	GS-628
Project Participants:	Kalpataru Power Transmission Limited
Location of the project:	Uniara village, District Tonk, Rajasthan, India Latitude 25^{o} 52' 0" N Longitude 76^{o} 03'60" E
Date of UNFCCC registration:	07-10-2008
Date of GS registration:	19-06-2009
Starting date of the CDM crediting period:	07-10-2008

The purpose of the project is the installation of biomass based power generation system with high combustion boiler and 8 MW turbo-generator system at Tonk plant. The power plant uses the locally available mustard crop residues as the fuel.

The project participant (PP) has signed a Power Purchase Agreement with Rajasthan Vidyut Vitran Nigam Limited on 16th February 2002.

2 METHODOLOGY

2.1 Verification Process

The verification process is based on the approach depicted in the Validation and Verification Manual.

Standard auditing techniques have been adopted. The verification team performs first a desk review, followed by an on-site visit which results in a protocol including all the findings. The next step is to close out the findings through direct communication with the PPs and finally prepare the verification report. This verification report and other supporting documents then undergo an internal quality control by the CB "climate and energy" before submission to the GS.

2.2 Verification Team

The appointment of the team takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

The verification team was consisting of the following members:

Name	Qualification	Coverage of technical area	Coverage of sectoral scope	Host country experience
Bratin Roy	**ATL**	☑	☑	☑
Sandeep Kanda	A	☑	☑	☑
Eswar Murty	A	☑	☑	☑

Bratin Roy is an Assessment Team Leader for CDM/JI projects for CDM/JI projects and also a lead auditor for quality and environmental management systems (according to ISO 9001 and ISO 14001). He holds a Master Degree in Environmental Science. Mr. Roy has worked for 10 years as a consultant in the field of energy industries, renewable and non-renewable sources, and energy distribution equipment, especially biomass and solar energy. He has presented several papers related to climate change, energy efficiency and corporate sustainability in various national and international seminars and workshops. He has received extensive training in the CDM and JI validation and verification processes and has already participated in several CDM/JI project assessments.

Sandeep Kanda is a GHG auditor for CDM/JI projects and energy and environment field expert at TÜV SÜD Industrie Service GmbH. He holds a master degree in energy systems engineering and also industrial safety and environmental management. Before joining the TÜV SÜD Industrie Service GmbH he has worked extensively on projects in energy sector, manufacturing industries, chemical industries and metal production. He has carried out energy audits and worked on development of CDM projects and methodologies in the aforementioned sectors.

Eswar Murty is an Auditor at TÜV SÜD South Asia. He holds a bachelors' degree in Civil engineering and a post graduate diploma in Environmental management. Before joining TÜV SÜD South Asia, he worked on environmental management and CDM projects energy projects for 5 years. He has received extensive training on CDM validation and verification process.

2.3 Review of Documents

The published MR was assessed based on all the relevant documents as listed earlier. The aim of the assessment in the desk review was to verify the completeness of the data and the information presented in the MR. The compliance check of the MR with respect to the monitoring plan depicted in the registered PDD and the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment

including calibration requirements, and the quality assurance and quality control procedures was paid. The evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions was also carried out. A complete list of all documents reviewed is available in Annex 2 of this report.

2.4 On-site Assessment and follow-up Interviews

During the period 23rd & 24th April 2009, TÜV SÜD performed a physical site inspection and on-site interviews with project stakeholders as a part of the initial verification for the registered CDM Project 1774: "Electricity generation from mustard crop residues: Tonk, India". The data verification and consultation with stakeholders required for the Gold Standard was also done by the audit team during this site visit. This was done to:

- confirm the implementation and operation of the project;
- review the data flow for generating, aggregating and reporting the monitoring parameters;
- confirm the correct implementation of procedures for operations and data collection;
- cross-check the information provided in the MR documentation with other sources (raw data);
- check the monitoring equipments against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.;
- review the calculations and assumptions used to obtained the GHG data and ER;
- identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters;

A list of the persons interviewed during this verification activity is included in Annex 2.

2.5 Quality of Evidence to Determine Emission Reductions

Among many others the following relevant and reliable evidences have been used by the audit team during the verification process:

- Joint Meter Readings and invoices of electricity export [IRL # 11,12];
- Calibration certificates of the project equipment [IRL #14,15,16];
- Quality Assurance/ Quality Control documents such as training records and monitoring responsibilities [IRL# 13, 29];
- Daily and monthly reports of electricity generation and biomass consumption [IRL # 27,28];
- Compliance check with regional/national requirements concerning safety and pollution [IRL # 8, 30].

Sufficient evidences covering the full verification period in the required frequency are available to validate the figures stated in the final MR. The source of the evidences are discussed in chapter 3 of this report. Specific cross-checks have been done in cases that further sources were available. All figures in the monitoring report were cross-checked by the audit team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology and GS requirements.

2.6 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the verification process was to resolve any outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the GHG emission reduction calculation. The findings raised as Forward Action Requests (FARs) (if any) indicated in

previous reports (validation/verification) were clarified during communications between the PP and TÜV SÜD.

To guarantee the transparency of the verification process, the concerns raised, based on the desk review and subsequent on-site audit assessment and follow up interviews, together with the responses given are documented in Annex 1 (verification protocol).

A Corrective Action Request (CAR) is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;
- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during validation that are not solved until the on-site visit.

A Clarification Request (CR/CL) is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

A Forward Action Request is raised where TÜV SÜD identifies that monitoring and/or reporting required special attention or adjustments for the next verification period.

Information or clarifications provided as response to a CAR, CR or FAR could also lead to a new CAR.

2.7 Internal Quality Control

As an ultimate step of verification the final documentation including the verification report and the protocol have to undergo an internal quality control by the Certification Body (CB) "climate and energy", i.e. each report has to be finally approved either by the Head of the CB or the Deputy. In case one of these two persons is part of the assessment team the approval can only be given by the other one. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the Gold Standard along with the relevant documents.

3 VERIFICATION RESULTS

In the following sections the results of the verification are stated. The verification results relate to the project performance as documented and described in the final Monitoring Report (21-09-2009, version 1.6). The verification findings for each verification subject are presented below:

3.1 Eligibility for pre-CDM VERs

3.2 In accordance with the GS rules on pre-CDM VERs, GS-VERs is being claimed for the maximum allowed period of 12 months prior to the project's CDM registration date. The PP had submitted the final version of the PDD to the DOE for CDM Validation prior to 31st of January 2008 as indicated in the validation report of the registered CDM project 1774. Although the project validation started in year 2005, it got finally registered as a CDM project in the year 2008. The reasons for the mismatch between the start of project operation and the CDM registration date can be attributed to change in methodology version and subsequent review of project. **FARs from Validation / Previous Verification**

Based on the validation report the verification team identified no missing steps. No FAR has been presented in the validation report.

3.3 Project Implementation in accordance with the registered PDD

The project is fully implemented according to the description presented in the PDD. The verifier confirms, through the visual inspection that all physical features of the GS-VER project activity including data collecting systems and storage have been implemented in accordance with the registered PDD. The project activity is completely operational and the same has been confirmed on-site.

The energy meters are installed at the Grid sub station and the same are calibrated and sealed by the Meter wing of Jaipur Vidyut Vitran Nigam Limited. All meters are calibrated annually, as per the frequency prescribed by the power purchase agreement (PPA).

3.4 Compliance of the Monitoring Plan with the Monitoring Methodology

The monitoring plan is in accordance with the approved methodology, AMS I.D, Version 11, applied by the GS-VER project activity.

3.5 Compliance of the Monitoring with the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD and approved methodology AMS I.D, Version 11. All the parameters were monitored as per the Monitoring Plan of the registered PDD and the GS annex. With respect to GS requirements, the project complies with the parameters in Sustainable Development Assessment Matrix.

Data / Parameter:	$E_{t, y}$
Data unit:	MWh
Description:	Total measured electricity generation from the project activity during the period
Source of data used:	Energy meters (Main meter-TNU 01883, Back up meter-TNU 01884) located at the grid sub-station and daily and monthly log book readings
Means of	The data from the main energy meter is verified from the daily and monthly plant log books.

verification/Comments:	
Cross-check	The back up meter value would be used in case of any failure of the main energy meter. The data from the back up meter is used to cross check the reading from the main meter. The value is also cross-checked by the monthly invoices raised by the plant for grid export.

Data / Parameter:	$BC_{y,i}$
Data unit:	Tons/yr
Description:	Total consumption of dry biomass i for year y
Source of data used:	Plant records
Means of verification/Comments:	Based on the daily reports of weigh-bridge data. The project activity has consumed primarily mustard crop residue as the fuel apart from the negligibly small quantity of wood-chips and Juli flora. No fossil fuel has been used during the considered monitoring period.
Cross-check	Based on biomass purchase receipts

Data / Parameter:	Air Quality
Data unit:	$\mu g/m^3$
Description:	Air quality of the plant
Source of data used:	Rajasthan State Pollution Control Board & Indian Ambient Air quality standards
Means of verification/Comments:	Consent to operate under the Air Act - consent letter given by Rajasthan State Pollution Control Board. During the course of validation it has been confirmed that in the absence of the project activity the biomass residue is burnt in the fields, as also checked from the technical literature submitted [IRL 31].
Cross-check	Technical specifications and operation of the electrostatic precipitator (ESP)

Data / Parameter:	Water Quality
Data unit:	mg/l
Description:	Water quality of the plant
Source of data used:	Rajasthan State Pollution Control Board
Means of verification/Comments:	Consent to operate under the Water Act - consent letter given by Rajasthan State Pollution Control Board
Cross-check	Payment made towards the water cess

Data / Parameter:	Livelihood of the poor
Data unit:	-
Description:	Number of farmers benefitted by the sale of biomass residues
Source of data used:	Biomass purchase data
Means of verification/Comments:	Based on the data for purchase of mustard crop residues from farmers at KPTL plant. However a FAR has been raised to know the actual number of farmers benefitted from sale of mustard crop residues during the next verification period.
Cross-check	Certificate from the chartered accountant firm indicating the goods received note (GRN)

Data / Parameter:	Employment numbers
Data unit:	-
Description:	Number of people employed in the plant as a result of project activity

Source of data used:	Employment records of KPTL plant
Means of verification/Comments:	Based on the number of personnel employed
Cross-check	Salary details of staff of the plant

Data / Parameter:	Technological self reliance
Data unit:	-
Description:	Number of engineers trained to operate and implement the technology
Source of data used:	Plant data
Means of verification/Comments:	Based on the training records of KPTL staff
Cross-check	Based on the employee records of KPTL.

Data / Parameter:	Resource Competition
Data unit:	-
Description:	Quantity of biomass residues type n available in the region
Source of data used:	Data from Government of Rajasthan
Means of verification/Comments:	Based on the biomass availability data provided by Department of Agriculture it can be confirmed that there is surplus availability of biomass residue in the region [IRL 21]
Cross-check	District Statistical Handbook, Government of Rajasthan

The calibration of all metering equipments is done regularly and the relevant calibration documents were viewed by the audit team during the on-site visit. These calibration certificates confirm the calibration status listed in the Monitoring Report for all meters. No further calibration activities are required for this GS-VER activity. No deviations exceeding the required frequency or the stated limits were found. Hence raw data of all measured parameter are reliable and serve as solid base for the reported emission reductions.

3.6 Assessment of Data and Calculation of GHG Emission Reductions

The Emission Reduction Calculations are laid down in the Monitoring Report. As the approach to calculate the baseline emissions is based on the applied methodology AMS I.D. Version 11, net amount of electricity produced solely by biomass and exported to the grid multiplied with the ex-ante defined emission factor for the respective grid. Such an approach is deemed to be acceptable.

The reported data has been cross checked against other sources when available as explained above in section 3.4.

The verifier confirms that the methods and formulae used to obtain the baseline emissions are appropriate. The same have been done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology.The verifier confirms that the default values (ex-ante values from PDD) have been correctly used.

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4 SUMMARY OF FINDINGS

The verifier can confirm that the published MR and related documents are complete and verifiable in accordance with the GS-VER requirements. All the findings raised by the verification team, the responses by the PPs and the conclusion from the team are presented in Annex 1, the means of verification and resulting changes in the MR are stated as follows:

CAR 1, means of verification
The permissible limits with respect to the Air (Prevention & Control of Pollution) Act- 1981 and Water Prevention & Control of Pollution) Act, 1974, were not indicated in the MR. Also the particulate emissions do not comply to the stack emission standards.
CAR 1, changes in the MR or related documents
The MR has been revised to include the permissible limits under Air act and Water act. Also the particulate emissions as specified do not comply with the consent but are in line with the environmental standards.
CR1, means of verification
The total generation exceeded 8 MW in the months of, December'07, January'08, March'08 and April'08 during the monitoring period.
CR1, changes in the MR or related documents
The total generation during the indicated period exceeded the 8 MW capacity by 0.75%. It could be accepted that this deviation is within a very small range of the total capacity and there can be slight variation during some days. This was also learnt from the UNFCCC registered project no.331, where similar case of excess generation beyond design capacity occurred and was supported by the letter from the equipment supplier. Also this increase in generation does not affect the emission reductions for the project. Based on this, the issue was closed.
CR2, means of verification
There is a large variation in the generation in two consecutive days in the months of July, August & September'08
CR2, changes in the MR or related documents
The explanation regarding the same has been provided in the Annex1. The variation has been attributed to the moisture content in the biomass residues during these months.
CR3, means of verification
The evidences supporting the basis of the indicated figure of biomass sales of 20000 needs to be provided to the DOE.
CR3, changes in the MR or related documents
The certificate from the chartered accountant firm has been given indicating the number of payments/goods received note (GRN) which justifies that the number of sales is exceeding the number of 20000 significantly. Thus this issue is closed.
CR4, means of verification
The quantity of available biomass in the region for the present monitoring period (2007-08) needs to be indicated and supporting documents need to be provided.
CR4, changes in the MR or related documents
The document indicated in the MR from the Department of Agriculture, Rajasthan, has been submitted. The document clearly shows the mustard crop residues available in the region. This can be considered as reliable evidence and therefore this issue is closed.
FAR 1

A single logbook should be maintained for electricity generation, auxiliary consumption and electricity export to grid.
FAR 2
The number of farmers from whom mustard crop residues have been bought are to be determined in order to know exactly the number of people benefitted by the project activity. The number of deliveries is not the correct measure as the same farmer may deliver the biomass residues to the plant more than once. The information of the number of farmers with complete details is to be presented and the same would be checked during next verification.

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5 VERIFICATION STATEMENT

TÜV SÜD Industrie Service GmbH has performed the Gold Standard verification of the project: "Tonk Biomass Project, India". The project consists of installation of a power plant with high combustion boiler and a turbo generator at Tonk plant in Rajasthan, India. The power plant utilizes mustard crop residues and the electricity generated is supplied to the Rajasthan state grid thus reducing emissions. The verification is based on the currently valid documentation of the Gold Standard.

The management of Kalpataru Power Transmission Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the registered PDD version 05, 02-10-2008 and the applied methodology AMS I.D version 11- Grid connected renewable electricity generation.

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the validated and registered project design document and the Gold Standard annex;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements;

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. The verifier also can confirm that the monitoring plan in registered PDD is as per the approved methodology AMS I.D version 11. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 07-10-2007 to 06-10-2008

Verified emissions in the above reporting period:

Baseline emissions:	40146 t CO_{2e}
Project emissions:	0 t CO_{2e}
Leakage emission:	0 t CO_{2e}
Emission reductions:	40146 t CO_{2e}

Munich, 21-09-2009

Thomas Kleiser
Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH

India, 21-09-2009

Bratin Roy
Assessment Team Leader

Industrie Service

Annex 1: Verification Protocol

Verification Protocol

Project Title: Gold Standard Verification-“Tonk Biomass Project, India”
Date of Completion: 21-09-2009
Number of Pages: 35

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1. Project Activity Implementation

1.1 Technology

PDD & GS Annex to PDD	Verified Situation	Conclusion
Location (s)		
Description: The proposed project is a biomass-based power generation project of 8 MW capacity, which uses locally abundant mustard crop residue as a primary fuel Address: Khatoli village, Approximately 5 kilometres from Uniara Town, Tonk District, Rajasthan, India	During the on-site visit, it has been confirmed that the project site is in compliance with the description of the registered PDD as well as the Gold standard Annex. This was also confirmed by the verification of following documents. 1. Power Purchase Agreement between KPTL and Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN) 2. Synchronization of 8 MW TG with Uniara grid sub station 3. Invoices for power export during the monitoring period.	☑
GPS coordinates: Latitude: $25^0$52'0''N Longitude: $76^0$03'60''E	The GPS coordinates were verified on site.	☑
Technical Equipment – Main Components		
Component 1: *Biomass Power generation plant* *Description* ✓ *Installed capacity 8 MW (electrical)* ✓ *Direct combustion boiler technology.*	The installed capacity of the plant is 8 MW. The Turbo generator installed is of single casing direct couplet condensing type. The manufacturer is Hangzhou steam turbine company limited. The boiler installed is of 38 Tonnes per hour (TPH) capacity. The project equipments installed were verified during on site visit and were found to be in compliance with the project description.	☑

PDD & GS Annex to PDD	Verified Situation	Conclusion
✓ *Medium-pressure steam boiler (modified Rankine cycle with regenerative feed water heating and water-cooled condensation)*		
Component 1: *Technical Features*	The commissioning certificate of the 8 MW turbine, technical specifications of the turbine and boiler have been checked on site.	☑
Operation Status during verification		
Approvals / Licenses N/A	The Plant has got the consent to operate the biomass based power plant from Rajasthan State Pollution Control Board under Air and Water Acts. The same have been checked during the on-site visit.	☑
Actual Operation Status N/A	Under construction ☐ In operation ☒ Out of operation ☐ Reason (when out of operation):	☑
Remarks to Special Operational Status During the Verification Period	The outages during the monitoring period are mainly due to boiler and super-heater zone cleaning, annual overhauling and maintenance and the details regarding the same have been checked during the on site visit.	☑

1.2 Organization

PDD	Verified Situation	Conclusion
Project Participant (s)		
Entity: Kalpataru Power Transmission Limited (KPTL) Responsible person: Mr. Ajay Munot (Executive Director)	This has been verified on-site. As Mr. Ajay Munot has left the organization, Mr. Anand Chopra has taken the overall responsibility of the monitoring plan and its implementation. One Carbon International is responsible for preparation and submission of the Monitoring Report.	☑
VER Project management: KPTL management is responsible for VER project management	The procedure for data collection and archiving has been verified on site. The shift operators record the data from the energy meter in a logbook or a computer system. The data is collected in daily plant operation reports and presented to the responsible manager who has to verify the data for the purpose of quality control. The verified report is then presented to the deputy manager who also has to verify the data before the data will be finally approved by the senior vice president of KPTL. The Monitoring manual submitted includes the documented procedures for data recording and archiving,	☑

1.3 Quality Management System

PDD	Verified Situation	Conclusion
Quality Management Manual: (KPTL is responsible for all kinds of quality management manual)	The monitoring manual for CDM and GS has been submitted, which includes the quality management in the KPTL plant.	☑
Responsibilities: (Hiring by KPTL)	This was confirmed through interviews and discussions during on site visit.	☑
Qualification and Training: (KPTL will hire the qualified person	KPTL has provided in house training to its staff on equipment operation, fire safety and also has sent their employees to external training programs. The documents supporting these	☑

who will be trained on job later)	trainings have been verified during on site visit.	
Implementation of QM-system (KPTL is responsible for development and implementation of QM-system)	The quality management system was not in place for the monitoring period. The PP has developed the CDM monitoring manual and has included the QM-system procedures.	☑

1.4 Remaining FARs from previous report

Remaining Requests from Previous report	Summary of project owner response	Audit team conclusion
There were no remaining requests (FARs) from validation report.	----	----

2 Data Management System

2.1 Description

Structure of raw data archiving				
Describe all the different data collection systems				
Type	Name	Responsible	Procedures	Comments
Electronically	Gross electricity generated Auxiliary consumption Net electricity exported to grid	Shift operators at the plant and the staff at Grid substation.	The electricity generated and the auxiliary consumption is continuously recorded in energy meters in the plant. This is monitored in DCS as well as entered into log books. The export and import data is recorded in the main and back up meters installed at the Grid substation at Uniara. The joint meter readings are taken once a month	☑
Electronically	Total consumption of Biomass	Shift operators at the plant	The amount of biomass is measured by weighbridge installed at the plant. This data is recorded by the shift operator and transferred into the computer.	☑
Manual	Fossil fuel consumed	Not applicable	Not applicable as no fossil fuel is consumed in the project activity.	☑
Accounting	Invoices	KPTL and RVPN	Based on Joint Meter Reading reports, sales invoices for Electricity exported issued by KPTL	☑
Sampling(GS)	Air quality Water quality	RPCB	The air and water quality is analyzed by Rajasthan Pollution Control Board (RPCB) during their yearly inspection in order to grant consent to operate under Air and Water acts.	☑
Others (GS-Sustainability)	Livelihood of poor Employment numbers Technological self reliance	KPTL	The data pertaining to the number of farmers benefitted, new jobs generated and numbers of people received trainings as a result of the VER project are assessed.	☑

	Resource competition			

Key Reporting Risks: Potential reporting risks of the data management system can be expected to occur in the following fields of action:
1. Raw data collection; 2. Data transfer. The electricity generated and auxiliary consumption is recorded in the plant. The daily export values are recorded in the plant log books upon confirmation of the same with the staff of the substation. There is a potential risk of error while entering into log books.

Risk Classification: Low

Further Remarks: None

2.2 Raw Data Archiving and Protection measures

Name	Description of data archiving and protection measures	Risks and comments	Concl.
Daily/Monthly records	The data is monitored continuously in energy meters. This is monitored in DCS as well as entered into log books. The export and import data is recorded in the main and back up meters installed at the Grid substation at Uniara.	The same was verified on site	☑
Invoices	Invoices are issued every month. The invoices show the energy exported based on joint meter readings. The invoices are stamped by the project owner. Data shall be archived for 2 years following the end of the crediting period. Invoices in paper form are printed out from the computer system, i.e. electronic files serve as back-up for the invoices in paper form.	Verified on site	☑
Sampling	The consent to operate from Pollution Control Board forms indicates the yearly sampling of air and water quality at the plant. These are archived in the plant	Verified on site	☑
Others(Sustainability)	The sales data, employee work contracts and details of trainings are archived in the plant.	Verified on site	☑

Key Reporting Risks: Low

Risk Classification: Low

Further Remarks: None

2.3 Data transfer

Description of data transfer from raw data archiving to calculation tool			
Name	Description and responsibilities	Risks and comments	Concl.
Daily/Monthly records	The data is monitored continuously in energy meters. This is monitored in DCS as well as entered into log books. The export and import data is recorded in the main and back up meters installed at the Grid substation at Uniara.	**Forward Action Request No.1** For future verifications, a single logbook should be maintained for electricity generation, auxiliary consumption and electricity export to grid.	FAR
Invoices	Invoices are issued every month. The invoices show the energy exported based on joint meter readings. The invoices are stamped by the project owner. Data shall be archived for 2 years following the end of the crediting period. Invoices in paper form are printed out from the computer system, i.e. electronic files serve as back-up for the invoices in paper form.	Verified on site	☑
Key Reporting Risks: Human error **Risk Classification:** Low **Further Remarks:** None			

2.4 Data Processing

Description of data processing from transferred data to final results in the calculation tool			
Step	Description	Risks and comments	Concl.
Consistency	The parameter Et,y Total measured electricity generation from the CDM project activity during the year y as mentioned in the PDD is being monitored in the form of the electricity exported to grid in Main and back up meters installed at the Grid substation.	OK	☑

Calculation Tool description	The process of emission reductions calculation has been clearly described in the monitoring report. The formulae, intermediate steps and constants are in compliance with the methodology and the PDD. The emission reductions ERy = BEy –PEy –Ly. Project activity emissions: PEy = 0. The leakage from the project is: Ly = 0. The baseline emissions of the Project are given as: BEy=EGy×EFy EFy: CO2 emission factor of the Northern grid (fixed ex-ante). EFy= 793.2tCO2e/GWh. The EF is consistent with the PDD.	OK	☑
Transformation from transferred data to useable data	The raw data are confirmed by meter readers from the owner and the grid company. It is verified by the data verifier in every steps of the transformation. After internal cross-checking, all plausible records will be deemed as useable data.	OK	☑
Elimination of not plausible data	All data are plausible for this monitoring period.	OK	☑
Transformation from useable data to input data for further calculation	EGt,y is the net electricity supplied to the Grid in MWh. The monthly main meter readings from the grid company should be chosen as input data for further calculation	OK	☑
Ex-ante data	EFy (unit: tCO_2/MWh) is the CO_2 emission factor, which is calculated ex-ante and will not be updated during the first crediting period.	OK	☑
Default parameter	The default values used are emission factor of grid, specific fuel consumption of biomass, coal and lignite and are in compliance with the PDD and the methodology	OK	☑
Formulae check	The formulae used are in compliance with the PDD.	OK	☑
Rounding functions	The rounding functions are correctly and conservatively applied in the monitoring re-	OK	☑

	port.		
Calculation tool changes and protection measures	The CER calculation sheet protected against unauthorized changes.	OK	☑
Key Reporting Risks: All data can be cross-checked; mistakes might happen, but can be traced back, evaluated and deleted. **Risk Classification:** Low, because cross- check is possible **Further Remarks:** No further remarks.			

3 Monitoring Plan Implementation

3.1List of Parameter to be monitored

ID-PDD/GS	ID-Meth.	ID-Internal	Description	Conclusion
Instrumentation *insert all components that are metered by instruments as necessary due to PDD and applied methodology version*				
$E_{t,y}$	-	-	Total measured electricity generation from the CDM project activity during the year y	☑
$E_{pl,y}$	-	-	Total annual electricity for internal consumption of the power plant during the year y	☑
$BC_{y,i}$	-	-	Total consumption of dry biomass i for the year y	☑
FC_y	-	-	Total consumption of fossil fuel in year y	☑
$B_{FLE,n,y}$	-	-	Quantity of biomass residue type n used for heat generation as a result of the project activity during the year y and for which leakage cannot be ruled out	☑
ID GS1	-	-	Air quality	☑
ID GS2	-	-	Water quality	☑
ID GS3	-	-	Livelihood of poor	☑
ID GS4	-	-	Employment numbers	☑
ID GS5	-	-	Technological self reliance	☑
ID GS6	-	-	Resource Competition	☑

3.2 Monitoring Instrumentation

3.2.1 Instrument i

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each sin-*		

gle instrument		
ID-PDD:	Et, y (Main meter)	☑
ID-Internal:	-----	☑
Data to be Measured:	Electrical energy generated in the project activity which is exported to grid	☑
Data Logging:	Continuous	☑
Archiving of Raw Data:	Log books and monthly reports	☑
Measurement Principle:	The data is measured continuously through energy meters and in DCS	☑
Period of Operating Time:	Begin: 7.10.2007 – End 06.10.2008	☑
Instrument Type:	Energy meter	☑
Serial Number:	TNU 01883	☑
Manufacturer Model Nr.:	SECURE	☑
Specific Location:	132 KV GSS UNIARA	☑
Measurement Range:	-	☑
Measurement Unit:	kWh	☑
Calibration:	24.09.2008, 06.03.2009	☑
Required Calibration Frequency:	Half yearly	☑
Uncertainty Level:	0.2%	☑
Monitoring & Calculation		
Reading Frequency:	Continuous	☑
Recording Frequency:	Monthly reports	☑
Trouble Shooting:	A back up meter is in place in case of failure of the main meter, which also records the electricity exported,	☑

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle: Continuous measurement Through Current transformer (CT) and potential transformer (PT)	The working status of the meter has been inspected.	The meter is working properly and measuring the electricity continuously.	☑
Installation:	The energy meter is installed by the RVPN grid and has been verified on site.	OK.	☑
Functionality: Bi-directional; Active/reactive power	Functionality of the meter has been verified on-site	OK	☑
Quality assurance: All the meters are calibrated at least once a year. Calibration records of meters are available to the verifier.	Meter verification and calibration certificates have been verified during desk-review.	OK	☑
Maintenance: The meter is maintained by grid company.	The maintenance status has been verified on-site.	OK	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

3.2.2 Instrument ii

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		

ID-PDD:	Et, y (Back up meter)	☑
ID-Internal:	-	☑
Data to be Measured:	Electrical energy generated in the project activity which is exported to grid	☑
Data Logging:	Continuous	☑
Archiving of Raw Data:	Log books and monthly reports	☑
Measurement Principle:	The data is measured continuously through energy meters and in DCS	☑
Period of Operating Time:	Begin: 7.10.2007 – End: 06.10.2008	☑
Instrument Type:	Energy meter	☑
Serial Number:	TNU 01884	☑
Manufacturer Model Nr.:	SECURE	☑
Specific Location:	132 KV GSS UNIARA	☑
Measurement Range:	-	☑
Measurement Unit:	kWh	☑
Calibration:	24.09.2008, 06.03.2009	☑
Required Calibration Frequency:	Half yearly	☑
Uncertainty Level:	0.2%	☑
Monitoring & Calculation		
Reading Frequency:	Continuous	☑
Recording Frequency:	Monthly reports	☑
Trouble Shooting:	-	☑

Inspection Results During Verification			
Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle: Continuous measurement Through CT, PT	The working status of the meter has been inspected.	The meter is working properly and measuring the electricity continuously.	☑
Installation:	The energy meter is installed by RVPN and has been verified on site.	OK.	☑
Functionality: Bi-directional; Active/reactive power	Functionality of the meter has been verified on-site	OK	☑
Quality assurance: All the meters are calibrated at least once a year. Calibration records of meters are available to the verifier.	Meter verification and calibration certificates have been verified during desk-review.	OK.	☑
Maintenance: The meter is maintained by grid company.	The maintenance status has been verified on-site.	OK	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

3.2.3 Instrument iii

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Instrumentation Information *list all different instruments which have been used during the monitoring period; use a separate table for each single instrument*		
ID-PDD:	BCy,i	☑

Industrie Service

ID-Internal:	-	☑
Data to be Measured:	Quantity of biomass during the period	☑
Data Logging:	Daily	☑
Archiving of Raw Data:	Monthly	☑
Measurement Principle:	Load cell	☑
Period of Operating Time:	Begin 07.10.2007 – End 06.10.2008	☑
Instrument Type:	Weighbridge	☑
Serial Number:	2005-340	☑
Manufacturer Model Nr.:	Leotronic scales	☑
Specific Location:	Plant entrance	☑
Measurement Range:	40 Metric Ton (MT)	☑
Measurement Unit:	MT	☑
Calibration:	28.04.2008, 09.03.2007	☑
Required Calibration Frequency:	Annual	☑
Uncertainty Level:	5kg	☑
Monitoring & Calculation		
Reading Frequency:	Depends on the quantity of biomass procured	☑
Recording Frequency:	Daily reports	☑
Trouble Shooting:	Belt scale is in place to crosscheck the biomass consumption from weighbridge data	☑

Inspection Results During Verification

Operation of Instrumentation	Method of Verification	Verification Results	Conclusion
Measuring Principle: Load cell	Verified on site with the certificates of weighbridge calibration	Ok.	☑
Installation: The PP will install the weighbridge	Verified on site	Ok.	☑
Functionality:	Functionality has been verified on-site	OK	☑
Quality assurance: Calibration to be done annually	Weighbridge verification and calibration certificates have been verified during onsite.	OK	☑
Maintenance: Regular maintenance to be done	Done	OK	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

3.3 Accounting information

Back to 3.1. List of Parameter to be monitored

PDD	Verified Situation	Conclusion
Accounting Information *list all significant accounted components which have been used during the monitoring period; use a separate table for each single component*		
ID-PDD:	N/A	☑
ID-Internal:	Invoice	☑
Description of Accounted Component:	The electricity sales confirmation, including the electricity exported to the grid and the electricity imported from the grid	☑
Accounting Unit:	kWh	☑

Quality Assurance Measures / System:	The invoices can be cross-checked and compared with the electricity transaction notes and the monthly readings of the main meter.	☑
Account Archived:	Copies of the invoices are kept on-site and original ones are archived in the head quarter office. Date: 07.10.2007 – 06.10.2008	☑
Account Credible / in Line with PDD:	The account is in line with the PDD.	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None		

3.4 External Data

Not applicable

3.5 Others-Sustainability parameters as per Gold standard

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS1	☑
ID-Internal:	___	☑
Description:	Air Quality	☑
Unit (if appropriate):	___	☑
Date:	12.09.2008	☑
Source:	Rajasthan State Pollution Control Board	☑
Reliability of Source:	Reliable (Government regulatory authority)	☑

Up-to-date?	Yearly review is done by the authority to verify the compliance with local environmental standards.	☑
Uncertainty Level:	N.A	☑
Key Reporting Risks: Low because yearly review is done by the Rajasthan State Pollution Control Board and certificate is issued. **Risk Classification:** Low **Further Remarks:** None		

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS2	☑
ID-Internal:	___	☑
Description:	Water Quality	☑
Unit (if appropriate):	___	☑
Date:	12.09.2008	☑
Source:	Rajasthan State Pollution Control Board	☑
Reliability of Source:	Reliable (Government regulatory authority)	☑
Up-to-date?	Yearly review is done by the authority to verify the compliance with local environmental standards.	☑
Uncertainty Level:	N.A	☑
Key Reporting Risks: Low because yearly review is done by the Rajasthan State Pollution Control Board and certificate is issued. **Risk Classification:** Low **Further Remarks:** None		

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS3	☑
ID-Internal:	___	☑
Description:	Livelihood of the poor - Number of people benefitted by the sale of biomass residues	☑
Unit (if appropriate):	___	☑
Date:	2007-2008	☑
Source:	Biomass receipt and payment made - KPTL	☑
Reliability of Source:	Reliable as also checked during the on-site audit with interviews of the local people	☑
Up-to-date?	Yes	☑
Uncertainty Level:	N.A	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None		

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS4	☑
ID-Internal:	___	☑
Description:	Employment numbers - Number of people employed in the plant as a result of project ac-	☑

	tivity	
Unit (if appropriate):	___	☑
Date:	2007-2008	☑
Source:	Employment records - KPTL	☑
Reliability of Source:	Reliable as also checked during the on-site audit with interviews of the employees	☑
Up-to-date?	Yes	☑
Uncertainty Level:	N.A	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None		

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS5	☑
ID-Internal:	___	☑
Description:	Technological self reliance - Number of engineers trained to operate and implement the technology	☑
Unit (if appropriate):	___	☑
Date:	17.07.2008	☑
Source:	Training records - KPTL	☑
Reliability of Source:	Reliable as also checked during the on-site audit with interviews of the employees	☑
Up-to-date?	Yes	☑

Uncertainty Level:	N.A	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None		

PDD	Verified Situation	Conclusion
Others		
ID-PDD:	ID GS6	☑
ID-Internal:	___	☑
Description:	Resource competition-Quantity of biomass residues type n available in the region	☑
Unit (if appropriate):	Tonnes	☑
Date:	2007-2008	☑
Source:	Government of Rajasthan	☑
Reliability of Source:	Reliable	☑
Up-to-date?	Yes	☑
Uncertainty Level:	N.A	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None		

4 Data Verification

4.1 Internal Review

Description and performance of internal review			
	Description	Comments	Concl.
Procedure	As KPTL is into generation of power and selling to grid, the internal review is done as per the Company requirements.	OK	☑
Documentation	The internal audit reports were checked during onsite audit	OK	☑
Responsibilities	The final internal approval of the Monitoring Report was given by the senior vice-president of biomass energy division of KPTL.	OK	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

4.2 Usage of default values

Description and performance of internal review			
	Description	Comments and Results	Concl.
Procedure	The default values used are emission factor of grid, specific fuel consumption of biomass.	OK	☑
Documentation	n.a	OK	☑
Responsibilities	---	OK	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

4.3 Reproducibility

Description and performance of the assessment			
	Description	Comments and Results	Concl.
Procedure	A complete check was performed by the audit team on the emission reduction calculation, the input data: the electricity exported to the grid and the electricity imported from the grid has been cross-checked with meter readings, log books and sales invoices.	The data have the reproducibility.	☑
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			☑

4.4 Peculiarities

Description of Peculiarities and unexpected Daily Events during the verification period			
	Description	Comments and Results	Concl.
Performance	There were no major shutdowns in the plant during the monitoring period except for the maintenance activities as indicated in the monitoring report.	**Clarification Request No.1** Please clarify why the total generation exceeded 8 MW in the months of, December'07, January'08, March'08 and April'08 during the monitoring period? **Clarification Request No.2** Please clarify why there is a large variation in the generation in two consecutive days in	CR

		the months of July, August & September'08?	
Documentation	The shutdown details were verified on site.	OK	☑
Measures	-	Refer above	CR
Key Reporting Risks: Low **Risk Classification:** Low **Further Remarks:** None			

4.5 Reliability and Plausibility

Description of crosschecks and plausibility checks			
	Description	Comments and Results	Concl.
Performance	During the desk-review audit, the verifier cross-checked and verified the input data of the CER calculation tool with the meter readings, log books and sales invoices. The verified data include main meter readings, and plant log books.	OK	☑

Period	***Power exchange through the main power line (MWh)***		***Net power supply to the grid (Et,y) (MWh)***
	EG_{export}	***EG_{import}***	
07/10/2007-31/10/2007	3135.8	3	
01/11/2007-30/11/2007	4274.4	22.7	
01/12/2007-31/12/2007	4821.3	15.6	
01/01/2008-31/01/2008	5312.8	4.1	
01/02/2008-28/02/2008	4806.4	12.6	

	01/03/2008-31/03/2008	4754.5	21.4			
	01/04/2008-30/04/2008	4158.1	18.3			
	01/05/2008-31/05/2008	4402.2	31			
	01/06/2008-30/06/2008	4219.7	33.2			
	01/07/2008-31/07/2008	4390.4	15			
	01/08/2008-31/08/2008	2298.1	40.9			
	01/09/2008-30/09/2008	3524	34.7			
	01/10/2008-06/10/2008	769.8	2			
	Total over monitoring period (07/10/2007– 06/10/2008)	**50867.5**	**254.5**	**50613**		
	The readings of main meter were used to calculate the emission reduction in the monitoring report: 50613 MWh × 0.793 tCO_{2e}/MWh = 40146.2 tCO_{2e}. The calculated emission reductions are traceable.					

Key Reporting Risks: Low
Risk Classification: Low
Further Remarks: None

4.5 Completeness and Correctness

Description of completeness and correctness			
	Description	Comments and Results	Concl.
Correctness	All data were cross-checked and verified during on-site visit. The biomass assessment study indicating the mustard crop residue situation around 50 km of the project site is submitted.	OK	☑
Completeness	Data covering the whole monitoring period has been provided to the DOE and verified by the same.	OK	☑
Further Remarks: None			

5 Additional requirements

Not applicable

6 Data Reporting

Description of the Monitoring Report		
	Comments and Results	Concl.
Compliance with UNFCCC regulations	The GS monitoring report for the registered GS project activity 628, is dated 01/07/2009, Version 1.1 The verification period is from 07/10/2007 to 06/10/2008 **Corrective Action Request No.1.** Please indicate the permissible limits under which the consent to operate under the water and air quality act respectively is obtained in the MR. Also, the details including the reference, period etc. of the consents should be indicated. **Clarification Request No.3** Although during the on-site audit it was observed that many farmers are supplying the biomass residue to	CAR CR

	the project plant, please submit the evidences supporting the basis of the indicated figure of 20000 as a conservative estimate of the people benefitted from the project. **Clarification Request No.4** What is the quantity of available biomass in the region for the present monitoring period (2007-08)?	
Completeness and Transparency	Refer above	
Correctness	Refer above	
Key Reporting Risks: All data can be cross-checked; mistakes might happen, but can be traced back, evaluated and be deleted **Risk Classification:** Low, because cross- check is possible. **Further Remarks:** No further remarks.		

7 Compilation and Resolutions of CARs, CRs and FARs

<table>
<tr><th>Corrective Action Requests by audit team</th><th>Summary of project owner response</th><th>Audit team conclusion</th></tr>
<tr>
<td><u>Corrective Action Request No.1.</u>
Please indicate the permissible limits under which the consent to operate under the water and air quality act respectively is obtained in the MR. Also, the details including the reference, period etc. of the consents should be indicated.</td>
<td>The limits applicable for the Consent to operate under air under the provisions of section 21(4) of the Air (Prevention & Control of Pollution) Act- 1981, are as follows:
<table>
<tr><td>Pollutant</td><td>Ambient Air</td><td>Stack emissions</td></tr>
<tr><td>Suspended particulate matter</td><td>500 µg/m^3</td><td rowspan="6">150 mg/m^3 particulate matter</td></tr>
<tr><td>SO2</td><td>120 µg/m^3</td></tr>
<tr><td>NOx</td><td>120 µg/m^3</td></tr>
<tr><td>CO</td><td>5000 µg/m^3</td></tr>
<tr><td>Respirable suspended particulate matter</td><td>150 µg/m^3</td></tr>
</table>
Please note that the 'Consent to operate under air' is containing a typing error regarding the threshold of the particulate matter of the stack emissions and by mistake stating a threshold value of 50 mg/m^3. KPTL issued a letter to the authorities that the consent is containing this mistyping (available to the DOE as document 'Request_for_revision_of_consent.pdf').
The DOE was provided with a copy of the applicable regulation ('GeneralStandards.pdf') that is stating the</td>
<td>The explanation provided by the PP should also be included in the MR under the respective sections.
Further please clarify how the stack emissions are maintained below 50 mg/m^3 as the gas outlet emission indicated for the ESP specification is 115 mg/Nm^3?
<u>Final response by the audit team</u>
The limits specified for ambient air do comply with the rules where as the gas outlet emission indicated for the ESP specification is 115 mg/Nm^3 which is more than the limit of 50 mg/m^3 as specified in the consent. However this value The permissible limits comply with the EPA rules as specified in the Consent letter and within the permissible limits. (the client has also requested for correction in the letter).Therefore this issue is closed.
☑</td>
</tr>
</table>

<table>
<tr><th>Corrective Action Requests by audit team</th><th>Summary of project owner response</th><th>Audit team conclusion</th></tr>
<tr><td></td><td>right value of the threshold, namely 150 mg/m3 for the stack emissions of particulate matter. As the specifications of the ESP are also available to the DOE is can be followed that the ESP is designed to lower the particulate matter content in the stack gas below the threshold value.

The limits applicable for the Consent to operate under water under the provisions of section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 are as follows:
<table>
<tr><td>Parameters</td><td>Limits</td></tr>
<tr><td>pH</td><td>Between 5.5 to 9.0</td></tr>
<tr><td>Total suspended solids</td><td>Not to exceed 100 mg/L</td></tr>
<tr><td>Oil and grease</td><td>Not to exceed 10 mg/l</td></tr>
<tr><td>BOD at 27°C, 3 days</td><td>Not to exceed 30 mg/l</td></tr>
<tr><td>COD</td><td>Not to exceed 250 mg/l</td></tr>
<tr><td colspan="2">Boiler Blow Down:</td></tr>
<tr><td>Temperature</td><td>Not more than 5°C higher than the intake water temperature</td></tr>
<tr><td>Copper (To-</td><td>Not to exceed 1.0 mg/l</td></tr>
</table></td><td></td></tr>
</table>

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
	tal) | Iron (Total) | Not to exceed 1.0 mg/l Cooling Tower Blow Down: Free available Chlorine | Not to exceed 0.5 mg/l Phosphate | Not to exceed 5 mg/l Zinc | Not to exceed 1.0 mg/l Chromium (Total) | Not to exceed 0.2 mg/l The monitoring report (v1.3) is now including the prescriptive limits of the consents under the respective paragraphs. Both consents are valid for the period from 01.08.2007 until 31.07.2010.	
Clarification Requests by audit team	**Summary of project owner response**	**Audit team conclusion**
Clarification Request No.1 Please clarify why the total generation exceeded 8 MW in the months of, December'07, January'08, March'08 and April'08 during the monitoring period?	The system is designed to deliver 8 MW_{el}. However the actual available capacity always differs slightly from the designed capacity within a range of a few percent due to the discrepancy between reality and modelling. As the planning of the energy generation system is based on assumptions and the system contains a number of devices, it is unavoidable that there are slight deviations from the operational capacity. This is the case at the	The statement "*the actual available capacity always differs slightly from the designed capacity within a range of a few percent*" should be supported by appropriate evidences. **Final response by the audit**

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
	Tonk plant. The deviation is within a very small range of the total capacity and can therefore be seen as neglectible. The total generation slightly exceeds 8 MW during the monitoring period on some days in December, January, March and April as the DOE mentions. The designed capacity is exceeded in maximum by 0.75 %. It is a known fact that the rated capacity under normal circumstances is subject to availability and the conditions of the steam and therefore a variation of the maximum electricity generation is possible that might even exceed the design capacity. This is a fact of based on basic thermodynamic laws. The design capacity is 8 MW, however the peak capacity that can be reached for short terms is usually ~10% larger (Reference: Page L 50, "Dubbel: Taschenbuch für den Maschinenbau"; Springer, 2004). However the amount of emission reductions is not influenced by the generated gross electricity as it is for conservativeness reasons determined based on the exported electricity.	**team** The total generation in the months of, December'07, January'08, March'08 and April'08 during the monitoring period exceeded the 8 MW capacity by 0.75%.It could be accepted that this deviation is within a very small range of the total capacity and there will be a slight variation during some days. This was also learnt from the UNFCCC registered project no.331, where similar case of excess generation beyond design capacity occurred and it was supported by the letter from the equipment supplier. Also this increase in generation does not affect the emission reductions for the project. However the emission reductions for the monitoring period are greater than that of the PDD. This is due to the low plant load factor considered at the time of PDD preparation by the PP, which was based on their previous experience of similar plant at Ganganagar. After this, KPTL was able to minimize the technical prob-

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
		lems. Hence the ER's slightly exceeded than that of the PDD. This was explained in the MR and based on the same, the issue remains closed. ☑
Clarification Request No.2 Please clarify why there is a large variation in the generation in two consecutive days in the months of July, August & September'08?	The large variation in the generation in two consecutive days in the months July, August and September 2008 is caused by the high moisture content of the biomass fuel. As the fuel is lying open it is under the influence of the monsoon and therefore containing a large amount of water at certain parts. Depending on the location from where the biomass is taken the moisture content varies highly, e.g. the upper layers of a pile contain more water than the layers deeper inside a pile.	It can be accepted that during the months of July, August and September, the moisture content of the biomass residues is high and hence the variation in the generation. Therefore this issue is closed. ☑
Clarification Request No.3 Although during the on-site audit it was observed that many farmers are supplying the biomass residue to the project plant, please submit the evidences supporting the basis of the indicated figure of 20000 as a conservative estimate of the people benefitted from the project.	The DOE was provided with documentation regarding the procurement of the mustard crop residues. These audited figures show the amount of purchases during the respective monitoring period. As can be seen from the documentation the number of sales is exceeding the number of 20000 significantly.	The certificate from the chartered accountant firm has been given indicating the number of payments/goods received note (GRN) which justifies that the number of sales is exceeding the number of 20000 significantly. Therefore this issue is closed. ☑
Clarification Request No.4 What is the quantity of available biomass in the region for the present monitoring period (2007-08)?	The quantity of biomass in the region for the period of 2007-2008 is approximately 265756 tons of mustard crop residues. The number is now included in the monitoring report. The value is based on the "District Statistical Data Book" published by the Economical & Statis-	Please provide the indicated reference. **Final response by the audit team** The document from the Depart-

Corrective Action Requests by audit team	Summary of project owner response	Audit team conclusion
	tical Directorate, Government of Rajasthan, Jaipur. The DOE was provided with the related documentary evidence.	ment of Agriculture, Rajasthan clearly show the mustard crop residues available in the region. This can be considered as reliable evidence and therefore this issue is closed. ☑

Forward Action Requests by audit team	Summary of project owner response	Audit team conclusion
Forward Action Request No.1 For future verifications, a single logbook should be maintained for electricity generation, auxiliary consumption and electricity export to grid.	We would like to thank the audit team of the DOE for this suggestion. The project owner will evaluate a satisfying solution until the next periodic verification.	The issue would be verified during the next verification. Therefore this issue is closed. ☑
Forward Action Request No.2. The number of farmers from whom mustard crop residues have been bought are to be determined in order to know exactly the number of people benefitted by the project activity. The number of deliveries is not the correct measure as the same farmer may deliver the biomass residues to the plant more than once. The information of the number of farmers with complete details is to be presented and the same would be checked during next verification.	---	---

Industrie Service

Annex 2: Information Reference List

IRL #	Document or Type of Information	Date of document
1.	Monitoring Report for Gold Standard project:628,version 01 Monitoring Report for Gold Standard project:628,version 1.6	01.07.2009 21.09.2009
2.	On-site interviews at KPTL plant in Tonk, Rajasthan by TÜV SÜD audit team on 23rd and 24th April 2009 : Sandeep Kanda TUV SUD Industrie Service Eswar Murty TUV SUD South Asia Interviewed persons: Anand Chopra Kalpataru Power Transmission Limited Hitesh Goyal Kalpataru Power Transmission Limited S.K.Basu Kalpataru Power Transmission Limited M.S.Malik Kalpataru Power Transmission Limited Manish Sharma Kalpataru Power Transmission Limited Alexander Samai One Carbon International Carsten Warnecke One Carbon International	
3.	Project documents for GS: Tonk Biomass Project:628 https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=628	19.06.2009
4.	Gold Standard Manual for VER Projects	---
5.	Power Purchase Agreement	16.02.2002
6.	Purchase order of 8 MW turbo generator	27.01.2005
7.	Technical specifications-Hangzhou steam turbine company limited & 38 TPH Boiler	---
8.	Consent to operate under Air and Water Acts from Rajasthan State Pollution Control Board	12.09.2008
9.	Synchronization of 8 MW turbine with GSS grid	10.11.2006
10.	Notification from Rajasthan Power Procurement Center regarding power distribution	16.03.2004
11.	Joint Meter Readings-KPTL plant from October'07 to October'2008	---
12.	Invoices for electricity export-KPTL plant October'07 to October'2008	---
13.	Details of trainings conducted to staff of KPTL plant	---

14.	Boiler inspection certificate	27.04.2008
15.	Weighing scale calibration certificate	28.04.2008
16.	Calibration report of energy meters TNU 01883 and TNU 01884	13.09.07, 23.01.08 and 26.07.08
17.	Technical specifications of Electrostatic precipitator	---
18.	Technical specifications of High voltage transformer rectifier unit	---
19.	Invoice for water and assessment of water cess for KPTL plant	October'2007-08
20.	Audited certificate for biomass purchase in KPTL plant	29.07.2009
21.	Biomass availability data from Department of Agriculture, Government of Rajasthan	---
22.	Request to Pollution Control Board for correction in the consent	21.11.2007
23.	List of employees and contract staff of KPTL Plant	February 2009
24.	Salaries paid for Security staff at Tonk plant	January 2009
25.	Sample purchase ledger for Mustard crop residues at Tonk plant	October 2008
26.	Details of outage in the plant during the monitoring period	---
27.	Excel sheet for biomass balance in Tonk plant	---
28.	Excel sheet for emission reduction calculations	---
29.	Monitoring manual for the project activity	---
30.	http://envfor.nic.in/legis/env_prt.htm	---
31.	Trace gases emission from field burning of crop residues, Indian Journal of Air Pollution Control, Vol. VIII, No. 1, March 2008, pp 76-86	March 2008