

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India"



Voluntary Carbon Standard 2007.1 Final Validation Report

Report No: 53608808-08/684

Validation Report:

Name of Validation company:	Date of the issue:
TÜV NORD CERT GmbH	2009-11-15
Report Title:	Approved by:
"53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India"	Eric Krupp
Client:	Project Title:
M/s. Sapthagiri Distilleries Private Limited	"53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India"
Summary:	

M/s. Sapthagiri Distilleries Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Validation of the project - "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India", with regard to the relevant requirements of VCS 2007.1 Standard as well as criteria for consistent project operations, monitoring and reporting.

The project activity generates electricity which will be supplied to the Southern Grid of India and then distributed to the connected end users.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this Validation. In the course of the Validation 4 Corrective Action Requests (CARs) and 11 Clarification Requests (CRs) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validators by project proponent. As a result of the validation, the validators confirm that: The project fulfils criteria of VCS 2007.1 provided.

- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of ACM0002, Version 09.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,193,820 tCO₂e (total) is most likely to be achieved during the chosen 10 years renewable crediting period which will be renewed once.

No restrictions or uncertainties were identified related to the validation.

Work carried out by:	Number of pages:
Mr. Ma Paa Puratchikkanal Mr. K V Sudarshan Ms. Sahana C.A Ms. C. Indumathi	49

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1 Introduction

1.1 Objective

The purpose of this validation is to have an independent third party assessment of the project design, in particular the project's baseline, the additionality, the monitoring plan (MP) and the project's compliance with

- The requirements of VCS 2007.1 program guidelines;
- Requirements of the CDM Approved methodology, ACM0002 Version 09, which is approved by VCSA;
- To assess the project's compliance with other relevant rules, including the project country (India) legislation and
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project design as documented is sound and reasonable and meet the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified emission reductions (VERs/VCUs¹) without any double counting.

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based ACM0002, Version 09: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources") which are included in the VCS PD and other relevant supporting documents.

The items covered in the validation are described below:

- VCS 2007.1 & Project Country Criteria
 - To meet the requirements of VCS 2007.1 guidelines requirements, in particular,
 - Project country requirements / criteria
- VCS Project Description
 - Project design
 - Project boundaries and Predicted VCS project GHG emissions
- Project Baseline
 - Baseline methodology

¹ As per VCS, Verified Emission Reductions (VERs) are considered to be VCUs only after successful registration in an approved VCU Registry

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- Baseline GHG emissions
- Monitoring Plan
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Roles and Responsibilities
- Project Additionality
- Background investigation and follow up interviews
- Draft validation reporting with CARs, CRs & FARs, if any
- Final validation reporting

The information included in the VCS PD^{PD3/} and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD CERT GmbH JI/CDM CP has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of VERs. The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

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

1.3 VCS project Description

The project activity is located in the districts of Dindigul, Coimbatore and Erode in the State of Tamil Nadu and in the districts of Hassan and Gadag in the State of Karnataka, India. The project activity involves the installation of Wind turbines of 20 X 1.50 MW capacity, 4 X 1.25 MW capacity, 9 X 0.75 MW capacity & 20 X 0.60 MW capacity, thereby totalling to an aggregate installed capacity of 53.75 MW.

Table 1: Details of the location of WTGs

S.N o.	Unique ID	HT SC No.	Capacity (kW)	SF No.	Latitude ²	Longitude ³	Taluka	Project proponent
1	Q 195	1312	1250	709, Kundadam	N10 ⁰ 50' 07.9"	E77 ⁰ 25' 58.7"	Palladam	KBDL

² <http://www.satsig.net/maps/lat-long-finder.htm>

³ <http://www.satsig.net/maps/lat-long-finder.htm>

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2	Q 211	1329	1250	804/1(P), 2(P), 805(P), Kundadam	N10° 48' 59.1"	E77° 25' 54.9"	Palladam	
3	G 81	1337	1250	178(P)C hinnapu dhur	N10° 44' 30.9"	E77° 25' 40.6"	Palladam	
4	G 89	1336	1250	136(P)	N10° 43' 31.0"	E77° 25' 51.5"	Palladam	
5	G 936	1442	1500	576/2D(P).2E(P)	N10° 33' 46.0"	E77° 19' 19.0"	Palladam	
6	G 938	1440	1500	2(P)	N10° 33' 45.4"	E77° 19' 47.1"	Palladam	SDPL (Tamil Nadu)
7	G 953	U 1441	1500		N10° 33' 32.4"	E77° 18' 34.8"	Palladam	
8	R73	2155	1500	69/2A(P art)/69 /2B9Par t) Udayath oor	N8° 17.383'	E77° 44.084'	Sankaneri	
9	R166	2317	1500	414/1B (Part) Udayath oor	N8° 14.466'	E77° 44.764'	Sankaneri	
10	R104	2309	1500	75/ 3B(Part) , 132/1(P art) Udayath oor	N8° 17.343'	E77° 44.865'	Sankaneri	
11	R116	2310	1500	153/3A(P), 3B(P), 3C(P), 3D(P) Udayath oor	N8° 16.728'	E77° 45.629'	Sankaneri	
12	R124	2311	1500	179/5 (Part) Udayath oor	N8° 16.024'	E77° 45.860'	Sankaneri	
13	R134	2312	1500	175/5(p) , Udayath oor	N8° 16.036'	E77° 45.513'	Sankaneri	
14	R138	2313	1500	218/2 (Part)	N8° 15.610'	E77° 45.302'	Sankaneri	

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				Udayathoor				
15	R173	2314	1500	153/1 (Part) Vijaypathy	N8° 14.014'	E77° 45.702'	Sankaneri	
16	R180	2315	1500	144/1 (Part) Vijaypathy	N8° 13.753'	E77° 45.703'	Sankaneri	
16	R178	2316	1500	87/1 (Part) Vijaypathy	N8° 13.681'	E77° 45.199'	Sankaneri	
18	R187	2318	1500	5 (Part) Vijaypathy	N8° 13.397'	E77° 43.764'	Sankaneri	
19	R181	2325	1500	10/2 (Part) Vijaypathy	N8° 13.627'	E77° 43.759'	Sankaneri	
20	H23	HSN/T L&SS/ WF/H2 3/04	1500	1 Rangapurakavalu	N 76° 11' 50.6"	E 13° 10' 81.6"	Arasikere	SDPL (Karnataka)
21	H24	HSN/T L&SS/ WF/H2 3/04	1500		N 76° 11' 44.3"	E 13° 10' 95.8"	Arasikere	
22	K310	GDG/T L&SS/ WF/SD PLK/K - 311/89	1500	72, 77 Keluru	N15° 08' 38.6"	E 75° 46' 49.8"	Mundargi	
23	K311	GDG/T L&SS/ WF/SD PLK/K - 311/89	1500		N15° 08' 18.3"	E 75° 47' 15.5"	Mundargi	
24	G 335	D 8	600	357 Muthu Naicken Patti	N10° 35' 40.2"	E77° 24' 26.2"	Palladam	D.K. Audike savulu
25	G 344	D 5	600	227 Muthu Naicken Patti	N10° 35' 30.9"	E77° 25' 01.9"	Palladam	

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26	G 369	D 11	600	311/2	N10 ⁰ 35' 05.4"	E77 ⁰ 25' 13.8"	Palladam	
27	G 340	D 4	600	341/4 Muthu Naicken Patti	N10 ⁰ 35' 21.5"	E77 ⁰ 24' 41.6"	Palladam	
28	G 342	D 13	600	356 Muthu Naicken Patti	N10 ⁰ 35' 34.9"	E77 ⁰ 24' 39.2"	Palladam	
29	G 374	D 7	600	386/1 Muthu Naicken Patti	N10 ⁰ 35' 01.3"	E77 ⁰ 24' 20.5"	Palladam	
30	G 367	D 14	600	408/1B Muthu Naicken Patti	N10 ⁰ 35' 01.7"	E77 ⁰ 24' 44.2"	Palladam	
31	G 366	D 6	600	352/2	N10 ⁰ 35' 05.9"	E77 ⁰ 24' 33.1"	Palladam	
32	G 541	D 16	600	494/1C Kozhuma nkondam	N10 ⁰ 34' 42.6"	E77 ⁰ 26' 54.1"	Palladam	
33	G 543	D 21	600	500/3 Melakar aipatti	N10 ⁰ 34' 33.9"	E77 ⁰ 26' 55.6"	Palladam	
34	G 545	D 19	600	494/1C Kozhuma nkondam	N10 ⁰ 34' 26.9"	E77 ⁰ 27' 07.8"	Palladam	
35	G 546	D 17	600	143 Kozhuma nkondam	N10 ⁰ 34' 24.3"	E77 ⁰ 26' 54.4"	Palladam	
36	G 438	D 20	600	233/1 (P), 288/1 (P). 2C1 (P) Kozhuma nkondam	N10 ⁰ 33' 38.3"	E77 ⁰ 26' 13.1"	Palladam	
37	G 476	D 25	600	500/1C (P), 2C (P) Kozhuma nkondam	N10 ⁰ 32' 51.3"	E77 ⁰ 26' 08.0"	Palladam	
38	G 460	D 22	600	495/2A (P), 2B (P), 492/2 (P) Kozhuma nkondam	N10 ⁰ 33' 11.9"	E77 ⁰ 26' 22.6"	Palladam	

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39	G 420	D 23	600	478/2A(P) Kozhuma nkondam	N10° 32' 43.7"	E77° 26' 31.5"	Palladam	
40	G 471	D 24	600	20/1B(P), 2B(P), 21/IB(P) Puspath ur	N10° 32' 54.5"	E77° 25' 00.3"	Palladam	
41	G 536	D 12	600	114/8A, 8B Puspath ur	N10° 32' 57.1"	E77° 24' 40.6"	Palladam	
42	G 407	D 10	600	123/11 Puspath ur	N10° 33' 04.3"	E77° 24' 33.3"	Palladam	
43	247(T)	G 897/10	750	178/7, Sampava rvadaka rai	N9° 01' 29.2"	E77° 24' 00.6"	Surandai	D.A. Satyaprabha
44	303(T)	G 897/18	750	125/7 (p), /8 (p)/9(p))10(p), Sampava rvadaka rai	N9° 00' 58.1"	E77° 24' 44.4"	Surandai	
45	350(T)	G 897/19	750	44/2,3, 4(P), Sampava rvadaka rai	N9° 01' 06.3"	E77° 22' 45.5"	Surandai	
46	73(T)	G 897/8	750	287/(p) , Alagiap andiapu ram	N9° 01' 23.9"	E77° 31' 34.8"	Surandai	
47	72(T)	G 897/9	750	210/1a(p), Alagiap andiapu ram	N9° 01' 05.6"	E77° 30' 29.7"	Surandai	D.A.Srinivas
48	351(T)	2270/TIN	750	145/10, 11, 12, 13, 14, 15, 16(P) Navanee thakris hnapura	N8° 56' 27.6"	E77° 38' 06.4"	Surandai	

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				m				
49	332(T)	2306/ TIN	750	144/3, 4 Navanee thakris hnapura m	N9 ⁰ 01' 25.9"	E77 ⁰ 32' 01.5"	Surandai	
50	302(T)	2289 TIN	750	415/1A, 1B, 2 Keelaka langal	N8 ⁰ 56' 26.8"	E77 ⁰ 38' 41.9"	Surandai	
51	331(T)	2307	750	378/ 2(P), 3(P) Keelaka langal	N9 ⁰ 01' 13.7"	E77 ⁰ 30' 28.8"	Surandai	
52	G 399	D 9	600	72/2B (P)	N10 ⁰ 33' 24.3"	E77 ⁰ 24' 02.9"	Palladam	
53	R107	2170	1500	133/1(p art)Uda yathoor	N8 ⁰ 17.297'	E77 ⁰ 45.182'	Sankaneri	

The electricity generated by the project activity is exported to Tamil Nadu Electricity Board (TNEB) in the State of Tamil Nadu & Karnataka Power Transmission Corporation Limited (KPTCL) in the State of Karnataka, which are part of Southern Grid in India. The project activity generates energy from wind resources thereby displacing, electricity generated using existing fossil fuel based power plants and/or future capacity additions in the States of Karnataka and Tamil Nadu.

The estimated electricity supplied to the grid from the project activity is about 128.790 GWh per year. The GHG emission reduction that are projected to be achieved is 1,193,820 tCO₂e during the chosen ten year crediting period.

1.4 Level of assurance

The validation report is based on VCS PD^{/PD1 to PD3/}, financial spreadsheet^{/XLS1 to XLS3/}, supporting documents made available to the validation team and information collected through performing interviews and during the on-site assessment. The validation opinion is assured provided the credibility of all above.

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2 Methodology

The validation of the project was carried from June 2009 to November 2009.

Preparations: 20/06/2009 to 23/10/2009

On-site validation: 29/07/2009, 30/07/2009 & 31/07/2009

(Draft) Reporting: 04/08/2009

(Final) Reporting: 15/11/2009

The validation consisted of the following three phases:

- a desk review of the project design, the baseline and monitoring methodology
- follow-up interviews
- the resolution of outstanding issues and the issuance of the final validation report and opinion

2.1 Review of Document

The draft PD^{PD1}/ submitted by the M/s. Sapthagiri Distilleries Private Limited in June 2009 and supporting background documents related to the project design and baseline were reviewed on 20/06/2009. Furthermore, the Validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The documents that were considered during the Validation process are given in chapter 5 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 5-1)
- Background investigation and assessment documents (Table 5-2)
- Websites used (Table 5-3).

2.2 Follow-up Interviews

From 29/07/2009 to 31/07/2009, the TÜV NORD JI/CDM CP performed validation site visit at the project locations in Dindigul, Coimbatore and Erode districts in Tamil Nadu and in Karnataka.

During this visit, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities were carried out to confirm selected information and to resolve issues identified in the document review.

The key interviewee and main topics of the interviews are summarised in Table 2-1.

Table 2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel /IM01/	- Desk review findings - General aspects of the project - Project design, Commissioning and implementation
2. Consultants /IM02/	- Technical equipment and operation of the project - Performance of the project - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring and measurement equipment - QA/QC Testing and calibration procedures - Monitored data management - Data quality, archiving and reporting procedures - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Apportioning of energy

A detailed list including the functions or designations of the interviewed persons is given in chapter 5 (see Table 5-4). This table also includes reference codes to be used in the validation protocol.

2.3 Resolution of any material discrepancy

A few discrepancies were found during the validation and the validation report containing a set of CARs & CRs were submitted to the project proponent. The project design document was revised addressing the CARs & CRs issued by TÜV NORD JI/CDM CP.

After reviewing the revised and resubmitted project documentation^{PD3/}; resolving the CARs & CRs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

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4 CARs and 11 CRs were found during Validation. Please refer to Section 3, table 3.

3 Validation Findings

The findings of validation are summarised in table 3:

Table 3: Summary of CAR, CR and FAR issued

Validation topic	No. of CAR	No. of FAR	No. of CR
D- Project Design	02	–	02
B- Baseline and additionality	02	–	05
M- Monitoring plan	–	–	01
C- Calculation of GHG emissions	–	–	02
E- Environmental Impact	–	–	–
L- Local Stakeholder Comments	–	–	01
SUM	04		11

For an in depth analysis/evaluation of all CARs and CRs can be referred to the below sections from 3.1 to 3.6.

3.1 Project Design

The proposed project utilizes wind power for electricity generation. Total installed capacity of the project is 53.75 MW (20 X 1.50 MW, 4 X 1.25 MW, 9 X 0.75 MW & 20 X 0.60 MW). The estimated electricity supplied to the grid is about 128.790 GWh per year. This project is equipped with WTGs developed by Suzlon make S-66 for the 1.25 MW, S-82 for the 1.50 MW, S-52 for the 0.6 MW and Vestas NM48 for 0.75 MW for power generation.

Supporting documents like purchase orders^{/PO/} of the WTGs by the investors were made available to the TÜV NORD JI/CDM CP. It was found that the purchase order^{/PO/} issued by the suppliers of the WTGs specifies the technical details for the WTG that has been installed. Information was also collected through performing interviews with the PP and during the on-site assessment.

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Technical details and equipment specifications used in the project are as detailed below:

Table 3-1: Technical details of the wind turbine

Technical Specification of Suzlon S-66/1250 kW WEG	
ROTOR	
Diameter	66 m
Blades	3 No.
Orientation	Upward/ horizontal axis
Rotational speed	13.8 / 20.7 rpm
Rotational direction	Clockwise
Swept area	3421 m ²
Hub height	74 m
Regulation	Pitch regulated
OPERATIONAL DATA	
Cut in wind speed	3 m/s
Rated wind speed	14 m/s
Cut off wind speed	22 m/s
GEARBOX	
Type	Integrated 3 stage
Cooling	Oil cooled, forced lubrication
GENERATOR	
Type	Asynchronous, 4/6 pole
Rated voltage	690 V
Frequency	50 Hz
Cooling	Air cooled

Technical Specification of Suzlon S-82/1500 kW WEG	
ROTOR	
Diameter	82 m
Blades	3 No.
Orientation	Upward/ horizontal axis
Rotational direction	Clockwise
Swept area	5281 m ²
Hub height	80 m
Regulation	Pitch regulated
OPERATIONAL DATA	
Cut in wind speed	4 m/s
Rated wind speed	12.5 m/s
Cut off wind speed	20 m/s
GEARBOX	
Type	Integrated 3 stage
GENERATOR	
Type	Asynchronous, 4 pole
Rated voltage	690 V
Frequency	50 Hz
Cooling	Air cooled

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Technical Specification of Suzlon S-52/600 kW WEG	
ROTOR	
Diameter	52 m
Blades	3 No.
Orientation	Upward/ horizontal axix
Rotational direction	Clockwise
Swept area	2124 m ²
Hub height	75 m
Regulation	Pitch regulated
OPERATIONAL DATA	
Cut in wind speed	3.5 m/s
Rated wind speed	12 m/s
Cut off wind speed	25 m/s
GEARBOX	
Type	Integrated 3 stage
Cooling	Oil cooled, forced lubrication
GENERATOR	
Type	Asynchronous, 4 pole
Rated voltage	690 V
Frequency	50 Hz
Cooling	Air cooled

Technical Specification of Vestas NM48/750 kW WEG	
ROTOR	
Diameter	48.2 m
Blades	3 No.
Orientation	Upward/ horizontal axix
Rotational direction	Clockwise
Hub height	55 m
OPERATIONAL DATA	
Cut in wind speed	< 3.5 m/s
Cut off wind speed	25 m/s
GEARBOX	
Cooling	Splash lubrication
GENERATOR	
Nominal power	750/ 200 kW
Rotational speed (synchronous)	1500/ 1000 rpm
Insulation class	F

The project duration is: 20 years.

Start date of the project activity: 29/09/2006

Crediting period for the project activity: 01/10/2006 to 30/09/2016

There are five individual investors in this bundled project activity. These investors have authorized M/s. Sapthagiri Distilleries Private Limited for all carbon

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India" related activities and communication. Authorization letters in this regard have been verified.

Proof of title was submitted to the DOE. Power Purchase Agreements^{/PPA1- PPA53/} & Commissioning Certificates^{/CR1- CR53/} are treated as proof of title. Refer to Table 5-1. The emission reduction has not been double counted. The project has not applied for carbon benefits under any other mechanism. There is no rejection history for the project activity.

However, CAR D1, CAR D2, CR D1 & CR D2 were raised and successfully closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR D1 Under section 1.5, the details of project location given do not meet the requirements of the VCS 2007.1 Standard. Please provide following details, preferably in a tabular form in the PD or in a spreadsheet format as an annexure: i) Unique ID	/PD1/	Table 4 in section 1.5 is provided which includes all these required information for investor wise WTGs	/PD3/ section 1.5	A table (Table-4) containing all the details in response to the clarification raised, which provides unique identification and delineation of this project activity has now been included under Section 1.5 of the revised PD. The details were verified during site visit and are found to be OK. Hence,

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
ii) HTSC no. iii) WTG Capacity iv) Name of the Village, Taluk (Tehsil) and District v) Survey number vi) Latitude and longitude with reference				CAR D1 is closed.
CAR D2 a) The dates of commissioning as shown in Appendix 1 of the PD do not tally with the information available at the project site. b) The entries for location	/PD1/	a) The dates of commissioning are revised as per the commissioning certificates now b) Actual unique IDs and location	/PD3/, /Appendix-1/, /CR1/- /CR53/ & /PPA1/- /PPA53/	The commissioning dates of all the WTGs provided under each investor-wise sheet in the XLS form of Appendix 1 have been verified with their respective commissioning certificates. They are now found to be OK. b) Unique ID numbers of the WTGs

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
details for all the WTGs & unique ID provided in Appendix 2 under serial numbers 45 to 53 do not tally with the information available on the site.		details have been provided in the revised PD		under serial number 45 to 53 and the location details of all the WTGs earlier listed under Appendix 2 have now been provided under Table 4 of Section 1.5 of the revised PD. The Unique ID numbers & location of the WTGs have been verified with their respective commissioning certificates and PPAs. They are found to be OK. CAR D2 is closed.
CR D1 The metering system covers two states in this project activity; thus, the diagram on page 14 given for	/PD1/	The diagram is revised to present Karnataka and Tamil Nadu WTGs separately.	/PD3/	The schematic diagram of the project boundary provided under section 2.3 of the revised PD represents Tamil Nadu and Karnataka separately

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
delineating the project boundary is not representative. Review the contents of the diagram and make necessary changes to reflect the actual conditions.				under the Southern Grid. The same is in line with the existing WTGs location, which was also confirmed during the site-visit. This is found to be OK. CR D1 is closed.
CR D2 a) 2 WEGs of 1.5 MW were commissioned on 29.03.2007 and 2 on 10.06.2007 in Karnataka. However, in the worksheet - 1500KW Karnataka - computation assumes that all the 4 WEGs were commissioned on 29.03.2007, which is not correct. Accordingly	/XLS1/	a) Initial two WTGs were commissioned on 31/03/2007. This is used as commissioning for all the four WTGs in Karnataka	/XLS3/ & /CR1/- /CR53/	a) The revised financial worksheet of SDPL for 4 WTGs of 1.5 MW located in Karnataka has been presented by considering the first commissioning date among the 4 WTGs i.e., 31/03/2007. This has been verified with the commissioning certificates of all the 4 WTGs and found to be OK.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
, first year and second year generation, revenue and cost estimation are not correct. b) 1 WEG of 1.5 MW in the 1500KW Tamilnadu worksheet belongs to D.A.Srinivas. This should be segregated. Balance 15 WEGs were commissioned on 29.03.2007 and not on 31.03.2007 as stated in the worksheet. c) All 1250 KW WEGs were commissione		b) WTG belonging to DA Srinivas is taken out of SDPL's sub-project. The first WTG was commissioned on 14/02/2007 and this is used as commissioning for the remaining 15 number WTGs for SDPL. c) The revised estimates give correct commissioning		b) The correction in response to the clarification b) raised has been verified with the revised financial worksheet of SDPL for 15 WTGs of 1.5 MW and their respective commissioning certificates. The revised sheet has been developed based on the first commissioning date among 15 WTGs i.e., 14/02/2007. This is found to be OK. c) The revised financial worksheet of

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
d on 29.9.06. The number of operating hours for the first year given in 1250KW worksheet does not appear to be correct.		dates and operational hours.		KBD for 1.25 MW WTGs has been presented by considering the first commissioning date i.e., 29/09/2006. The operating hours has also been calculated correspondingly. This has been verified with the respective commissioning certificates of the WTGs and found to be OK. CR D2 is closed.

3.2 Baseline

The proposed project adopts CDM approved methodology ACM0002, version 09: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, which is approved under VCS 2007.1.

The project satisfies all criteria for ACM0002. The application of baseline methodology is assessed as correct. There is no methodology deviation or revision.

The project participant used ACM0002, version 09 approach to determine the emission coefficient of the indicative simplified baseline and monitoring methodologies for selected large scale CDM project activity which states that the baseline scenario in case of installation of a new grid-connected renewable power plant/unit is "Electricity delivered to the grid by the project

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activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". The selection of baseline scenario is assessed to be appropriate.

The project proponent has calculated the Simple Operating Margin (OM) based on the latest three year statistics data (year of 2005-06, 2006-07, 2007-08) as per Central Electricity Authority guidelines version 4.0 October 2008 and the Operating Margin Emission Factor is 0.9982 tCO₂/MWh, which is average of the three year data. The value for Build Margin (BM) for 2007-2008 is directly used, i.e., 0.7133 tCO₂/ MWh and a weightage factor of 75% & 25% is used for OM and BM to arrive at the Combined Margin value of 0.9269 tCO₂/MWh.

The Combined Margin (weighted average of Simple Operating Margin and Build Margin) is estimated based on three years averages (2005-06, 2006-07 and 2007-08) of Simple Operating Margin and Build Margin which is in line with steps of "Tool to calculate the emission factor for an electricity system". Both the values of Simple Operating Margin and Build Margin are selected under ex-ante approach. The grid boundary w.r.t the connected state grid is in Southern Grid of India.

The project proponent has used the published data of CEA, Version 4, October 2008 to calculate the Simple Operating Margin (OM). For wind and solar projects, "Tool to calculate the emission factor for an electricity system" allows the usage of the default weights which are as follows: $w_{OM} = 0.75$ and $w_{BM} = 0.25$. Using the above values the combined margin emission factor is valued at 0.9269 tCO₂/MWh.

The calculation of EF_y is current and publicly available and published by the Central Electricity Authority on its web-site^{/cea/}. The validation team is convinced of the result of the emission coefficient calculation. It is deemed to be adequate, transparent and conservative.

The additionality has been assessed using project test. The implementation barrier, investment barrier & common

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Step as per VCS 2007.1	Argument	Assessment
Step 1: Regulatory Surpluses	- Local or National Legislation does not require the production of the underlying service or product with the chosen technology. - There is no legal requirement on the choice of a particular technology for power generation. - The applicable Environmental Regulations do not restrict the use of wind energy for power generation. - The implementation of project activity is a voluntary initiative and it is not mandatory or a legal requirement. For power generation, the Electricity Act 2003 does not restrict or empower any authority to restrict the fuel choice, the applicable environmental regulations do not restrict the use of wind energy. - Project Proponents have been issued with all required regulatory clearances before commissioning.	Validation team has checked all the National Regulations and Local legal requirements. It was found that there is no legal requisite in India and at the local level which restricts the implementation of wind power generating projects. Hence the argument is appropriate for this project activity. ☒ Step passed ☐ Step not passed ☐ Not applicable
Step 2:	The project faces capital or investment return	Investment Barrier:

Step as per VCS 2007.1	Argument	Assessment
Investment Barrier	constraints that can be overcome by the additional revenues associated with the generation of VCU. So the PP has chosen Benchmark Analysis to demonstrate the additionality of the projects in the bundle. Weighted average costs of capital (WACC) has been considered as the benchmark for the project activity. To arrive at this benchmark risk free rate from Indian Government bond rates published by the RBI for various years, starting from 1980-81 till 2006-07 were analyzed in which weighted average interest rate on Central Government securities for the year 2004-05 was chosen. Sensex detail for the year 2004-05 was also evaluated to understand the market returns. The difference in this annual market return and the interest rate on Central Government Securities available from RBI has been used to arrive at the market risk premium for the project. Beta calculation for four power generating industries has been carried out to arrive at the average beta applicable to this project activity. Along with this, State Bank	Various elements have been checked during the additionality assessment. Validation team has checked the identified financial indicator (Project IRR), which is most suitable for the project type and decision context. In order to verify the relevant benchmark value of WACC, validation team has referred all necessary supportive data and found OK. Project proponents have demonstrated through the investment analysis that the financial returns of the project activity are below the requisite benchmark. TUV-NORD considers the benchmark chosen as appropriate for the project activity. Using the investment analysis, the project proponents have demonstrated the Project IRR of

Step as per VCS 2007.1	Argument	Assessment												
	of India (Nationalised bank) BPLR of 10.25% on the debt as on 01/01/2004 and cost of equity have been added together to arrive at benchmark WACC of 14.69%. Since the Project IRR is chosen as the financial indicator to demonstrate the additionality; WACC is one of the appropriate benchmarks as per the Guidance on Investment Analysis EB 41, Annex 45, and version 2.	all the five investors as mentioned in the below table. <table><tr><th>Project proponent</th><th>Project IRR</th></tr><tr><td>1. Karnataka Breweries & Distilleries Ltd.</td><td>12.73%</td></tr><tr><td>2. Sapthagiri Distilleries Private Ltd</td><td>10.27% for Tamil Nadu WTGs & 13.53% for Karnataka WTGs</td></tr><tr><td>3. D.K. Audikesavulu</td><td>3.45%</td></tr><tr><td>4. D.A. Satyaprabha</td><td>2.67%</td></tr><tr><td>5. D.A. Srinivas</td><td>3.71%</td></tr></table> Above mentioned Project IRRs for all the investors including the one getting highest returns i.e., 13.53% from the project activity is lower than benchmark WACC of 14.69%. Thus, the established investment barrier has been assessed to be correct. The arguments with	Project proponent	Project IRR	1. Karnataka Breweries & Distilleries Ltd.	12.73%	2. Sapthagiri Distilleries Private Ltd	10.27% for Tamil Nadu WTGs & 13.53% for Karnataka WTGs	3. D.K. Audikesavulu	3.45%	4. D.A. Satyaprabha	2.67%	5. D.A. Srinivas	3.71%
Project proponent	Project IRR													
1. Karnataka Breweries & Distilleries Ltd.	12.73%													
2. Sapthagiri Distilleries Private Ltd	10.27% for Tamil Nadu WTGs & 13.53% for Karnataka WTGs													
3. D.K. Audikesavulu	3.45%													
4. D.A. Satyaprabha	2.67%													
5. D.A. Srinivas	3.71%													

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Step as per VCS 2007.1	Argument	Assessment
		spreadsheets^{/XLS3/} provide proof for the non-viability of the project. The input data and assumptions for calculation of IRR like (profit after tax, net cash flow, book depreciation, term loan & equity) were verified with references^{/PO/, /LSL/, /PPA1-PPA53/, /O&M/} provided by PP. The considered benchmark is appropriate. The estimated annual electricity for the WTGs located in Tamil Nadu is based on the PLF of 27.46% which is considered as per TNERC Amending Order no. 5 dated May 18, 2006, which was an amendment to TNERC Proceedings, Order no. 3 dated May 15, 2006. The TNERC proceedings, Order no. 3 dated May 15, 2006 and Amending Order no. 5 dated May 18, 2006 were referred in this regard. For considering the PLF of 27.46%,

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Step as per VCS 2007.1	Argument	Assessment
		information on wind velocity, air density, quality, capacity and age of machines, height of the hub, and length of blades were obtained in Tamil Nadu from Tamil Nadu Energy Development Agency. The PLF was calculated by TNERC for two different groups of projects commissioned prior to and after the date of TNERC Order no. 3. Since this project falls under group II based on the date of commissioning of WTGs, the PLF of 27.46% considered for this project activity is found to be valid and is acceptable. KERC order dated January 18, 2005 entitled "In the matter of Determination of Tariff in respect of Renewable Sources of Energy", after considering various PLFs proposed by different companies and State

Step as per VCS 2007.1	Argument	Assessment								
	A sensitivity analysis also has been carried out and the same is provided as below: <table><tr><th>Investors</th><th>10% increase in Project IRR</th><th>Base Case (Project IRR)</th><th>10% decrease in Project IRR</th></tr><tr><td>Karnataka Breweries &</td><td>14.42%</td><td>12.73%</td><td>10.97%</td></tr></table>	Investors	10% increase in Project IRR	Base Case (Project IRR)	10% decrease in Project IRR	Karnataka Breweries &	14.42%	12.73%	10.97%	Government entities and having examined the actual PLF achieved by the wind power plants in operation in Karnataka, recommends a PLF of 26.50%. This KERC recommended PLF of 26.50% has been considered for the WTGs located in Karnataka. Hence the PLF considered for this project activity is found to be valid and is acceptable. The project revenue is sensitive to the electricity generation. Hence the sensitivity analysis has been carried out by the PP for the above variable. The calculation has been reviewed and it is concluded that the project activity has an IRR less than the benchmark value, clearly indicating that the project is financially not feasible without carbon benefits. The sensitivity analysis has also
Investors	10% increase in Project IRR	Base Case (Project IRR)	10% decrease in Project IRR							
Karnataka Breweries &	14.42%	12.73%	10.97%							

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Step as per VCS 2007.1	Argument				Assessment
	Distilleries Ltd.				been provided for individual developers with increase in the generation to a tune of +/- 10% and it has been verified that the Project IRR does not cross the benchmark except for one project (Sapthagiri Distilleries Private Ltd., for WTGs located in Karnataka) in this bundled project activity. But the possibility of achieving higher PLF so as to meet the benchmark returns is very unlikely. ☒ Step passed ☐ Step not passed ☐ Not applicable
	Sapthagiri Distilleries Private Ltd a)	11.79%	10.27%	8.65%	
	In Tamil Nadu b)				
	In Karnataka a)	15.30%	13.53%	11.70%	
	D.K. Audikesavulu	4.70%	3.45%	2.14%	
	D.A. Satyaprabha	3.98%	2.67%	1.28%	
	D.A. Srinivas	4.97%	3.71%	2.39%	
Step 3: Common Practice	Common practice analysis has been carried out for Tamil Nadu and Karnataka with the publicly available data. The scenario in Tamil Nadu is explained as per the statistics published in the TNERC proceedings ⁴ , Order no. 3 dated May 15, 2006 where the total installed capacity in India				By the TNERC Proceedings, Order no. 3 dated May 15, 2006 for Tamil Nadu, The CEA Executive Summary report for March 2006 & The Annual Report 2005-06, by Ministry of New and Renewable Energy

⁴ <http://tnerc.tn.nic.in/orders/CP%20Order-approved%20host%20copy.pdf>

⁵ http://www.cea.nic.in/power_sec_reports/Executive_Summary/2006_03/6.pdf

Step as per VCS 2007.1	Argument	Assessment
	being 124,287 MW the renewable resources contributes to around 6.97% i.e., 8,661 MW. The TNERC Proceedings is also cited to show that out of the total potential of 82,200 MW of renewable energy resources available in India, wind power contributes to only 6.49% i.e., 5,340.60 MW. The scenario in Karnataka is explained based on the statistics published in the CEA Executive Summary report for March 2006⁵ which gives the Indian power scenario, as on March 31, 2006. As per this report, the installed power generation capacity all over India is 124287.17 MW and the installed renewable energy sources generating projects contributes to 6190.86 MW, which is about 4.9% of the total generating capacity in India. Region-wise installed capacity was also provided in the report where the Thermal power stations in the Southern grid contributes to 16% (20366.32 MW) and renewable energy sources just 3.4% (4233.49 MW) of the total installed capacity in India. The Annual Report 2005-06, by Ministry of New	for Karnataka, it has been established that the contribution towards installation of renewable energy projects, especially wind power projects in India, in the Southern region was very low. As a result of existence of the analysis of the barriers, the project activity has been concluded as not a common practice scenario in the region. The argument is hence acceptable. ☒ Step passed ☐ Step not passed ☐ Not applicable

⁶ http://mnes.nic.in/annualreport/2005_2006_English/CH8/2.html

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Step as per VCS 2007.1	Argument	Assessment
	and Renewable Energy ⁶, Government of India has been cited to show that out of 4434.5 MW of total wind power installed capacity for electricity generation in India, Karnataka evidenced only 487.00 MW as on December 31, 2005. Hence, wind energy in Karnataka contributes to only 10.9% during the period. Hence it has been sufficiently demonstrated that the development of wind power project without VCS revenues is not a viable option.	

Thus the validation team arrived at the opinion that the project activity is assessed to be additional.

However, following CAR & CR issues were raised and consequent upon the satisfactory response received from the project promoter, the issues have been closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR B1 The flow of narration of issues under section 2.5 should follow the 'Tool for the demonstration and assessment of additionality' as well as 'Combined tool to identify the	/PD1/	The additionality is presented as per the tools and EB guidelines	/PD3/& /XLS3/	Demonstration of additionality under Section 2.5 of the revised PD and the financial XLS are in line with the

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
baseline scenario and demonstrate additionalty'. Barriers should be described under various heads identified by these Tools and Annex 45 of EB 41.				prescribed Steps and Guidance provided under 'Tool for the demonstration and assessment of additionalty', version 05.2, 'Combined tool to identify the baseline scenario and demonstrate additionalty', version 02.2 & Guidance on the Assessment of Investment Analysis, version 02, Annex 45 of EB 41. This is found to be OK. CAR B1 is closed.
CAR B2 In 750KW and 600KW worksheets, the PLF has been stated as 24.69%. As per TNERC Order, it is 27.46%. Moreover, the PLF considered for all the projects should be machinery supplier guaranteed generation or the PLF recommended by TNERC or KERC as the case may be, whichever is higher.	/XLS1/	The PLF taken is as per the TNERC order	/XLS3/	The PLF of 27.46% considered for the projects located in Tamil Nadu is as per the TNERC Amending Order no. 5 dated May 18, 2006, which was an amendment to TNERC Proceedings, Order no. 3

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				dated May 15, 2006. Hence, this TNERC recommended PLF of 27.46% is applicable to this project activity. This was verified with the respective TNERC order mentioned above. This is found to be OK. CAR B2 is closed.
CR B1 Provide the sensitivity analysis in a tabular format having the base PLF and $\pm$ 10% increase/decrease. Sensitivity analysis has to be conducted in respect of as many variables as reasonably possible. The results need to be mentioned in the PD. Also, provide the sensitivity analysis on the PLF of both Tamil Nadu and Karnataka as they are different in two states.	/PD1/	The PLF used is separate for the two states and sensitivity analysis is done as per the EB Guidance.	/PD3/& /XLS3/	The project revenue is demonstrated sensitive to the electricity generation in the respective project location by carrying out sensitivity analysis to a tune of $\pm$ 10% for individual investor. Sensitivity analysis has been presented in a tabular form under Section 2.5 of the revised PD and is in line with the Guidance

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				provided on the Assessment of Investment Analysis, version 02, Annex 45 of EB 41. This is found to be OK. CR B1 is closed.
CR B2 It is found from the details provided under investment barrier in the PD and in the financial spreadsheet that the Project IRR has been calculated based on capacity of the WTGs. This is not acceptable.	/PD1/	The revised financial analysis is done as per the individual investor-wise.	/PD3/&/XLS3/	The revenue projections in the revised financial XLS and under the investment barrier in the PD are demonstrated investor-wise. These have been verified and are found OK. CR B2 is closed.
CR B3 Project cash flow (based on which IRR has been derived) does not seem to be correct and not acceptable. Moreover, the given cash flow also seems to suffer from double counting. It should include only profit after tax, depreciation, salvage value and tax shield.	/XLS1/	The cash flow is now revised	/XLS3/	The revised 'cash flow' worksheet in the financial XLS for every investor has been demonstrated by taking 'profit after tax', 'depreciation' and 'tax shield' into consideration.

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CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
				Salvage value has been considered to arrive at the value of 'profit after tax' at the first year in 'p&l' worksheet and the same has been carried forwarded to the 'cash flow' sheet. This is found to be OK. CR B3 is closed.
CR B4 Book depreciation and income tax depreciation seem to have been provided only for WEGs. Clarify how other assets are depreciated/amortized	/XLS1/	The depreciation is reworked in the project financials	/XLS3/	'Book depreciation' and 'Calculation of depreciation as per IT Act' in 'P&l' worksheet of the revised financial XLS have been arrived after depreciating the cost on other assets and WTGs except land value. This is found to be OK. CR B4 is closed.
CR B5 MAT has been provided in all the cases. While 3 out of 5	/XLS1/	The cash flow is now revised	/XLS3/	MAT is applicable under Section

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
constituents of the bundle are individuals, to whom MAT will not apply, PP may also clarify whether MAT is applicable to the project activities at all under IT Act.				80IA of the Income Tax Act in India only to the companies in Power and infrastructure development. However, the limited companies can claim MAT by filing 'income under energy business'. Thus, MAT is considered for the Karnataka Breweries & Distilleries Ltd. and Sapthagiri Distilleries Private Ltd. The other three project owners are individuals and are not covered under the 80IA act, so MAT is not considered for those. Hence, CR 5 is closed.

3.3 Monitoring Plan

The proposed project uses CDM approved methodology ACM 0002 /Version 9: Grid Connected Renewable electricity Generation, which is approved under VCS 2007.1.

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The project satisfies all criteria for ACM 0002. The application of monitoring methodology is assessed as correct.

The monitoring plan^{/PD3/} provides detailed information related to the collection and archiving of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Estimate changes in emissions from the site

The parameters to monitor are electricity exported to the grid, electricity imported from the grid and net electricity generated.

The evacuation facility of the project activity to deliver the power to grid is maintained by the state utilities (TNEB & KPTCL).

In Tamil Nadu, the a main meter is located at each of the WTGs having reference to HTSC Nos. 1312, 1329, 1337, 1336, 1442, 1440, U 1441, 2155, 2317, 2307, 2309 to 2316, 2318, 2325, D 4 to D 14, D 16, D 17, D 19 to D 25, 2319/TIN to 2321/TIN, 2232/TIN, 2233/TIN, 2270/TIN, 2306/TIN, 2289/TIN & 2170 at various project sites. This energy meter is a two-way meter to record the export of power generated by the wind mill to the grid and to record the import of TNEB's power from the grid. The main meter is of 0.5% accuracy class as per standard industry norms. The quantities of electricity exported and imported are measured by this meter on a continuous basis. The difference between the two parameters (export and import) is the net power exported.

The respective project sites in Karnataka holds a common main and check meter located for all the wind turbines at the receiving station at the point of step-up transformer. Both the meters (main and check) are of 0.2% accuracy class as per standard industry norms. The power evacuated by the wind mill belongs to a particular feeder line. Thus meter reading is taken at the substation and apportioning is done to calculate the transmission loss and finally net electricity supplied by individual wind mill. The calculation procedure is mentioned under section 3.3 of the PD and was checked and found to be OK.

The export and import readings of both main and check meters are recorded on a monthly basis by the officers of

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TNEB and KPTCL in the presence of operation and maintenance personnel of M/s. Suzlon Infrastructure Limited and M/s. Vestas Wind Technology India Private Limited in the respective states. All the readings are jointly recorded^{/JMR/}. Thus the project conforms to the requirement of clause III of ACM 0002, version 9.

The transmission and distribution losses and the minimum reactive power consumption are taken into account as per TNERC guidelines-order no 3 dated May 15, 2006. The actual quantum of power exported is calculated and is duly signed by the TNEB officer in Tamil Nadu.

In Karnataka, the Net electricity generated from the windfarm in this project activity is calculated based on the difference of electricity exported to the grid, electricity imported from the grid, transmission loss incurred during export of electricity and import of electricity. The procedure for calculating transmission loss for the electricity exported and electricity imported is mentioned under section 3.3 of the PD. This was checked by the joint meter reading^{/JMR/} reports and invoices raised by the PP to the KPTCL. The actual quantum of power exported is calculated after considering all the above and is duly signed by the officer of KPTCL.

Apportioning of transmission loss for the WTGs in Karnataka is done as the percentage of electricity generated by the WTG out of total generated electricity from the windfarm. The 'B-form' i.e, joint meter reading^{/JMR/} report provided by CESC Mysore/HESCOM (Chamundeshwari Electricity Supply Corporation Limited/Hubli Electricity Supply Company Limited), a subsidiary of KPTCL, every month gives details of electricity generated by the WTGs owned by the investor after accounting the transmission losses for the WTGs.

For all practical purposes, it is the reading in the main meter that is reckoned for calculation, as long as the readings in the main and check meters are within acceptable limits.

A daily generation report is also prepared by the operation and maintenance personnel and sent to Project Participant via server.

Based on the daily generation report and monthly meter reading report duly signed by the TNEB/KPTCL officer, the project proponents raise an invoice on the TNEB/CESC

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India" Mysore/HESCOM at the rates stipulated in the PPA^{/PPA1-PPA53/} for such quantities as determined to have been exported and copies of such invoices are maintained as part of monitoring records. A comparison of such invoiced quantity of power serves as a check for the net monthly power exported to the grid based on which the emission reductions are calculated.

The on-site visits were carried out from 29/07/2009 to 31/07/2009 in Tamil Nadu and Karnataka. Two members of the Validation team attended the site visit.

Before and during the on-site visit the Validation team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

During the onsite-visit the information above was verified by the joint meter reading^{/JMR/} reports which have been duly signed by the representatives of TNEB/KPTCL submitted by the PP. This was found to be in line with the monitoring plan^{/PD3/} & the PPA^{/PPA1-PPA53/} signed for the project and deemed to be OK.

The meters are calibrated as per the PPAs signed between TNEB/KPTCL with the respective PPs and as per the TNEB/KPTCL norms.

Responsibilities related to monitoring are clearly defined in the monitoring plan and were assessed and found to be OK.

However, following CR was raised and successfully closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR M1 Review the list of monitoring parameters to be monitored especially in view of the monitoring plan in the two wind	/PD1/	The list of monitoring parameters is revised for Tamil Nadu and Karnataka sites	/PD3/	The revised PD under Section 3.3 contains the actual monitoring details and description of the metering

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
stations of Karnataka vis-à-vis the requirements of the Version 09 of the methodology. Please clarify about power imports.				structure as on the project sites in Tamil Nadu and Karnataka. These were also checked during the on-site visit. This is found to be OK. Hence, CR M1 is closed.

3.4 Calculation of GHG Emissions

GHG emission reduction achieved by the project activity is calculated as the difference between the baseline emission and the project emission as well as the leakage. There are no GHG emissions arising from the project being a wind power project. Hence, the project emissions are zero. As the project activity does not involve power plant construction, fuel handling (extraction, processing, and transport), and land inundation, the leakage due to the project activity is not applicable as per ACM 0002.

Following the ACM0002 methodology, the combined margin (CM) was calculated using the approved consolidated baseline Methodological tool (Version 01) "Tool to calculate the emission factor for an electricity system". *Ex-ante* was chosen to calculate the baseline emission factor.

Baseline emission is equal to Net Electricity export by the project to the grid by the project activity (EG_y) multiplied by the grid emission factor ($EF_{grid,y}$). Also refer section 3.2.

The baseline emission factor is equal to the CM, which is applying the default weights which are as follows: $w_{OM} =$

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0.75 and $w_{BM} = 0.25$ for operating margin emission factor (EF OM, y) and the build margin emission factor (EF BM, y).

The calculation method of the OM and BM is derived from the guide of OM and BM calculation issued by CO₂ Baseline Database for the Indian Power Sector, User Guide (Version 4, October 2008) issued by CEA.

The validation team has checked the underlying input values as well as the computation in the emission reduction spreadsheet^{/ER/}. The estimation of the emission reduction was realized in a transparent and conservative manner and is well documented under section 4.2 – 4.4 of the PD.

As per the final PD^{/PD3/} this project is expected to reduce emissions of 1,193,820 tCO₂e over a 10 year crediting period.

Following CRs were raised and was subsequently closed out in view of the satisfactory response received from the project promoters:

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR C1				
Review and ensure that the values and methods used for calculating OM and BM are in line with the referred tool. Also, ensure that values up to at least four decimal places are considered for arriving at average values	/PD1/	The values and method is modified to that as per the methodological tool and decimal places are also used up to four digits	/PD3/	Calculation of OM and BM in the revised PD is as per 'Tool to calculate the emission factor for an electricity system (Version 01.1)'. The three year average value from 2005-06 to 2007-08 i.e., 0.9982

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
and for subsequent calculations.				tCO ₂ /MWh of OM and the BM value of 2007-08 i.e., 0.7133 tCO ₂ /MWh is arrived after considering four decimal places available under the CEA database, Version 4. This has been checked and found OK. CR C1 is closed.
CR C2 a) As the project is simultaneously being validated under CDM protocol, please submit a declaration by all project participants clearly stating that there shall not be any double counting and that the DOE shall be kept informed about the status of the project in regard to CDM Validation.	/PD1/	a) & b) A declaration and authorization letters have been provided by the PP to the DOE.	/PD3/ /UD-LET/ /AUTH-LT/	a) A declaration in response to the clarification raised has been provided by the PP stating the period from the date of commissioning till March, 2009 will not be claimed for carbon credits under any other GHG program except VCS. The declaration has been verified is

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
b) Please submit a letter from each PP appointing the grouped project representative to represent his/her interests.				found to be OK. b) Authorization letter stating M/s. Sapthagiri Distilleries Private Limited as focal point for communication on behalf of other PPs has been verified and is found to be OK. CR C2 is closed

3.5 Environmental Impact

As per the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated 27 January 1994 and further modified on 14th September 2006, 38 Categories of project activities are required to undertake environmental impact assessment studies. The details of these activities are available at: <http://envfor.nic.in/legis/eia/sol533.pdf>

Wind power projects of this scale doesn't fall under the list of activities requiring EIA as it will not involve any negative environmental impacts and the WEGs installed for generation of power use wind (cleanest possible source of renewable energy). However, the clearance from electricity board and the stakeholders' meeting proceedings have been submitted by the project promoter and verified by the DOE. They are found to be in order.

3.6 Comments by stakeholders

A stakeholder consultation meeting of the project was conducted in Karnataka on 2008/09/27 at Billenahalli village in Hassan district & on 2008/09/16 at Suzlon Infrastructure Services Limited site office, Harogeri

VCS 2007.1 Validation Report of the GHG emission reduction project entitled "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India" village in Gadag district. In Tamil Nadu, stakeholder consultation meeting was conducted on 2008/04/16 at Suzlon Infrastructure Services Limited site office at Puspathur village, Palladam taluk & on 2008/04/25 at Suzlon Infrastructure Services Limited site office, Radhapuram village in Sankaneri taluk. Stakeholders' meeting notification was provided to the local Gram Panchayats and farmers in the villages. A summary of the stakeholder comments^{/SCM/} have been included in the VCS PD. All comments were positive and it has been verified that all comments sufficiently have been addressed.

The statutory stakeholders, such as the CESC Mysore/HESCOM/TNEB, concerned Land Revenue authorities have issued the necessary licenses for the project activity. These have been verified and found to be in order.

However, following CR was raised and was subsequently closed out.

CAR/CR	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CR L1 Copy of notice informing the local stakeholders about the proposed meeting may be submitted for verification. Provide the minutes of the meeting of the stakeholders' consultation.	/PD1/	Enclosures for this are as under: 1. Copies of advertisement given for stakeholders meeting. 2. Minutes of the stakeholders meeting 3. Photos of the stakeholders meeting 4. Copy of the letter sent Local Panchayat office about stakeholders meeting.	/SCM/, copies of public notice on the stakeholders consultation	Notification copies of the stakeholders' consultation meeting and minutes of the meeting have been submitted in response to the clarification raised. These very verified and checked during the site-visit. Hence, CR L1 is closed

4 Validation conclusion

M/s. Sapthagiri Distilleries Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the validation of the project - "53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India", with regard to the relevant requirements of VCS 2007.1 Standard as well as criteria for consistent project operations, monitoring and reporting.

The project activity generates electricity which will be supplied to the Southern Grid of India and then distributed to connected end users.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this validation. In the course of the validation 4 Corrective Action Request (CAR) and 11 Clarification Requests (CR) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validators by project proponent.

As a result of the validation, the validators confirm that:

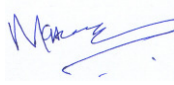
The project fulfils criteria of VCS 2007.1 provided.

- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of ACM0002, Version 09.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,193,820 tCO₂e (total) is most likely to be achieved within the 10 years renewable crediting period which will be renewed once.

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No restrictions or uncertainties were identified related to the validation.



Mr. Ma. Paa. Puratchikkanal

Team Leader

Bangalore, 2009-10-23



Eric Krupp

Final approval

Essen, 2009-11-15

5 References

Table 5-1: Documents provided by the project proponent

Reference	Document
/PD1/	VCS PD for M/s.Rakesh Builders Developers wind mill dated at 19/06/2009, Version 1
/PD2/	VCS PD for M/s. Rakesh Builders Developers wind mill dated at 16/10/2009, Version 2
/PD3/	VCS PD for M/s. Rakesh Builders Developers wind mill dated at 22/10/2009, Version 3
/PHT/	Photographs of the Project Site
/TD/	Technical specification of the WTGs.
/XLS1/	Financial calculation sheet corresponding to VCS /PD1/
/XLS2/	Financial calculation sheet corresponding to VCS/PD2/
/XLS3/	Financial calculation sheet corresponding to VCS/PD3/
/ER/	Emission reduction calculation sheet corresponding to VCS/PD4/
/Appendix-1/	Investor-wise details on the unique identification of all the 53 WTGs
/CR1/-/CR53/	Commissioning certificates of all the 53 WTGs from the TNEB/ KPTCL
/PPA1/-/PPA53/	Power Purchase Agreements between TNEB/CESC Mysore/HESCOM and the respective PP for all the 53 WTGs
/PO/	Purchase orders for all the 53 WTGs
/UD-LET/	Letter from all the investors regarding creation of no other form of environmental credit by this project activity
/AUTH-LT/	Authorization letter by the PP as a focal point for communication on behalf of other PPs
/JMR/	Joint meter reading reports for all the 53 WTGs
/LSL/	Loan sanction letters from the respective banks for all the 5 investors
/SCM/	Minutes of the stakeholders’ consultation meeting

VCS 2007.1 Validation Report of the GHG emission reduction project entitled “53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India”

Reference	Document
/O&M/	Operation & Maintenance agreement for all the 53 WTGs between all the 5 investors and the WTG suppliers M/s. Suzlon Infrastructure Limited and M/s. Vestas Wind Technology India Private Limited

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM 0002/	Indicative simplified baseline and monitoring methodologies for selected large-scale CDM project activity categories (Version 9)
/IPPC-RM/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book

Table 5-3: Websites used

Reference	Link	Organisation
/vcs/	www.v-c-s.org	VCS website
/unfccc/	www.unfccc.int	UNFCCC website
/cea/	www.cea.nic.in	Central Electricity Authority
/rbi/	www.rbi.org.in	Reserve Bank of India
/MoEF/	http://envfor.nic.in/legis/eia/so1533.pdf	Ministry of Environment and Forests, GoI, India
/PLF/	http://tnerc.tn.nic.in/orders/CPP%20Order-approved%20host%20copy.pdf	Tamil Nadu Electricity Regulatory Commission
/PLF/	http://www.kerc.org/order2005/Order%20on%20NCE%20Tariff%20(FINAL).doc	Karnataka state Electricity Regulatory Commission
/MNES/	http://mnes.nic.in/annualreport/2005_2006_English/CH8/2.html	Ministry of New and Renewable Energy, GoI, India

VCS 2007.1 Validation Report of the GHG emission reduction project entitled “53.75 MW Bundled wind Power project in Tamil Nadu and Karnataka by KBD Group, India”

Reference	Link	Organisation
/satsig/	http://www.satsig.net/maps/lat-long-finder.htm	Satellite Signal

Table 5-4: Interviewed Persons

Reference		Name	Organisation / Function
/IM01/	☒ Mr. ☐ Ms.	Mr. P.S. Chakrapani	Financial Advisor, M/s. Sapthagiri Distilleries Private Limited
/IM02/	☐ Ms. ☒ Mr.	Mr. Pravin Jadhav	Consultant, CantorCO2e India Pvt Ltd.
/IM03/	☐ Mr. ☒ Ms.	Ms. Priyanka	Consultant, CantorCO2e India Pvt Ltd.