VERIFICATION / CERTIFICATION REPORT

"BUNDLED WIND POWER PROJECT IN TAMILNADU, INDIA COORDINATED BY TAMILNADU SPINNING MILLS ASSOCIATION (TASMA)

UNFCCC REFERENCE NO. 991

MONITORING PERIOD
01 January 2007 to 31 December 2007

REPORT NO. 2008-2062 -I
REVISION NO. 02

DET NORSKE VERITAS

VERIFICATION / CERTIFICATION REPORT

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Approved by:	Organisational unit: Climate Change Services
Client: Tamil Nadu Spinning Mills Association(TASMA)	Client ref.: Mr.Venkatachalam,

DET NORSKE VERITAS CERTIFICATION AS

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Summary:

Det Norske Veritas Certification AS (DNV) has performed a verification of the emission reductions reported for the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" (Registration Ref. No. 991) for the period 01 January 2007 to 31 December 2007.

In our opinion, the GHG emissions reductions reported for the project in the monitoring report of 18 December 2008 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the consolidated baseline and monitoring methodology ACM0002, version 6, the registered PDD of 01 March 2007 and the revised monitoring plan approved on 14 July 2008. During the course of verification, DNV identified three corrective action requests which have been closed by DNV following appropriate clarifications by TASMA.

Hence, Det Norske Veritas Certification AS is able to certify that the emission reductions from the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" for the period 01 January 2007 to 31 December 2007 amount to 862 742 tCO_2 equivalent.

Report No.: 2008-2062-I	Subject Group: Climate Change	
Report title: Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA).		
Work carried out by: Ramesh Ramachandran, Murali Govindarajulu, Ravandur Sathish Nikesh, Michael Lehmann		
Work verified by: Chandrashekara Kumaraswamy		
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HTSC No.	High Tension Service Connection Numbers
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
TASMA	Tamilnadu Spinning Mills Association
TNEB	Tamil Nadu Electricity Board
UNFCCC	United Nations Framework Convention for Climate Change
WBCDCF	World Community development carbon fund
WEG	Wind Energy Generator

1 INTRODUCTION

Tamil Nadu Spinning Mills Association(TASMA) has commissioned Det Norske Veritas Certification AS (DNV) to carry out the verification of emission reductions reported for the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" for the period 01 January 2007 to 31 December 2007. This report contains the findings from the verification and a certification statement for the certified emission reductions. This revised verification report has been prepared to address the clarifications required by the CDM Executive Board as part of the request for review of the initial request for issuance.

1.1 Objective

Verification is the periodic independent review and ex-post determination by the Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined verification period.

Certification is the written assurance by the DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

1.2 Scope

The verification scope was:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan for the project activity,
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement,
- To verify that the reported GHG emission data is sufficiently supported by evidence

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The verification team has, based on the recommendations in the Validation and Verification Manual /5/, employed a risk based approach, focussing on the identification of significant reporting risks and verifying the mitigation measures for these.

1.3 Description of the Project Activity

Project Party:	India, Sweden, Switzerland
Title of the project activity:	"Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)"
UNFCCC registration number:	0991

Methodology applied:	ACM0002, version 06
Project Participants:	TASMA (Tamil Nadu Spinning Mills Association), Carbon Asset Services Sweden AB
Location of the project activity:	The project bundles 704 individual Wind Energy Generator (WEGs) located in Coimbatore, Tirunelveli and Kanyakumari. The individual WEGs and the locations along with the service connection numbers are provided in Appendix 3 of the registered PDD.
Project's crediting period	01 January 2003 to 31 December 2012 (Fixed crediting period).
Verification period	01 January 2007 to 31 December 2007

The project activity comprises of 704 numbers of WEGs aggregating to 467.81 MW, connected to the Tamil Nadu state electricity grid. The starting date of the project activity is 15 February 2002 as per the registered PDD and the validation report. The project activity envisages harnessing the wind potential in the Udumalpet, Ayakudi and Aralvaimozhi region of Tamil Nadu, for generation of electricity. The electricity generated from the machines is evacuated through the nearest sub-stations.

2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. As the CDM Executive Board has not yet formally endorsed the application of any materiality principle for verification of emission reductions from CDM projects - implying that emphasis should be on the significant contributors to emission reductions - the DNV team has checked all factors and issues with the same emphasis. Despite this, DNV has during its preparations identified the key reporting risks and used the assessment to determine to which extent the project operator's control systems were adequate for mitigation of these key reporting risks. In addition, other areas that can have an impact on reported emission reductions have also undergone detailed audit testing. The verification process was guided by a verification checklist.

Verification team

Ramesh Ramachandran	DNV India	Team Leader, CDM Verifier
G.Murali	DNV India	CDM Verifier
R.S.Nikesh	DNV India	GHG Auditor
Michael Lehmann	DNV Oslo	Energy Sector Expert
Chandrashekara Kumaraswamy	DNV India	Technical Reviewer

Duration of verification

Preparations:	From 05 September 2008 to 15 September 2008
On-site verification:	From 17 September 2008 to 20 September 2008
Resolution of verification:	From 22 September 2008 to 24 September 2008

findings and reporting

2.1 Review of Documentation

The monitoring reports (version 1.0 dated 15 September 2008, 1.1 dated 22 September 2008 and 1.2 dated 18 December 2008) / 1/ and the emission reduction calculations, provided in the form of spreadsheets submitted by the project participant, were assessed as a part of the verification. In addition the registered Project Design Document / 2/, the monitoring plan contained in the PDD and the revised monitoring plan approved on 14 July 2008 as well as the validation report / 3/ were assessed. Other operational documents /6/ - /8/ were also assessed as evidence during the site visit.

2.2 Site Visits

During 17-20 September 2008, DNV carried out a site visit at the WEGs of TASMA and documents and evidences for the reported net generation of electricity was verified i.e., the electricity supplied to the grid minus the electricity consumption of the project (electricity imported from the grid). DNV verified that the actual operation of the project is as described in the PDD. The instruments used for monitoring electricity in all the locations were checked, including the calibration records for these instruments.

2.3 Assessment

The data presented in the monitoring report were assessed in detail through a review of the detailed project documentation and production records, interviews with personnel at sites, collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results and verify the correct application of the monitoring plan. The emission factor of the southern regional grid used in the project activity has been determined ex-ante (for the entire crediting period) and this has been assessed and verified as part of the validation of the project.

2.4 Reporting of Findings

Findings established during the verification may be that:

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 material misstatements in the reported emission reductions. Emission reductions with material misstatements shall be discounted based on the verifiers' ex-post determination of the achieved emission reductions.

A forward action requests (FAR) should be issued, where:

a. the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or
b. an adjustment of the implementation of monitoring plan is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the monitoring plan. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.

3 VERIFICATION FINDINGS

3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification

According to the validation report / 3/, no CAR or CL's were required to be closed out during verification. This has again been confirmed by DNV. Similarly, no CAR or CL's from the previous verifications were required to be closed out during this verification.

3.2 Project Baseline

The approved baseline methodology ACM0002, version 6 - "Consolidated baseline methodology for grid connected electricity generation from renewable sources", has been adopted for the project activity.

TASMA has used the *CO_2 Baseline data for emission factor, published in the CEA*[*] data base for the determination of the baseline of the southern regional grid. In accordance with ACM0002 version 06, the baseline scenario for the project activity is the electricity generated by the renewable energy unit multiplied by the emission coefficient of the connected grid calculated in a transparent manner. The emission coefficient of the southern regional grid, to which the project is connected has been determined ex-ante (for the entire crediting period) in a transparent manner and has been validated to be 0.932 tCO_2/MWh as per the registered PDD.

3.3 Project Implementation

The project activity comprises of 704 numbers of WEGs aggregating to 467.81 MW, connected to the Tamil Nadu state electricity grid. The project has been implemented as planned. DNV's team during their on-site visits and documents verification has confirmed that the project boundaries and key equipments for the project activity are in line with the registered PDD. The project boundary covers the 704 wind electricity generators located at Udumalpet, Ayakudi and Aralvaimozhi region of Tamil Nadu, for generation of electricity. The electricity generated from the machines is evacuated through the nearest sub-stations.

[*] CO_2 Baseline Database, http://cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

CAR/CL	Description of finding	Response	Conclusion
CAR 1(a)	In Appendix 3 of the registered PDD – following mismatches have been found: - Name of the company in the PDD vis-à-vis commissioning certificate provided for the same. - HTSC (High Tension Service Connection) numbers for a few WEG's indicated in the PDD Vis-a-Vis actual numbers in the commissioning certificates.	• These name changes have occurred for administrative purposes i.e. at the time of PDD writing it was not yet clear which company entity would hold the contract with TNEB. Example: SJLT TEXTILES (P) LTD has been corrected as SJLT GRANITES • The HTSC numbers have been changed due to two reasons: The majority were simple typos. In few cases the HTSC numbers have been confused with the numbers of the meters at the spinning mill, measuring captive energy consumption	• The commissioning certificates and the clearance certificates have been verified, so as to confirm that the project equipment is in place as per the certificates provided by TNEB. In these cases the location and the HTSC numbers were matching between the PDD and the certificates verified. Hence accepted. • Details such as the name of the company and location were matching with the commissioning certificates and hence accepted.
CAR 1(b)	Shifting of Machines: i. Machines from Rameswaram to Coimbatore	As the electricity production remained below expectation, the bank instructed the spinning mill to relocate the wind turbines in search for better conditions, in order to guarantee continuous debt servicing. The bank correspondence and relocaction confirmation from TNEB has been provided to DNV	DNV has checked the certificates of commissioning at both locations along with the request for shifting from TASMA to TNEB and the Clearance Certificate from TNEB for shifting the machines. Hence accepted.

3.4 Completeness of Monitoring

As stated in the revised monitoring plan, the following parameters are being monitored:

(i) Net electricity supplied to the grid,

The parameters reported, including source as indicated in the monitoring plan were verified to be correct and in line with the approved revised monitoring plan. The net electricity supplied to the grid is measured by the electronic tri vector meters continuously and the readings are recorded once in a month by TNEB and records of the monitoring and the statement from TNEB on the net electricity exported to grid signed by the accounts officer has been verified.

A request for revision to the monitoring plan regarding the accuracy class of the meter and the frequency of calibration of the meters as addressed in the registered PDD was raised with the CDM Executive Board and the same has been approved on 14 July 2008.

- The net electricity supplied to the southern grid of India by the project shall be measured by energy meters of ***0.5S Class Meter*** located at the sub-station
- Electricity meter shall be calibrated by the TNEB at least **once in 5 years** with a calibration report kept by the project owner

Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PDD. Knowledge of personnel associated with the project activity was also found to be satisfactory.

CAR/CL	Description of finding	Response	Conclusion
CAR 2	Transposing errors were noticed in the data for electricity supplied to the grid for some individual months. These need to be corrected.	The revised excel sheet is submitted.	Accepted based on the revised excel sheet. CAR Closed.

3.5 Accuracy of Emission Reduction Calculations

The net electricity supplied to the grid by the project activity is measured by the electronic tri vectors meters installed exclusively for each of the service connection numbers to which the WEGs are connected as indicated in the registered PDD. The main meter has been installed and owned by TNEB. The primary recording of the electricity fed to the state utility grid are carried out jointly by TNEB. The reading of the joint measurement is being carried out once in a month in presence of both the parties (the developer's representative and officials of the state government power utility). This record on the net electricity generated by the project activity for each month has been double checked with the monthly credit statements provided by TNEB. These monthly credit statements have been duly authorised by the accounts officer of TNEB. For the purpose of emission reduction calculations the net electricity supplied by the project activity as presented in the monthly credit notes has been taken,

Each meter is jointly inspected and sealed on behalf of the parties and is not interfered with by either party except in the presence of the other party or its accredited representatives. As the meters are maintained by TNEB, metering, recording, meter readings, meter inspections, test & checking and communication are as per the regulations and standard procedures laid by TNEB. It is the practice by the TNEB to install new and calibrated meters. During the site visit it was confirmed that relevant calibrations have been done, at least once in five years, since commissioning of the turbines. Records to this effect were evidenced for all the WEG's and the same is confirmed to be in line with the revised and approved monitoring plan.

CAR/CL	Description of finding	Response	Conclusion

CAR 3	The meter with HTSCno.740 is connected to three WEGs. Only two of these three WEG's are included in this project, and the third WEG is not a part of the project activity. The accounting of the electricity generated and subsequent emission reduction calculations for the two machines included in this bundle needs to be clarified.	The monthly readings of the meter were being recorded and the statements were being issued by TNEB. Also the daily LCS meter readings from the individual machines were being recorded and archived monthly. The net generation values for HTSC.No. 740 was arrived by selecting the lowest figure of the three alternatives stated below: a. Equally apportioning the TNEB readings (HTSC 740) by the formulae "((TNEB statement /3) *2))" thereby arriving at the generation of two machines. b. Sum of the month wise LCS meter readings of the two WEGs forming part of the project activity. The LSC meters are calibrated by the project proponent. c. Average of the month wise LCS meter readings taken from all three WEGs connected to HTSC. No 740 and multiplying by 2. In order to fully comply with the revised monitoring plan with respect to the two WEGs, connected to HTSC.No 740, a separate metering arrangement has now been planned. However to be conservative, TASMA has decided to forego the emission reductions from the two WEGs connected to HTSC.No 740 till a separate	The methodology adopted for arriving at the net generation values considered for the emission reduction calculations was accepted considering that the HTSC 740 meter is calibrated by TNEB and the individual WEG LCS meters are also calibrated by the project proponent. However, in the light of the fact the PP has decided to forego the emission reductions generated from the two WEGs connected to HTSC.No 740 till the time the separate metering arrangement is commissioned, it is deemed conservative and in line with the monitoring plan. . CAR Closed

		metering arrangement is commissioned.	

The methodology adopted for arriving at the net generation values considered for the emission reduction calculations was accepted considering that the HTSC 740 meter is calibrated by TNEB and the individual WEG LCS meters are also calibrated by the project proponent. and the CAR was closed. However, in order to fully comply with the revised monitoring plan with respect to the two WEGs, connected to HTSC.No 740, a separate metering arrangement has now been planned by Tasma. However to be conservative, the project participant has also now chosen to forego the emission reductions generated from the two WEGs connected to HTSC.No 740 till the time the separate metering arrangement is commissioned.

No significant reporting risks have been identified for the data reported except for the CARs raised and addressed as above.

The parameters reported, including source, frequency and review criteria as indicated in the monitoring plan were verified to be correct and in line with the revised monitoring plan approved on 14 July 2008.

The worksheet contains all the electricity exported (to grid) as per the credit notes issued by the TNEB and the calculations for the period 01 January 2007 to 31 December 2007.

The baseline emissions have been calculated as the product of the net electricity supplied to the grid and the emission factor for the southern regional grid (fixed ex-ante) as defined in the validated and registered PDD and the validation report.

Being a wind power project there are no project emissions and leakages

The calculations have been verified and are correct. The emission reductions from the project for the period from 01 January 2007 to 31 December 2007as reported in the revised monitoring report of 18 December 2008 and actually verified at site equals to 862 742 tonnes of CO_2 equivalent. The reported emission reductions of 862 742 are 7.6% more than the estimated emission reduction of 801 520 (estimated for the same period as per the registered PDD of 1 March 2007).

Year	Registered PDD, CERs	Initial Monitoring Report, CERs	Monitoring Report revised
01 January 2007 to 31 December 2007	801 520	863 545	862 742
% Deviation	0	7.7% higher than the registered PDD	0.01% (803) lower than the initial monitoring report.
Reasons	-	This is acceptable given that actual records have	The electricity generation from two WEGs have been foregone as an

		been verified, while the PDD was based on forecasts.-	conservative approach.

It has been confirmed by DNV that the maximum output capacity has not been exceeded on any given month during the monitoring period.

The emission reductions from the project for the period from 01 January 2007 to 31 December 2007 as reported in the revised monitoring report of 22 September 2008 are 862 742 tonnes of CO_2 equivalent.

3.6 Quality of Evidence to Determine Emission Reductions

The emission reductions reported for the period under monitoring, that is, 01 January 2007 to 31 December 2007 was verified to be 862 742 tCO_2e.

Sufficient evidence was presented for the reported net emission reductions.

3.7 Management System and Quality Assurance

TASMA has established management procedures and implemented systems to ensure that the monitoring and reporting process is consistent. The procedures cover management responsibilities, data monitoring procedures, training procedures, periodical internal audits, management reviews and corrective actions in case of any deviations effectively. Calibration process is followed as per defined procedures.

4 VERIFICATION STATEMENT

Det Norske Veritas Certification AS (DNV) has been engaged by Tamil Nadu Spinning Mills Association(TASMA) to verify the greenhouse gas (GHG) emission reductions reported for the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" (CDM registration reference no.991) for the period 01 January 2007 to 31 December 2007

Responsibilities of TASMA and DNV

The management of the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's monitoring plan. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

It is DNV's responsibility to express an independent verification statement on the GHG emission reductions from the project reported for the period 01 January 2007 to 31 December 2007.

Basis of GHG verification opinion

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 emissions for the period from 01 January 2007 to 31 December 2007.

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 period 01 January 2007 to 31 December 2007 are fairly stated.

We conducted our verification on the basis of the monitoring methodology ACM0002, version 06, and the revised monitoring plan of the project approved on 14 July 2008. The verification included:

- *collection and assessment of evidence supporting the reported data,*
- *checking whether the provisions of the monitoring methodology ACM0002, version 06, and the revised monitoring plan in the PDD were consistently and appropriately applied.*

We have verified whether the information included in the revised monitoring report of version 1.2 of 18 December 2008 is correct and that the emissions reductions achieved have been determined correctly.

Opinion

In our opinion, GHG emissions reported for the project in the revised monitoring report version 1.2 of 18 December 2008 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002 version 06 the revised monitoring plan approved on 14 July 2008.

Det Norske Veritas Certification AS is able to certify that the emission reductions from the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" project for the period 01 January 2007 to 31 December 2007 amount to 862 742 ton CO_2 equivalent.

Chennai, 29 December 2008

Ramesh Ramachandran
CDM Verifier

Oslo, 29 December 2008

Michael Lehmann
Technical Director
Climate Change Services
Det Norske Veritas Certification AS

5 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project.

/ 1/ Monitoring report for "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)", Version 1.2 dated 18 December 2008 and its previous version.

/ 2/ CDM PDD for the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA) dated 01 March 2007 and revised monitoring plan approved on 14 July 2008.

/ 3/ Validation report for the "Bundled wind power project in Tamilnadu, India coordinated by Tamilnadu Spinning Mills Association (TASMA)" dated 12 March 2007.

/ 4/ CDM Executive Board: ACM0002 – "Approved Consolidated Baseline Methodology for grid connected electricity generation from renewable sources", Version 06.

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/5/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/6/ Copies of TNEB generation Certificates for all months

/7/ Snap shots of monthly generation from CMS, Maintenance records, Internal calibration records, Internal audit reports.

/8/ Excel sheet containing the details of electricity supplied to the grid from the individual service connections.

9 Commissioning certificates of all the individual machines and connected services connection numbers from TNEB.

10 Calibration certificates for all the Meters involved in the bundle.

Persons interviewed during the verification.

/11/ Mr. K.Venkatachalam, Chief Advisor, TASMA.
Mr.V.Bharathi Kannan, Advisor, TASMA
Mr. Raja Chidambaram, URS Productively.

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APPENDIX A

VERIFICATION CHECKLIST

Verification Checklist

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
A. Opening Session		
A.1. Introduction to audits	Outline of the initial verification process was presented by Team Leader. • Objectives • Verification team, plan • Confirmation of participation • Definition of FAR/CAR • Obligation to confidentiality	OK
A.2. Clarification of access to data archives, records, plans, drawings etc.	Activities related to the project at all locations, eg. Measurement, calculation, reporting, calibration, control of documentation and records is planned and covered as per procedures defined. Access to these was verified to be clear and implementation was verified to be effective.	OK
A.3. Contractors for equipment and installation works *Who has installed the equipment? Who was contracted for planning etc.?*	The WEGs were supplied by various WEG manufacturers across the globe, the installation and the commissioning of the WEGs have also been done by the respective supplier.	
A.4. Actual status of installation works *Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.*	The project activity comprises of 704 numbers of WEGs aggregating to 467.81 MW, connected to the Tamil Nadu state electricity grid. The starting date of the project activity is 15 February 2002 as per the registered PDD and the Validation report. However, in Appendix 3 of the registered PDD certain mismatches have been found and the same has been raised under CAR.	~~CAR 1~~

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
B. Open issues indicated in validation report *Especially in projects which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues which should have been indicated by the validation report.*		
B.1. Missing steps to final approval	According to the validation report all the CAR's and CL's are closed. This was verified during verification, by DNV	OK
C. Implementation of the project *This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification*		
C.1. Physical components *Check the installation of all required facilities and equipment as described by the PDD.*	The project activity comprises of 704 numbers of WEGs aggregating to 467.81 MW, connected to the Tamil Nadu state electricity grid the same checked and found to be appropriate.	OK
C.2. Project boundaries *Check whether the project boundaries are still in compliance with the ones indicated by the PDD.*	The project boundaries and key equipments for the project activity are in line with the PDD encompassing the physical, geographical site of the renewable generation source. The project boundary covers the WEGs and the evacuation systems.	OK
C.3. Monitoring and metering systems *Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.*	The metering system as envisaged in the PDD has been verified to be installed and in place. The metering of generated and exported power happens through meters, which are calibrated periodically by TNEB. However the meter with HTSCno.740 is connected with three WEGs. Only two machines have been included in this project. The accounting of the electricity generated and subsequent emission reduction calculations for the two machines included in this bundle has been raised as CAR.	~~CAR 3~~
C.4. Data uncertainty *How will data uncertainty be determined for later calculations of emission reductions? Is this in*	All equipment used for measurement and metering are calibrated as per procedures.	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
compliance with monitoring and metering equipment?		
C.5. Calibration and quality assurance *Check how monitoring and metering systems are subject to calibration and quality assurance routines* *a) with installation* *b) during future operation*	The calibration status of metering and monitoring equipment is as per the procedures defined to cover the process of calibration. The meters used for power monitoring are calibrated by TNEB authorities.	OK
C.6. Data acquisition and data processing systems *Check the eligibility of used systems.*	As above.	OK
C.7. Reporting procedures *Check how reports with relevance for the later determination of emission reductions will be generated*	Project Management system procedures, including responsibility and authority of monitoring and reporting activities, have been verified to be as per that indicated in the registered validation report.	OK
C.8. Documented instructions *Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.*	All the activities have been performed as per the defined procedures and are satisfying the requirements needed to monitor emission reductions effectively.	OK
C.9. Qualification and training *Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.*	Tasks have been performed as per procedures defined and by competent personnel. The procedures defined take care of required competence for performing tasks as per documented instructions.	OK
C.10. Responsibilities *Check whether all tasks required to gather data*	Responsibility and authority of monitoring and reporting activities have been verified to be as per that indicated in the registered PDD and allocated to the	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
and prepare a monitoring report with the necessary quality have been allocated to responsible employees.	responsible employees.	
C.11. Troubleshooting procedures *Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)*	The data redundancy is maintained by multi stage monitoring as the export power is monitored by both project team and also TNEB officials.	OK
D. Internal Data *Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data..*		
D.1. Type and sources of internal data *Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g.." continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".*	Southern grid emission factor has been used in the calculation of the emission reductions. The power exported to the grid is monitored on daily basis by project team and on monthly basis by TNEB officials. This daily monitoring also includes the monitoring of the power imported from the grid during plant shutdowns and annual maintenance.	OK
D.2. Data collection *How is data collected and processed? What are the means of quantifying emissions from the different data sources?*	Each WEG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm. The generation data of individual machine can be monitored as a real-time entity at CMS.	OK
D.3. Quality assurance *Does internal data collection underlie sufficient*	Yes. The data undergoes multiple checks through operating team and plant management as a part of quality assurance.	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
quality assurance routines?		
D.4. Significance and reporting risks *Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.*	The recording of the net electricity exported by the TNEB official is done on a monthly basis and hence no significant reporting risks are foreseen. These data will be cross verified through the readings captured by CMS. The data related to baseline emissions is based in CEA data hence uncertainty is less through out the crediting period. However transposing errors were noticed in the data for electricity supplied to the grid for some individual months. These need to be corrected.	~~CAR 2~~
E. External Data *Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.*		
E.1. Type and sources of external data *Acquire information on type and source of external data, which is used in calculations of emission reductions*	The external data sources used is mainly data for calculation of Southern grid emission factor based on CEA annual reports. The audit of these external data may not be required as these are independent and authorised sources of data.	OK
E.2. Access to external data *How is data transferred? How can reproducibility of data set be ensured?*	Transfer and compilation of data will be done manually. The reproducibility of data will be through redundant data captured.	OK
E.3. Quality assurance *Does external data underlie any quality assurance routines?*	Yes the external data are subjected to quality assurance routines as CO2 emission factor for grid (as per Central Electricity Authority reports) is calculated ex-post for entire crediting period.	OK
E.4. Data uncertainty	The actual generation and heat rates are obtained from CEA reports. Carbon	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?	emission factors (CEF) for fuels are taken form IPCC default emission factors. This is been verified and found reasonable as the uncertainty impact is very negligible.	
E.5. Emergency procedures *Are there any procedures which will be applicable if there is no access to relevant external data?*	No such emergencies are fore seen.	OK
F. Environmental and Social Indicators *A Monitoring Plan may comprise environmental and/or social indicators which could be necessary to monitor for the success of the project activity.*		
F.1. Implementation of measures *A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.*	The project activity is not expected to lead to any adverse environmental impacts.	OK
F.2. Monitoring equipment *Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.*	In line with the revised monitoring plan: • The net electricity supplied to the southern grid of India by the project shall be measured by energy meters of ***0.5S Class Meter*** located at the sub-station • Electricity meter shall be calibrated by the TNEB at least **once in 5 years** with a calibration report kept by the project owner .	OK
F.3. Quality assurance procedures *What quality assurance procedures will be applied for such data?*	Same as F.2	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
F.4. External data *Check the quality, reproducibility and uncertainty of external data.*	Same as F.2	OK
G. Management and Operational System *In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system.*		
G.1. Documentation *The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.*	The procedures are documented, controlled and available for personnel working for the project.	OK
G.2. Qualification and training *The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.*	Defined procedures ensure the methodology and criteria for training of personnel working on emission reductions. And the mechanism of evaluation of effectiveness for the training imparted is clear in the procedures defined.	OK
G.3. Allocation of responsibilities *The allocation of responsibilities should be documented in written manner.*	Roles and responsibilities are defined in procedures and are in place.	OK
G.4. Emergency procedures *The system should contain procedures which provide emergency concepts in case of unexpected problems with data access and/or data quality.*	The system procedures define the back up mechanism for data protection.	OK

OBJECTIVE	COMMENTS	Concl.(incl FARs/CARs)
G.5. Data archiving *The system should provide routines for the archiving of all data which is required for verifying the project's performance in the context of consecutive verifications.*	All the data required by the methodology were made available to DNV and the effectiveness of document control was satisfactory.	OK
G.6. Monitoring report *The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.*	Yes, the mechanism for the calculation of emission reductions and preparation of monitoring report is in place.	OK
G.7. Internal audits and management review *The system includes internal control procedures, which allow the identification and solution of problems at an early stage.*	The procedures are defined	OK

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