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Validation of a Revised Monitoring Plan Including Validation Opinion

EID PARRY (INDIA) LIMITED

**VALIDATION OF THE REVISED MONITORING PLAN OF
THE REGISTERED CDM PROJECT No.1139**

**“BAGASSE BASED COGENERATION PROJECT AT
PUDUKOTTAI, TAMIL NADU, INDIA”**

Report No. 1278762

10 June 2010

**TÜV SÜD Industrie Service GmbH
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Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
1278762	01-12-2009	03	10-06-2010	-

Subject: Validation of revised monitoring plan of a CDM Project	
Accredited TÜV SÜD Unit: TÜV SÜD Industrie Service GmbH Certification Body “climate and energy” Westendstr. 199 80686 Munich Germany	TÜV SÜD Contract Partner: TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 80686 Munich Germany
Project Participant: EID Parry (India) Limited 234, NSC Bose Road DARE House Chennai-600001	Project Site(s): EID Parry Sugar Complex, Kurumbur village, Pudukottai District, Tamil Nadu, India GPS Coordinates Latitude 10.25 Longitude 78.97
Project Title: Bagasse based Cogeneration Project at Pudukottai, Tamil Nadu, India	
Applied Methodology / Version: ACM0006/ Version 04 Scope(s): 01 Technical area: 1.2.	
Registered PDD Version: Version 04, 02-07-2007 Registration Date: 14-09-2007 Starting Date of Crediting Period: 14-09-2007	Revised Monitoring Plan: Date of issuance: 10-06-2010 Version No.: NA
Assessment Team Leader: Bratin Roy Assessment Team Members: Sandeep Kanda Eswar Murty	Technical Reviewer Randig Sebastian Certification Body Responsible Cuiyun (Rachel) Zhang
Summary of the Validation Opinion: <input checked="" type="checkbox"/> The review of the revised monitoring plan and the subsequent follow-up interviews has provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the replacement of the monitoring plan of the registered PDD by the submitted revision. <input type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.	



Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
DG	Diesel Generator
EB	Executive Board
ER	Emission reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organization
NCV	Net Calorific Value
PDD	Project Design Document
TÜV SÜD	TÜV 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	ACM0006, Version 04
Other used Methodologies TOOLS	---
Registered PDD	http://cdm.unfccc.int/UserManagement/FileStorage/JNVZG887K7ZR_I8ACY9EU73G62JSL9J
Deviation Request Submitted to EB	http://cdm.unfccc.int/UserManagement/FileStorage/RRGIEHYBLNT_P5377OE6BJ1JUL30HZM
Deviation Request Accepted by EB	http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_BMI_BWXR1JX8TR83TSHBMAL4V0U981
UNFCCC weblink (project documentation)	http://cdm.unfccc.int/Projects/DB/SGS-UKL1179758404.75/view
VV Manual	http://cdm.unfccc.int/Reference/Manuals/accr_man01.pdf



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1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed revision of a monitoring plan against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is required in the context of proposed revisions of a registered CDM activity and will finally result in a conclusion by the executing DOE whether a revised monitoring plan is valid and should be submitted for replacing the previous version. The ultimate decision on the registration of a proposed revision rests at the CDM Executive Board.

The project activity discussed by this validation report is registered as CDM activity No. 1139 with the project title:

Bagasse based Cogeneration Project in Pudukottai, Tamil Nadu, India

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. The core requirements on revised monitoring plans are given by CDM Validation and Verification Manual, Version 01.1, as referred below:

The request for revising monitoring plan is made in cases where:

- a) If the monitoring plan is not in accordance with the monitoring methodology applied to the proposed CDM project activity, the DOE shall submit a request for revision of the monitoring plan before/prior to providing its verification conclusion or making its certification decision.*
- b) The DOE shall ensure that the level of accuracy and completeness in the monitoring and verification process will not be reduced as a result of the proposed revision.*
- c) The verification report shall determine whether and how the monitoring report reflects the application by the project participants of the approved guidance from the CDM Executive Board regarding the request for revision of the monitoring plan.*

The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the revised monitoring plan.

2 METHODOLOGY

The project assessment applies standard auditing techniques to assess the correctness of the information provided by the project participants. The assessment is based on the “Clean Development Mechanism Validation and Verification Manual” version 01. The work starts with appointment of team covering the technical scope(s), sectoral scope(s) and relevant host country experience for evaluating the CDM project activity. Once the revised monitoring plan is submitted by the project proponent, members of the team carry out the desk review, follow up actions, resolution of issues identified and finally preparation of validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB “climate and energy” before submission to the CDM-EB.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body “climate and energy”. The composition of an assessment team has to be approved by the Certification Body ensuring that the required skills are covered by the team. The Certification Body TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The validation team was consisting of the following experts (the responsible Assessment Team Leader is written in bold letters):

Name	Qualification	Coverage of sectoral scope	Coverage of technical area	Host country experience
Bratin Roy	ATL			<input checked="" type="checkbox"/>
Eswar Murty	----			<input checked="" type="checkbox"/>
Sandeep Kanda	GHG-A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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 7 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 received extensive training in the CDM and JI validation and verification processes and has already participated in several CDM/JI project assessments.

Eswar Murty in formal times was appointed as a GHG 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.

Sandeep Kanda is an 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 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.

2.2 Review of Documents

The revised Monitoring Plan version 01, dated 20th November 2009 (revised section B.7.1 and Annex 4 of the registered PDD) submitted by the PP and additional background documents related to further monitoring aspects were reviewed as initial step of the validation process.

2.3 Follow-up Interviews

Telephone conferences have been held with Mr.K.N.Radhakrishnan of EID Parry (India) Limited and assessment team (Mr. Bratin Roy and Mr. Eswar Murty) of TUV SUD South Asia in India discussing the revision of the monitoring plan of the registered PDD.

2.4 Internal Quality Control

As final step of a validation the validation report has to undergo an internal quality control procedure by the Certification Body “climate and energy”, i.e. each report has to be approved either by the head of the certification body or his deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one.

The decision whether a revised monitoring plan will be submitted for approval to the EB or not solely rests with the TÜV SÜD's Certification Body.

2.5 Further cross-check

During the validation process, the team makes reference to available information related to similar projects or technologies as the CDM project activity. The documentation has also been reviewed against the approved methodology/ies applied to confirm the appropriateness of formulae and correctness of calculations.

2.6 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarifications and any other outstanding issues which needed to be clarified for TÜV SÜD's conclusion on the project design. No CARs and CRs have been raised during the validation of the revised monitoring plan.

3 FINDINGS

The purpose of the project is the installation of a cogeneration system with high pressure boiler and a double extraction cum condensing turbine at EID Parry Limited.

The Project activity consists of boiler of capacity 100 tonnes per hour and the outlet pressure and temperature of the boiler are 86 kg/cm^2 and 510°C respectively. An 18 MW turbine was installed of extraction and condensing type. The turbine was supplied by BHEL. The incremental electricity generated is supplied to the TNEB grid.

Prior to the project activity, there were two boilers on site, one of which has a capacity of 51.5 tonnes per hour and operate at 17 kg/cm^2 and 280°C and the other one has a capacity of 29 tonnes per hour and operates at 17 kg/cm^2 and 280°C . There were two turbo generators of 2 MW and 2.5 MW to meet the process steam and electricity requirement of the sugar plant. All the pre project boilers and turbo generators do not operate in the project activity.

The project starting date as per PDD is 20th December 2004 and the fixed crediting period of 10 years started on 14th September 2007. The expected operational life time of the project activity is 25 years.

The project has been registered as a CDM activity on 14th September 2007 and has the reference No. 1139.

During the initial and first periodic verification TÜV SÜD has observed that the monitoring plan of the registered PDD was not inline with the one depicted in the approved methodology ACM0006 version-04.

As per the registered PDD, 'Net quantity of electricity generated in the project plant' ($\text{EG}_{\text{project plant},y}$) is to be metered directly. This is done by metering the gross electricity generation and auxiliary consumption and deducting the auxiliary consumption from the gross electricity generation. Accordingly deviation request¹ has been submitted to the CDM-EB on 10th September 2009 for this deviation in the monitoring plan. The EB has accepted this deviation² for the current monitoring period in its 50th meeting on 16th October 2009.

The monitoring plan is now revised by the PP which includes the measurement methods of the parameter $\text{EG}_{\text{project plant},y}$ as the difference between gross electricity generation and auxiliary consumption. This parameter is based on the two metered values and the same is cross checked with the invoices of electricity export and annual energy balance, which is as per the methodology ACM0006 version 04.

The parameters, 'Moisture content of biomass residues', 'On site electricity consumption attributable to the project activity' ($\text{EC}_{p,j,y}$), 'Quantity of fossil fuel type i combusted at the project site for other purposes' ($\text{FF}_{\text{project site},i,y}$), 'Net quantity of heat generated from firing biomass in the project plant' ($\text{Q}_{\text{project plant},y}$), which were not part of the registered monitoring plan are now included in the revised monitoring plan by the PP as per ACM0006 version 04. Quality Control

¹<http://cdm.unfccc.int/UserManagement/FileStorage/RRGIEHYBLNTP5377OE6BJ1JUL30HZM>

²http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_BMIBWXR1JX8TR83TSHBMAL4V0U981

(QC) and Quality Assurance (QA) procedures for these parameters are also mentioned explicitly in the revised monitoring plan.

Moisture content of biomass residues in terms of percentage of water content will be measured on site by using weights method. This parameter will be measured on daily basis and mean values would be calculated monthly.

EC_{P,J,y}- This parameter accounts for the electricity consumption during the project activity (excluding the import from grid and generation from DG sets which is included in the auxiliary consumption) and will be measured based on energy meter readings. This parameter will be measured continuously and would be cross checked with invoices for electricity export.

FF_{project site,i,y}- This parameter (in units of tonnes) accounts for the quantity of fossil fuel type *i* combusted at the project site for other purposes (transportation) that are attributable to the project activity will be measured on site by weight or volume meters. The measured value would be cross checked with annual fuel balance based on purchased quantities and stock changes. This parameter will be measured continuously.

Q_{project plant,y}- This parameter accounts for the net quantity of heat generated from firing biomass residues in the project plant is based on the on site measurements and will be determined by the difference of enthalpy of steam generated by the project plant and the enthalpy of feed water and condensate return. The steam flow, steam temperature and steam pressure together with feed water and condensate, will be continuously monitored using flow and online meters and cross checked with the annual fuel consumption.

In the parameters **AVD_y**, **BF_{k,y}**, **NCV_i**, **NCV_k**, **FF_{project plant,i,y}**, **EF_{km,CO2}** listed in the PDD as per the registered monitoring plan, the source of data and measurement methods are not clearly described as per the methodology ACM0006 version 04. The revised monitoring plan explicitly mentions the source and measurement methods for these parameters along with the QA and QC procedures. These are found to be in line with ACM0006 version 04.

In the registered PDD, source of data for the parameter **AVD_y** is mentioned as ‘Truck operator’ where as this has been clearly mentioned in the revised monitoring plan. The parameter is in compliance with ACM0006 version 04.

Similarly for the parameter **EF_{km,CO2}**, source of data has been given as ‘IPCC and Truck operator’. This has been explained in the revised monitoring plan to be in line with the definition of the applied methodology. The units for the fuel efficiency are **kms/litre**. The fuel consumption per distance travelled by the trucks (**tonnes/kms**) is calculated based on the product of the inverse of fuel efficiency and the density of fuel (**kg/litre**). Thus the product of fuel consumption per distance, emission factor of the fuel (**tCO₂/TJ**) and the net calorific value of the fuel (**GJ/tonne**) is done to arrive at the parameter ‘Average CO₂ emission factor for the trucks’ which has the units **tCO₂/km**. Hence the units of the parameter is in compliance with ACM0006 version 04.

FF_{project plant,i,y}- The description of the parameter and the measurement methods are not as per the methodology. The QA/QC procedures in the PDD mention “the consistency of metered fuel consumption quantities will be checked with purchase receipt”. This inconsistency is now clarified in the revised monitoring plan where the cross check is made with an annual energy balance based on purchased quantities and stock exchange and complies with the methodology.

For the parameters, **NCV_i** and **NCV_k**, the units mentioned as Kcal/kg are corrected as GJ/tonne in the revised monitoring plan, which is as per the methodology. Measurements for NCV would

be carried out in accredited laboratories once in every six months. The monitoring frequency of NCV analysis is now explicitly mentioned in the revised monitoring plan.

In the registered PDD, the measurement methods for the parameter **BF_{k,y}** (which is called BF_{y,i} in the PDD) are given as ‘monthly and annual mass energy balance in sugar plant’. It is actually measured by weight or volume meters as explained in the QA/QC procedures section of the PDD, which has been corrected in the revised monitoring plan. The measurement methods and monitoring frequency of quantity of biomass combusted in the project plant are clearly described in the revised monitoring plan.

The parameter **COEF_{CO2,I}** as per the PDD is now revised as **EF_{CO2,FF,I}** which is as per the methodology. The value adopted for this parameter would be based on IPCC default values of the type of fuel used in the project activity. This value would be compared with the national data and the most conservative value would be adopted for emission reductions. The appropriateness of this data would be reviewed annually by the PP. Hence the conservativeness of the value is justified and is in line with the methodology. The PP can be able to implement the revised monitoring plan which is in line with the approved methodology and the requirements of EB 49, Annex 28, paragraph (b).

The parameters, **EG_y**, **ε_{elprojectplant,y}** and **ε_{boiler}** which are not required as per the methodology and are not relevant to the project activity have been removed in the revised monitoring plan.

The parameter **TL_y** in the PDD is as per the methodology and the same has been included in the revised monitoring plan.

The revisions have been made in the Annex 4 of the registered PDD which are also included in the revised monitoring plan. These are listed below:

- The electricity monitoring diagram presents a detailed view of the energy meters used for measuring the gross generation, auxiliary consumption, export to the grid and the sugar plant. The electricity monitoring diagram has been verified by the audit team at the time of deviation request submission to EB, which was subsequently accepted by EB. (<http://cdm.unfccc.int/UserManagement/FileStorage/RRGIEHYBLNTP5377OE6BJ1JUL30HZM>)
- This diagram will ensure that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of this revision and hence in line with EB 49, Annex 28.
- The fuel monitoring diagram describes about the instruments used in the monitoring of bagasse received at the plant and bagasse combusted in the boiler. The description is in line with the registered monitoring plan. This diagram will ensure that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of this revision and hence in line with EB 49, Annex 28.
- The table providing the detailed monitoring procedures for each parameter has been updated for the parameters, **BF_{k,y}**, **BF_{i,y}**, **NCV_i**, **NCV_k** as described in B.7.1 of the revised monitoring plan. The instrument used for monitoring, calibration methods and frequency are updated for parameters **BF_{k,y}**, **BF_{i,y}** in accordance with the methodology requirements. The calibration methods and frequency are updated for parameters **NCV_i**, **NCV_k**. The calibration certificates and the plant log books are checked by the audit team to confirm that the revisions in the monitoring plan are in line with the methodology. This updation is the summary of the measurement methods, monitoring frequency and QA/QC procedures as specified in B.7.1 of the revised monitoring plan. Hence the level of accu-



- racy and completeness in the monitoring and verification process is not reduced as a result of this revision and hence in line with EB 49, Annex 28.
- The measures to check the data accuracy has been included in the revised monitoring plan to ensure the completeness and accuracy of monitoring plan. The information has been revised with respect to energy balance, calibration, internal audit processes, training and data uncertainty. These measures are also included under QA/QC procedures in B.7.1 of the revised monitoring plan. The internal audit records, training documents, calibration certificates and energy balance data are checked by audit team. The audit team confirms that this proposed revision is appropriate and the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of this revision and hence in line with EB 49, Annex 28.

The PP can be able to implement the revised monitoring plan and hence Annex 4 is in line with the requirements of EB 49, Annex 28, paragraphs (a) and (b).

To confirm the changes in above monitoring parameters in monitoring plan of the registered PDD, DOE has reviewed the project activity process documents and also done telephonic discussion with project proponent and reached the conclusion that the description in the revised monitoring plan seems to be acceptable. However, revised monitoring plan changes can be confirmed by DOE during subsequent site audit.

Based on the above it is confirmed that-

1. *The proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions*
2. *The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity*
3. *The findings of previous verification reports, if any, have been taken into account.*

4 VALIDATION OPINION

TÜV SÜD Industrie Service GmbH has performed a validation of the revised Monitoring Plan of CDM project 1139: **“Bagasse based Cogeneration Project in Pudukottai, Tamil Nadu, India”** of EID Parry (India) Limited.


The review of the revised monitoring plan and the subsequent follow-up interviews has provided TÜV SÜD with sufficient evidence to determine the fulfillment of all stated criteria. In our opinion, the revised monitoring plan meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD recommends the replacement of the monitoring plan of the registered PDD by the submitted revision.

Munich, 2010-06-10



Cuiyun (Rachel) Zhang
Deputy Head of Certification
Body “Climate and Energy”

India, 2010-06-10



Bratin Roy
Assessment Team Leader