

BUNDLED WIND ENERGY GENERATION PROJECTS IN GUJARAT, INDIA



SGS United Kingdom Limited

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Summary:

SGS United Kingdom Ltd has performed the verification of the project “Bundled wind energy generation projects in Gujarat, India” VCS Project ID: 412 against VCS Version 3.3. The verification includes confirming the implementation of the monitoring plan of the VCS Project Description version 04 dated 22/05/2007 and the application of the monitoring methodology as per ACM0002 version 6 dated 18/05/2006. A site visit was conducted to verify the data submitted in the monitoring report.

The project activity involves the installation of 75 WTGs with an installed capacity of 59.4 MW. The break-up of the 75 WTGs is as follows: 72 WTGs of 0.8 MW (E-48 Enercon) capacity each & 3 WTGs of 0.6 MW (E-40 Enercon). The generated electricity is being supplied to the Western Regional Grid. Thus, the project contributes towards reducing GHG emissions by replacing the same amount of electricity from the Western Regional Grid which would otherwise be generated by a fossil fuel based power plant.

The report describes a total of 03 findings which include:

- 03 Corrective Action Requests (CARs)
- 01 Clarification Requests (CLs)
- 00 Forward Action Requests (FARs)

All findings have been closed satisfactorily and same has been discussed in Annex 2 of this report.

SGS confirms that the project is implemented in accordance with the validated VCS Project Description. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and validated project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 102,311 tCO₂e emission reductions during period 01/08/2011 to 30/09/2012.

Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
CO ₂	Carbon dioxide
EB	Executive Board
EIL	Enercon India Limited
FAR	Forward Action Request
GEDA	Gujarat Energy Development Agency
GHG	Greenhouse Gases
GUVNL	Gujarat Urja Vikas Nigam Limited
ISO	International Standards Organization
MP	Monitoring Plan
MR	Monitoring Report
OM	Operating Margin
PD	Project Design
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS PD	VCS Project Description
VVS	Validation and Verification Standard
WTG/WEG	Wind Turbine Generator/Wind Energy Generator

Table of Contents

Table of Contents.....	4
1 Introduction.....	5
1.1 Objective.....	5
1.2 Scope and Criteria	5
1.3 Level of assurance.....	5
1.4 Summary Description of the Project.....	5
2 Validation Process, Findings and Conclusion.....	7
2.1 Validation Process	7
2.2 Validation Findings.....	7
2.2.1 Gap Validation.....	7
2.2.2 Methodology Deviations	7
2.2.3 Project Description Deviations.....	7
2.2.4 New Project Activity Instances.....	7
2.3 Validation Conclusion	7
3 Verification Process	8
3.1 Method and Criteria	8
3.2 Document Review	8
3.3 Interviews.....	8
3.4 Site Inspections.....	9
3.5 Resolution of Any Material Discrepancy.....	10
4 Verification Findings.....	10
4.1 Project Implementation Status	10
4.1.1 Implementation status of the project activity	10
4.1.2 Remaining Issues from Previous Validation or Verification	12
4.1.3 Compliance of the monitoring plan with the monitoring methodology	12
4.1.4 Implementation Status of the Monitoring Plan and Completeness of Monitoring	12
4.1.5 Accuracy of Equipment.....	13
4.1.6 Data from External Sources.....	14
4.2 Accuracy of GHG Emission Reduction or Removal Calculations.....	15
4.2.1 Accuracy of GHG Emission Reductions.....	15
4.2.2 Calculations of Emission Reductions	15
4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals.....	16
4.4 Management and Operational System.....	16
5 Verification conclusion.....	16
Annex 1: Document References.....	19
Annex 2: Overview of Findings.....	20
Annex 3: Team Members Statements of Competency.....	25

1 INTRODUCTION

1.1 Objective

SGS United Kingdom Ltd has been contracted by Enercon (India) Limited to perform an independent verification of its project “Bundled wind energy generation projects in Gujarat, India” (VCS Project ID 412) against VCS Version 3.3. The verifiers have reviewed the GHG data collected to date for the period between 01/08/2011 to 30/09/2012.

The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the project has resulted in emission reductions as declared by the organisation or GHG project’s GHG assertion;
- The data reported are accurate, complete, consistent, transparent and free of material error or omission

1.2 Scope and Criteria

This engagement covers verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of “Bundled wind energy generation projects in Gujarat, India” as per VCS PD Version 4 dated 22/05/2007.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project’s GHG emission reductions for the defined reporting period.

The verification 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 project design.

1.3 Level of assurance

The level of assurance of the verification report falls under reasonable assurance engagements as selected by the Client. Materiality for the project is 5%.

1.4 Summary Description of the Project

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	Bundled wind energy generation projects in Gujarat, India
VCS Project ID	412
Monitoring Period Covered in this Report	01/08/2011 to 30/09/2012 (both days included)

Project Participant(s)	Enercon (India) Limited
Location of the Project Activity:	Sites: Bamnasa; Jodhapar; Kuranga; Navadra; Okha Madhi & Satapar District: Jamnagar State: Gujarat Country: India

The project activity involves electricity generation by WTGs and supplying the same to the Western Regional Grid. This is the renewable energy generation, which can replace the fossil fuel dominated grid connected electricity generation.

The project activity consists of 75 WTGs with an installed capacity of 59.4 MW in the district of Jamnagar in Gujarat, India. The break-up of the 75 WTGs is as follows: 72 WTGs of 0.8 MW (E-48) capacity each & 3 WTGs of 0.6 MW each (E-40). Both the models (E-40 & E-48) have been sourced from Enercon. The WTGs have been commissioned between June 2004 and September 2006. The same has been verified through the commissioning certificates^{/8/}.

All 75 WTGs are fully functioning and the assessment team verified this during the site visit.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

This project activity is registered under the VCS Version 1. Thus it is concluded that all the rules and validation requirements set by VCS are already taken care at the time of VCS validation of the project activity under Version 1. Thus no further validation is required for the project activity. The PP has not applied for inclusion of this project activity to any other GHG programme and hence there is no double counting of emission reductions.

2.2 Validation Findings

2.2.1 Gap Validation

This project activity is registered only under the VCS. Hence, gap validation with reference to the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.2, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description template is not required.

2.2.2 Methodology Deviations

Not applicable as no methodological deviations are found.

The assessment team confirms that the monitoring plan is in accordance with the approved consolidated methodology ACM0002 version 6^{/2/} which was applied to the project activity and that the monitoring has been carried out in accordance with the monitoring plan. All the parameters used in the calculation of net electricity supplied to the Western Regional Grid by the project have been verified against the monitoring plan and found to be complete and correct.

2.2.3 Project Description Deviations

Not applicable as no project description deviations are observed. The assessment team confirms that the project has been implemented and equipment installed as described in the registered VCS PD^{/1/}.

2.2.4 New Project Activity Instances

Not applicable as no new project activity instances are included in the project activity during the current monitoring period. The assessment team confirms that the project has been implemented and equipment installed as described in the registered VCS PD^{/1/}.

2.3 Validation Conclusion

Since the project activity is registered under the VCS only, no further validation is required for the project activity. It is concluded that all the rules and validation requirements set by VCS are already taken care at the time of VCS validation of the project activity under Version 1.

3 VERIFICATION PROCESS

3.1 Method and Criteria

SGS' approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Verification checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report^{/5/} for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

3.2 Document Review

The validated & registered VCS PD^{/1/}; monitoring report^{/5/}; verification reports of the previous monitoring periods^{/3/} and additional supporting documents related to the project performance submitted by the client were reviewed. A complete list of all documents reviewed is mentioned in Annex 1 of this report.

3.3 Interviews

The site visit to the project location was conducted on 20th November 2012. During the site visit to the project location, personnel responsible for monitoring of the project activity, data collection and management, QA/QC procedure to be followed for the project activity were interviewed. Summary of the same is discussed in table as below:

Date	Name & Designation	Short Description of Subject Discussed
20/11/2012	Mr. Bhimbhai Kadegiya Service In-charge, EIL	• Project Implementation • Monitoring & Measuring System • Data collection and recoding • Data archiving system • Calibration of measuring Equipments • QA/QC procedures
20/11/2012 onwards (i.e. during the	Mr. Navneet Kumar Dy Manager, EIL	• Project implementation & boundary • Monitoring & Measuring System • Data collection and recoding

Date	Name & Designation	Short Description of Subject Discussed
site visit and after that, during the course of the verification)		• Data archiving system • Calibration of measuring Equipments • Operation and Maintenance procedures • VCS monitoring & Reporting documentation • Training procedures

3.4 Site Inspections

As part of the verification, the following on-site inspections have been performed by Sudeep Kodialbail (Lead Assessor, Local Assessor and Sectoral Expert).

Location: Jamnagar district	Date: 20/11/2012
Coverage	Source of Information / Persons Interviewed
Electricity Generation Records (GEDA share certificates, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Bhimbhai Kadegiya – Service In-charge, EIL
Monitoring and measuring system • Collection of measurements • Observations of established practices • Data Verification of monitoring parameters	Mr. Bhimbhai Kadegiya – Service In-charge, EIL Mr. Navneet Kumar – Dy Manager, EIL
QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations	Mr. Navneet Kumar – Dy Manager, EIL

3.5 Resolution of Any Material Discrepancy

As an outcome of the verification process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a Clarification Request (CL) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. The verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- II. The verification has identified misstatements in the reported emission reductions. Emission reductions with misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

FARs may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

Corrective Action Requests and Clarification Requests are detailed in Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

4.1.1 Implementation status of the project activity

The project has been implemented; all WTGs were commissioned and are in operation as described in the registered VCS PD^{/1/} Version 4 dated 22nd May 2007. The same has been checked and verified during the site visit. The first WTG has been commissioned on 30th June 2004 and the last one on 30th September 2006. The commissioning of all the WTGs have been cross checked against their commissioning certificates^{/8/}.

CAR #1 (point 1) - The MR Version 1.0 dated 26-October-2012^{/5/} submitted by the PP was prepared using the VCS MR template version 3.0; while the latest version of the MR template on the VCS website is version 3.2. The PP was requested to clarify the same. In response, the PP has submitted a revised MR^{/5/} prepared using the latest MR form v3.2 available on the VCS website. This has been checked and is accepted. Hence CAR #1 (point 1) was **closed** out.

CAR #1 (point 2) - In the MR Version 1.0 dated 26-October-2012^{/5/} submitted by the PP, the title page; sections 1.2; 1.3 and 1.8 was not been completed as per the guidelines for completing the MR version 3.2 mentioned in the template. In response, the PP has revised the title page; and sections 1.2; 1.3 and 1.8 of the MR. These sections have now been completed as per the guidelines for completing the MR Version 3.2 mentioned in the template. This has been checked and is accepted. Hence CAR #1 (point 2) was **closed** out.

CAR #1 (point 3) - The start date in section 1.5 of the MR Version 1.0 dated 26-October-2012^{/5/} has been mentioned as “29/01/2004 (Date of purchase order)”. As per the VCS, the start date is “The date on which the project began generating GHG emission reductions or removals” Considering this definition, the PP was requested to clarify if the mentioned start date is appropriate. In response, the PP has revised the start date of project activity to 30-June-2004 which is the date of commissioning of the 1st WTG (i.e. the first machine of Desai Textiles) of the project activity. This has been confirmed against the commissioning certificates^{/8/} and is found to be correct. Hence CAR #1 (point 3) was **closed** out.

The following points were also raised and discussed under CAR #1:

1. The commissioning date mentioned in section 1.1 of the MR was not complete. The PP was requested to clarify the same. In response, the PP has now mentioned the completed date of commissioning i.e. 30/06/2004 and 30/09/2006 in section 1.1 of the revised MR. This is correct and hence accepted.
2. The value of CER mentioned in Section 4.4 was inconsistent with other values in the MR. The PP was requested to clarify the same. In response, the PP has revised the value of ER in section 4.4 of the MR to 1,02,311 t CO₂; which is correct and consistent with the rest of the ER values in the MR. Hence accepted.

Hence CAR #1 was closed out. For details please refer CAR #1 under annex 2 of this report.

CL #2 - The crediting period for the project activity as per the validated VCS PD^{/1/} is from 1st June 2004 to 31st December 2006. The current monitoring period is from 1st August 2011 to 30th September 2012 which is outside the crediting period. The PP was requested to clarify the same. The VCS version 3.3^{/4/}, section 3.8 states that: “The project crediting period under VCS Version 1 shall be deemed as 10 years, and commences at the specific project crediting period start date.” Hence the crediting period of this project activity is considered to be from 1st June 2004 to 31st May 2014. Hence accepted and CL #2 **closed** out.

For detailed discussion on the findings please refer the findings document in Annex 2 of this report.

CAR #4 (point 1) - The number formatting throughout the MR does not use internationally recognized format. The PP was requested to clarify the same. In response, the PP has revised the number formatting in the MR using the internationally recognized format. This has been checked and is accepted. Hence CAR #4 (point 1) was **closed** out.

CAR #4 (point 2) – The page 24 of the MR was left blank. The PP was requested to clarify the same. In response the PP has now deleted the blank page, which is appropriate. Hence this was accepted and CAR #4 (point 2) was **closed** out.

4.1.2 Remaining Issues from Previous Validation or Verification

This is the fifth verification for the project activity. The validation report and previous verification reports have been checked to confirm that there are no pending issues.

4.1.3 Compliance of the monitoring plan with the monitoring methodology

The project has been registered with the “Consolidated methodology for grid-connected electricity generation from renewable resources” ACM0002 version 06^{/2/}. The assessment team verified the monitoring plan in the registered VCS PD^{/1/} against the applied methodology and confirms that the registered monitoring plan is in accordance with the approved methodology applied by the project activity.

Based on the requirements of paragraphs 229 to 232 of the VVS version 03.0^{/15/} the assessment team confirms that the monitoring plan in the registered PD^{/1/} is in compliance with the monitoring methodology.

4.1.4 Implementation Status of the Monitoring Plan and Completeness of Monitoring

The monitoring of the project activity is found to be in conformance with the monitoring methodology described in ACM0002 version 6^{/2/} and monitoring plan indicated in the registered VCS PD^{/1/} & the MR^{/5/}. The monitoring mechanism is effective and reliable. During the site visit, personnel involved at various levels of operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of the monitoring activities. The on-site verification of the plant records also substantiate consistency in recording and reporting of monitored data.

The required monitoring systems have been installed and are operational. The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity is found to be in accordance with the Wheeling and Banking Agreements^{/11/} signed for the project activity.

The supporting records of GEDA Share certificate^{/6/} for electricity produced by the wind farm issued by GEDA and invoices^{/7/} for the project activity were found to be sufficient to enable verification of emission reductions.

The parameter “Net electricity supplied to the grid by the Project (EGy)” has been verified for the calculation of emission reductions. EG_y has been considered as mentioned in the GEDA share certificates^{/6/} and the same calculated by the apportioning procedure mentioned in the monitoring report^{/5/}. The WTGs belonging to the project activity are connected to the State Grid Authority sub-stations through different feeders where other WTGs of other customers (not part of the project activity) are also connected. Thus, apportioning of the generated electricity by the project WTGs at grid interface is carried out to calculate electricity supplied by the project activity. The apportioning of electricity generated by project activity is entirely under jurisdiction of GUVNL and project participant has no role in computing and furnishing the apportioned electricity for themselves.

This parameter is used for the emission reduction calculations. Further, this parameter has been cross verified against the invoices raised by the PP and found correct, hence accepted. The value of this parameter for the current monitoring period is 108,816.686 MWh.

CAR #3 (point 1) - In the sheet titled “Elect Generation”; the values mentioned in cells K3 and O26 are inconsistent with the values observed in the corresponding GEDA share certificate. The PP was requested to

clarify the same. In response, the PP has submitted a revised ER sheet^{/9/}. The values now mentioned in cells K3 and O26 of “Elect Generation” worksheet are now consistent with the GEDA share certificate. Hence accepted and CAR #3 (point 1) was **closed** out.

CAR #3 (point 2) - In the sheet titled “Elect Generation”; the decimal places of the values in columns W and X are inconsistent. In response, the PP has submitted a revised ER sheet^{/9/}. The decimal places of the values in columns W and X of “Elect Generation” worksheet have been made consistent. Hence accepted and CAR #3 (point 2) was **closed** out.

CAR #3 (point 3) - In the sheet titled “Elect Generation” in cell C12; the PP has commented that the “Name of Company changed to Surbhi Textile Mills Pvt Ltd, Surat w.e.f. August, 2010.” The PP was requested to substantiate the same with evidence and clarify why the new name is not being used in the excel sheet. In revised ER sheet^{/9/}, submitted by the PP, the cell C12 of “Elect Generation” worksheet has been revised as to Surbhi Textile Mills Pvt Ltd, Surat w.e.f. August, 2010. The PP has submitted the letter^{/14/} of amalgamation of M/s Indo Fashions Pvt. Ltd. with Surbhi Textile Mills Pvt Ltd. This has been checked and is accepted. Hence CAR #3 (point 3) was **closed** out.

The following points related to the spreadsheet were also raised and discussed under CAR #3:

1. The PP was requested to transparently clarify the period indicated when referring to the month like Aug-11, Dec-11, etc. In response the PP has clarified in section 5 of the revised MR that the month referred to in the excel spreadsheet refers to the period from the first to the last day of that particular month. This is correct and clarifies the period referred in the excel spreadsheet. Hence accepted and closed out.
2. It is observed that CM is calculated using OM & BM, but the spreadsheet sheet does not show the calculations of the same. The PP was requested to clarify the same. In response, the PP has now inserted the calculation of CM in sub-sheet ‘Baseline Emission Factor’ of the excel spreadsheet. The calculations are correct and consistent with the calculations indicated in annex 1 of the MR. Hence accepted and closed out.

Hence CAR #3 was closed out. For details please refer CAR #3 under annex 2 of this report.

4.1.5 Accuracy of Equipment

During the verification assessment of the project activity, accuracy and calibration of all the metering have been checked through the calibration certificates^{/12/} and found appropriate. The details of monitoring equipments involved in the project activity and their calibration details are mentioned in below table.

Substation	Meter Serial No	Accuracy Class	Calibration prior to monitoring period	Calibration Validity
Bhogat	GJB 00486	0.5%	23-Nov-2010	22-Nov-2013
	GJU 07452	0.2%	23-Nov-2010	22-Nov-2013
Navadra	GJB 00267	0.5%	29-May-2010	28-May-2013
	GJB 00269	0.5%	29-May-2010	28-May-2013

The installation and working conditions of the meters were checked during the site visit for the project activity and it was found to be satisfactory. It is also evident from the above table that calibrations for all monitoring

equipment involved in the project activity are valid for current monitoring period and there is no delay in calibration. The Gazette of India (Registered NO. DL (N) – 04/0007/2003 – 15) dated 26/07/2010 which is a gazette for metering regulations in India clearly mentions that for voltage of 650 V up to 33 kV, 0.5s and better is recommended. Hence, the accuracy classes of 0.5s and 0.2s of energy meters installed at sites are found to be appropriate and it is accepted.

CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006 which is considered as national standard mentions that “All interface meters shall be tested at least once in five years.” Hence, the calibration frequency of 3 years for the meters is appropriate. The calibration frequency was checked from the letter issued by GUVNL^{/13/}.

CAR #1 (point 4) - The PP was requested to submit evidence to substantiate the calibration validity dates of 29th May 2013 and 23rd November 2013 mentioned in the table in section 3.3 of the MR. In response, the PP has submitted the letter from GUVNL dated 10 February 2010^{/13/}. It was confirmed from this letter that the calibration frequency of the meters is 3 years. As per the CEA regulations, Ministry of Power, Govt. of India the meters need to be calibrated once in 5 years. Hence the calibration frequency of 3 years is appropriate and accepted. Hence CAR #1 (point 4) was **closed** out.

CAR #1 (point 5) - During the site visit to the Bhogat sub-station, the accuracy class of the meter with serial no. GJU 07452 was observed to be 0.2%. The same has been mentioned as 0.5% in the table in section 3.3 of the MR^{/5/}. In response, the PP has corrected the accuracy class of the meter with serial no. GJU 07452 to 0.2%, in the table in section 3.3 of the MR^{/5/}. This has been checked and is accepted. Hence CAR #1 (point 5) was **closed** out.

As per Para 234 c), VVS, version 3.0^{/15/}, the verification team is able to confirm that the accuracy of equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board and it is controlled and calibrated in accordance with the monitoring plan;

- (i) Monitoring results are consistently recorded as per approved frequency;
- (ii) Quality assurance and quality control procedures have been applied in accordance with the monitoring plan.

4.1.6 Data from External Sources

The PP has calculated the grid emission factor as per the combined margin approach described in the ‘Tool to calculate the emission factor for an electricity system’. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM have been obtained from a publicly available source i.e. “CO2 Baseline Database for Indian Power sector” version 1.1^{/10/} published by Central Electricity Authority, Ministry of Power, Government of India. The OM has been determined as the average of the previous 3 years values mentioned in the CEA database. The value of BM has been identified directly from the CEA database^{/10/}. The combined margin emission factor has been arrived at by applying weights of 75% for OM and 25% for BM, as specified in the tool.

The OM and BM have been calculated to be 0.9945 tCO2/MWh and 0.7772 tCO2/MWh respectively. Applying the weights, the grid emission factor has been calculated to be 0.94022 tCO2/MWh.

The PP has referred to the correct version of the CEA database^{/10/} to obtain the value of grid emission factor. The values have been checked against the database and found to be correct. Also, the calculation of the emission factor is in line with that mentioned in the registered VCS PD^{/11/} and the applied methodology^{/2/}.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

4.2.1 Accuracy of GHG Emission Reductions

The calculation of the emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 4.2.2 of this report, 'Calculation of Emission Reductions'.

The net electricity supplied to grid by the project activity is used for the emission reduction calculations. The project participant has provided a complete set of data for the current monitoring period. The values of parameters reported in the ER spreadsheet^{/9/} by the PP and the same were checked and confirmed with the same mentioned in the GEDA Share certificate^{/6/} of electricity. The values are found to be consistent and accurate.

The formula and method used to calculate the baseline emissions are appropriate. Since the project is a wind power generation project, project emissions and leakage emissions are not involved in the project activity. This is found to be in line with the approved methodology ACM0002 version 6^{/2/} and as defined in the registered VCS PD^{/11/}.

4.2.2 Calculations of Emission Reductions

Parameter	Reported Value Version 1.0	Verified Value Version 1.4
Net electricity supplied to the grid by the Project (EGy) MWh	Not Available	108,816.686
Operating Margin Emission Factor of Western Regional Electricity Grid (EF _{OM,y}) (t CO ₂ /MWh)	0.9945	0.9945
Build Margin Emission Factor of Western Regional Electricity Grid (EF _{BM,y}) (t CO ₂ /MWh)	0.7772	0.7772
Combined Margin Emission Factor of Western Regional Electricity Grid (EF _{CM,y}) (t CO ₂ /MWh)	0.94022	0.94022

Grid emission factor is determined ex-ante and fixed throughout the crediting period. The emission reduction is calculated as follows:

$$\begin{aligned}\text{Baseline emission} &= \text{EGy, net (MWh)} \times \text{EF}_{\text{CM,y}} (\text{tCO}_2\text{e /MWh}) \\ &= 108,816.686 \times 0.94022 \\ &= 102,311 \text{ t CO}_2\text{e}\end{aligned}$$

The above value of baseline emission have been rounded down for conservativeness. As per methodology, leakage emissions and project emissions are zero. Thus emission reductions are calculated as follow:

$$\begin{aligned}\text{Emission reductions} &= \text{Baseline emissions} - \text{Project emissions} - \text{Leakage emissions} \\ &= 102,311 - 0 - 0 \\ &= 102,311 \text{ t CO}_2\text{e}\end{aligned}$$

Vintage-wise VERS

Vintage	VERs (tCO ₂ e)
2011 (01/08/2011 to 31/12/2011)	28,328
2012 (01/01/2012 to 30/09/2012)	73,983
Total	102,311

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Critical parameters used for the determination of the Emission Reductions are discussed in section 4.1.4 above. All the data recorded is in compliance with the monitoring report.

4.4 Management and Operational System

The operations, maintenance and monitoring of the project activity is being carried out by the WTG supplier, Enercon whose operation and maintenance activities are ISO certified. Hence it can be confirmed that the management system of the VCS project is in place; with the responsibilities properly identified.

5 VERIFICATION CONCLUSION

The scope of the verification

SGS have been engaged by Enercon (India) Limited to certify that the greenhouse gas (GHG) emission reductions reported for the “Bundled wind energy generation projects in Gujarat, India” (VCS Project ID 412) for the period from 01/08/2011 up to 30/09/2012 in the monitoring report version 1.4 dated 21/02/2013 are eligible for issuance as Verified Carbon Units.

This engagement covers the verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the “Bundled wind energy generation projects in Gujarat, India”, (VCS Project ID 412).

The verification 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 project design.

Conclusions of the verification

(a) SGS is an entity accredited by the United Nations Framework Convention on Climate Change (UNFCCC) to undertake certification and verification services in the sector in which the Project is undertaken. The accreditation is accepted by VCSA as indicated in Clause 5 of VCS Program Guide Version 3.4.

(b) The monitoring report, together with other information examined, was prepared as per the VCS Monitoring Report Template, Version 3.2.

(c) The information in the monitoring report together with other information examined by the assessment team, including all the information necessary to determine that the emission reductions achieved have been determined correctly.

(d) Based on the examination of the monitoring report and other relevant information, the project meets all the requirements of the VCS Version 3.3.

(e) Based on our examination of the monitoring report and other relevant information, the claiming emission reductions during the monitoring period from 01/08/2011 up to 30/09/2012 are verified as 102,311 t CO₂ equivalent.

Liability statement with regards to the accuracy of the verification statement

The management of Enercon (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions. SGS is responsible for verification and confirming emission estimates for the project, as described in the monitoring report.

Our certification approach draws on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes an assessment of evidence, through desk review, and where necessary, interviews, stakeholder discussions and site visits, relevant to certifying the rightfulness of the amounts and disclosures in relation to the Project's GHG emission reductions.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the monitoring report, are fairly stated.

This assessment included:

- Collection of evidence supporting the reported data;
- Checking whether the provisions of the Monitoring Plan in the registered VCS PD, were consistently and appropriately applied;
- Site visit and interview of relevant staff.

We have verified whether the information included in the monitoring report representing the emission reductions achieved has been determined correctly for the given period from the baseline figure.

Certification statements

Based on process and procedures conducted, in our opinion, the monitoring report version 1.4 dated 21/02/2013 on emission reductions for “Bundled wind energy generation projects in Gujarat, India” during the reporting period from 01/08/2011 up to 30/09/2012 is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. All relevant facts have been found correct by our examination. The GHG emission reductions calculation is correct.

Therefore, SGS is able to certify that the project is in full compliance with the VCS Version 3.3, and the quantity of the reported emission reductions during below reporting period are completely, comparably, accurately and correctly reported.

(1) Reporting period: From 01/08/2011 up to 30/09/2012

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO ₂ e
Baseline Emissions	102,311
Project Emissions	0
Leakage	0
Net GHG emission reductions or removals	102,311

Statement of Confidentiality

SGS will hold all information confidential until the client instructs otherwise or until it has been released in accordance with the VCS Version 3.3 requirements.

Signed on behalf of the Verification Body by Authorized Signatory

SGS United Kingdom Limited

Dated: 22/02/2013

-22/02/2013

Signature:

Signature:

Kodialbail SR

Shivaji Chakraborty

Lead Assessor

Technical Reviewer

Sudeep Kodialbail

Shivaji Chakraborty

ANNEX 1: DOCUMENT REFERENCES

/1/	VCS PD Version 4 dated 22/05/2007
/2/	Approved Consolidated Methodology ACM0002, version 6 dated 18/05/2006
/3/	Previous Verification reports • 1st Verification - Period from 01/06/2004 to 31/12/2006 Report No. 46072030 dated 21/05/2007 issued by DNV • 2nd Verification - Period from 01/01/2007 to 25/07/2009 Report No. 8106140555-09/460 dated 05/01/2010 issued by TUV NORD • 3rd Verification - Period from 01/08/2009 to 30/06/2010 Report No. CCP.VOL0824 dated 03/06/2011 issued by SGS • 4th Verification – Period from 01/07/2010 to 31/07/2011 Report No. VCS.11.VER.0010 dated 11/01/2012 issued by KBS certification services
/4/	VCS Version 3.3 at http://www.v-c-s.org/
/5/	Monitoring Report • Version 1.0 dated 26/10/2012 • Version 1.1 dated 07/12/2012 • Version 1.2 dated 29/01/2013 • Version 1.3 dated 13/02/2013 • Version 1.4 dated 21/02/2013
/6/	Share certificate for electricity produced by wind farm issued by GEDA (monthly, for the entire monitoring period)
/7/	Invoices for the project activity (monthly, for the entire monitoring period)
/8/	Commissioning Certificates (for all 75 WTGs)
/9/	Excel spreadsheet for Emission Reduction Calculations • Version 1.0 dated 26/10/2012 • Version 1.1 dated 07/12/2012 • Version 1.2 dated 13/02/2013
/10/	CEA data for emission factor - Version 1.1
/11/	Wheeling and Banking Agreements for the project activity (for all 34 customers)
/12/	Test / Calibration Certificates of the sub-station meters
/13/	Letter dated 10/02/2010 issued by GUVNL
/14/	Letter dated 30/07/2010 issued by Indo Fashions Pvt Ltd.
/15/	CDM Validation and Verification Standard, version 3.0

ANNEX 2: OVERVIEW OF FINDINGS

	CARs	CLs	FARs
Total Number raised	3	1	-

Date:	30/11/2012		Raised by:	Assessment Team	
Type:	CAR	Number:	#1	Reference:	Checklist
Lead Assessor Comment:				Date: 30/11/2012	
- The MR Version 1.0 dated 26-October-2012 submitted by the PP has been prepared using the VCS MR template version 3.0; while the latest version of the MR template on the VCS website is version 3.2. - In the MR Version 1.0 dated 26-October-2012 submitted by the PP, the title page; sections 1.2; 1.3 and 1.8 have not been completed as per the guidelines for completing the MR version 3.2 mentioned in the template. - The start date in section 1.5 of the MR Version 1.0 dated 26-October-2012 has been mentioned as "29/01/2004 (Date of purchase order)". As per the VCS, the start date is "The date on which the project began generating GHG emission reductions or removals" Considering this definition, PP is requested to clarify if the mentioned start date is appropriate. - PP is requested to submit evidence to substantiate the calibration validity dates of 29th May 2013 and 23rd November 2013 mentioned in the table in section 3.3 of the MR. - During the site visit to the Bhogat sub-station, the accuracy class of the meter with serial no. GJU 07452 was observed to be 0.2%. The same has been mentioned as 0.5% in the table in section 3.3 of the MR.					
Project Participant Response:				Date: 07/12/2012	
- The MR has been revised as per latest MR template version 3.2 downloaded from VCS website. - The title page, sections 1.2, 1.3 and 1.8 of MR have been revised as per the guidelines for completing the MR version 3.2 mentioned in the template. - As per the Guidance provided regarding start date of project activity, first machine of Desai Textiles under the bundled project activity was commissioned on 30 June 2004. Accordingly PP has revised section 1.5 of the MR Version 1.1. - The Gujarat Urja Vikas Nigam Limited (GUVNL), an electrical services umbrella company in the state of Gujarat has issued guidelines on 10 February 2010 with regard to meter calibration once in a period of 3 years. The evidence to substantiate the calibration/testing validity dates as 28th May 2013 and 22nd November 2013 mentioned in the table in section 3.3 of the MR has been provided to DOE. - Section 3.3 of the MR has been revised as per observation during the site visit of Bhogat sub-station. The accuracy class of the meter with serial no. GJU 07452 has been revised as 0.2%.					
Documentation Provided as Evidence by Project Participant:					
MR ver 1.1 Letter from GUVNL dated 10 February 2010					
Information Verified by Lead Assessor:					
The revised MR version 1.1 dated 7 th December 2012 has been checked for the revisions made by the PP. Letter dated 10/02/2010 issued by GUVNL to GETCO					
Reasoning for not Acceptance or Acceptance and Close Out:					

1. The revised MR submitted by the PP has been prepared using the latest MR form v3.2 available on the VCS website. Hence accepted and closed out. 2. In the revised MR submitted by the PP, sections 1.2; 1.3 and 1.8 have now been completed as per the guidelines for completing the MR Version 3.2 mentioned in the template. This has been checked and is accepted. The title page of the MR has not been completed as per the guidelines for completing the box on title page as mentioned in the guidelines for completing the MR Version 3.2 states that "All items in the box at the bottom of the title page must be completed using Arial 10pt, black, regular (non-italic) font." The box on the title page of the MR submitted by the PP is inconsistent with this guideline. PP is also requested to check the formatting of the MR with reference to the MR form template published on the VCS website. Hence open. 3. The PP has revised the start date of project activity to 30-June-2004 which is the date of commissioning of the 1st WTG (i.e. the first machine of Desai Textiles) of the project activity. This has been confirmed against the commissioning certificates and is found to be correct. Hence accepted. 4. The PP has submitted the letter from GUVNL dated 10 February 2010. It is confirmed that the calibration frequency of the meters is 3 years. As per the CEA regulations, Ministry of Power, Govt. of India the meters need to be calibrated once is 5 years. Hence the calibration frequency of 3 years is appropriate and accepted. 5. The PP has corrected the accuracy class of the meter with serial no. GJU 07452 to 0.2%, in the table in section 3.3 of the MR. This has been checked and is accepted. CAR #1 is open	
Acceptance and Close out by Lead Assessor: Open	Date: 28/01/2013
Project Participant Response:	Date: 29/01/2013
In accordance with guidelines for completing the MR Version 3.2, the box on title page of the MR has been revised using Arial 10pt, black, regular (non-italic) font. The formatting of MR has also been revised as per latest MR template published on the VCS website.	
Documentation Provided as Evidence by Project Participant:	
MR ver 1.2	
Information Verified by Lead Assessor:	
The revised MR version 1.2 dated 29/01/2013 has been checked for the revisions made by the PP.	
Reasoning for not Acceptance or Acceptance and Close Out:	
The PP has revised the formatting of the MR to make it consistent with the formatting of the MR form template on the VCS website. Hence accepted and closed out on 29/01/2013. The PP was requested to address the following comments on 13/02/2013, raised during the TR stage: 1. The commissioning date mentioned in section 1.1 of the MR is not complete. Please clarify. 2. Value of CER mentioned in Section 4.4 is inconsistent with other values in the MR. Please clarify.	
Project Participant Response:	Date: 13/02/2013
The first machine under the bundled project activity was commissioned on 30 June 2004. Therefore the section 1.1 of the MR has been revised accordingly. The value of CER mentioned in Section 4.4 has been revised as 1,02,311 which is inconsistent with other values in the MR.	
Documentation Provided as Evidence by Project Participant:	
412 MR ver 1.3 track	
Information Verified by Lead Assessor:	
The revised MR Version 1.3 dated 13/02/2013 has been checked for the revisions made by the PP.	
Reasoning for not Acceptance or Acceptance and Close Out:	

1. The PP has now mentioned the completed date of commissioning i.e. 30/06/2004 and 30/09/2006 in section 1.1 of the MR. This is correct and hence accepted.
2. The PP has revised the value of ER in section 4.4 of the MR to 1,02,311 t CO ₂ ; which is correct and consistent with the rest of the ER values in the MR. Hence accepted.
Hence CAR #1 closed out
Acceptance and Close out by Lead Assessor: Closed
Date: 13/02/2013

Date:	30/11/2012	Raised by:	Assessment Team		
Type:	CL	Number:	#2	Reference:	Checklist
Lead Assessor Comment:				Date: 30/11/2012	
The crediting period for the project activity as per the validated VCS PD is from 1 st June 2004 to 31 st December 2006. The current monitoring period is from 1 st August 2011 to 30 th September 2012 which is outside the crediting period. PP is requested to clarify the same.					
Project Participant Response:				Date: 07/12/2012	
The project activity has been validated and first verification has been conducted for the period of 01/06/2004 to 31/12/2006 under VCS version 1. PP mentioned the crediting period based on the monitoring period in the absence of proper guidelines of VCS Board. However, PP selected fix crediting period of 10 years for the project activity from 1 June 2004 to 31May 2014.					
Documentation Provided as Evidence by Project Participant:					
NA					
Information Verified by Lead Assessor:					
The above mentioned PP response has been reviewed against the VCS version 1 and the latest version 3.3.					
Reasoning for not Acceptance or Acceptance and Close Out:					
The VCS version 3.3, section 3.8 states that: “The project crediting period under VCS Version 1 shall be deemed as 10 years, and commences at the specific project crediting period start date.” Hence the crediting period of this project activity is considered to be from 1 st June 2004 to 31 st May 2014. Hence accepted and closed out.					
CL #2 closed out.					
Acceptance and Close out by Lead Assessor: Closed				Date: 28/01/2013	

Date:	30/11/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	#3	Reference:	ER spreadsheet
Lead Assessor Comment:				Date: 30/11/2012	
Emission reduction spreadsheet					
1. In the sheet titled “Elect Generation”; the values mentioned in cells K3 and O26 are inconsistent with the values observed in the corresponding certificate for share of electricity. Please clarify.					
2. In the sheet titled “Elect Generation”; the decimal places of the values in columns W and X are inconsistent.					
3. In the sheet titled “Elect Generation” in cell C12; the PP has commented that the “Name of Company changed to Surbhi Textile Mills Pvt Ltd, Surat w.e.f. August, 2010.” PP is requested to substantiate the same with evidence and clarify why the new name is not being used in the excel sheet.					
Project Participant Response:				Date: 07/12/2012	

1. In revised Emission reduction spreadsheet version 1.1, the values mentioned in cells K3 and O26 of "Elect Generation" worksheet has been revised in accordance with certificate for share of electricity. 2. In revised Emission reduction spreadsheet version 1.1, the decimal places of the values in columns W and X of "Elect Generation" worksheet has been revised accordingly. 3. In revised Emission reduction spreadsheet version 1.1, the cell C12 of "Elect Generation" worksheet has been revised as to Surbhi Textile Mills Pvt Ltd, Surat w.e.f. August, 2010. The evidence of amalgamation of M/s Indo Fashions Pvt. Ltd. with Surbhi Textile Mills Pvt Ltd. is attached.	
Documentation Provided as Evidence by Project Participant:	
ER sheet ver 1.1 Letter of amalgamation of Surbhi Textile Mills Pvt Ltd, Surat	
Information Verified by Lead Assessor:	
The revised excel spreadsheet version 1.1 dated 7 th December 2012 has been checked for the revisions made by the PP. Letter of amalgamation has been checked	
Reasoning for not Acceptance or Acceptance and Close Out:	
1. In the revised ER sheet, the values mentioned in cells K3 and O26 of "Elect Generation" worksheet are now consistent with the certificate for share of electricity. Hence accepted and closed out. 2. In revised ER sheet, the decimal places of the values in columns W and X of "Elect Generation" worksheet have been made consistent. Hence accepted and closed out. 3. In revised ER sheet, the cell C12 of "Elect Generation" worksheet has been revised as to Surbhi Textile Mills Pvt Ltd, Surat w.e.f. August, 2010. The PP has submitted the letter of amalgamation of M/s Indo Fashions Pvt. Ltd. with Surbhi Textile Mills Pvt Ltd. This has been checked and is accepted. CAR #3 is closed out on 28/01/2013. The PP was requested to address the following comments on 13/02/2013, raised during the TR stage: 1. Sub-Sheet_electricity generation: PP is requested to transparently clarify the period indicated when referring to the month like Aug-11, Dec-11, etc 2. Sub-Sheet _ Baseline Emission Factor: Combine margin (CM) is calculated using OM & BM, but CER sheet does not show the calculations. Please clarify.	
Project Participant Response:	Date: 13/02/2013
1. In electricity generation worksheet of emission reduction spread sheet, PP has referred months like Aug-11, Dec-11, etc. in spreadsheet. These names of months indicate a period from first day to last day of each respective month. The same has been mentioned in section 5 of revised MR. 2. In Baseline Emission Factor worksheet of emission reduction spread sheet, the calculation of Combine margin (CM) is presented in revised emission reduction spread sheet version 1.2	
Documentation Provided as Evidence by Project Participant:	
412 ER Sheet ver 1.2	
Information Verified by Lead Assessor:	
The MR Version 1.3 dated 13/02/2013 and ER sheet version 1.2 dated 13/02/2013 has been checked for the revisions made by the PP.	
Reasoning for not Acceptance or Acceptance and Close Out:	
1. The PP has clarified in section 5 of the revised MR that the month referred to in the excel spreadsheet refers to the period from the first to the last day of that particular month. This clarifies the period referred in the excel spreadsheet. Hence accepted and closed out. 2. The PP has now inserted the calculation of CM in sub-sheet 'Baseline Emission Factor' of the excel spreadsheet. The calculations are correct and consistent with the calculations indicated in annex 1 of the MR. Hence accepted and closed out. Hence CAR #3 is closed out	
Acceptance and Close out by Lead Assessor: Closed	Date: 13/02/2013

Date:	21/02/2013		Raised by:	Assessment Team	
Type:	CAR	Number:	#4	Reference:	Completeness Check Comments
Lead Assessor Comment:				Date: 21/02/2013	
1. The number formatting throughout the MR does not use internationally recognized format. Please clarify. 2. Page 24 of the MR has been left blank. Please clarify.					
Project Participant Response:				Date: 21/02/2013	
1. The number formatting throughout the revised MR has been revised in accordance with internationally recognized format. 2. Blank page 24 of the revised MR has been deleted.					
Documentation Provided as Evidence by Project Participant:					
412 MR ver 1.4 track					
Information Verified by Lead Assessor:					
The revised MR version 1.4 dated 21/02/2013 has been checked for the revisions made by the PP					
Reasoning for not Acceptance or Acceptance and Close Out:					
1. The number formatting throughout the MR now uses internationally recognized format. This has been checked and is accepted. Hence closed out. 2. The PP has now deleted the blank page 24 of the MR. This is appropriate and hence accepted. CAR #4 closed out.					
Acceptance and Close out by Lead Assessor:				Date: 22/02/2013	

ANNEX 3: TEAM MEMBERS STATEMENTS OF COMPETENCY

Name: Sudeep Kodialbail

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)

x

Technical Area(s): TA 1.2 Energy generation from renewable energy sources

2. Energy Distribution

Technical Area(s):

3. Energy Demand

Technical Area(s):

4. Manufacturing

Technical Area(s):

5. Chemical Industry

Technical Area(s):

6. Construction

Technical Area(s):

7. Transport

Technical Area(s):

8. Mining/Mineral Production

Technical Area(s):

9. Metal Production

Technical Area(s):

10. Fugitive Emissions from Fuels (solid, oil and gas)

Technical Area(s):

11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride

Technical Area(s):

12. Solvent Use

Technical Area(s):

13. Waste Handling and Disposal

Technical Area(s):

14. Afforestation and Reforestation

Technical Area(s):

15. Agriculture

Technical Area(s):

Approved Member of Staff by:

Siddharth
Yadav

Date:

06/02/2012

Name: Ravi Kant
Soni

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 12/10/2012

Name: Shivaji Chakraborty

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. **Energy Industries (renewable / non-renewable)** X

Technical Area(s):

TA 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar

TA 1.2 Energy generation from renewable energy sources

2. **Energy Distribution** X

Technical Area(s): TA 2.1 Electricity distribution

TA 2.2 Heat distribution

3. **Energy Demand** x

Technical Area(s): TA 3.1 Energy Demand

4. **Manufacturing**

Technical Area(s):

5. **Chemical Industry**

Technical Area(s):

6. **Construction**

Technical Area(s):

7. **Transport**

Technical Area(s):

8. **Mining/Mineral Production**

Technical Area(s):

9. **Metal Production**

Technical Area(s):

10. **Fugitive Emissions from Fuels (solid, oil and gas)**

Technical Area(s):

11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**

Technical Area(s):

12. **Solvent Use**

Technical Area(s):

13. **Waste Handling and Disposal**

Technical Area(s):

14. **Afforestation and Reforestation**

Technical Area(s):

15. **Agriculture**

Technical Area(s):

Approved Member of Staff by: Siddharth Yadav Date: 19/09/2012