

## CDM Executive Board

Our / Your Reference

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### Request for Review

"31 MW Wind energy project in, India by Grace Infrastructure Pvt Ltd" (Ref. no. 2813)

Dear Sir/Madam,

Please find below the response of the TÜV NORD JI/CDM Certification Program to the request for review for the above mentioned project No. 2813.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program



Rainer Winter

Request for Review (1)	
Issue raised by EB Members	1. <i>The DOE is requested to explain how it has validated that continuing and real actions have been undertaken to secure CDM status in accordance VVM para. 100 (b), considering a time gap of 2 years and 4 months between the project start date and signing of contract with CDM consultant.</i>
Response of PP	<p>Documentary evidences to support serious consideration CDM prior to start of the project and Time line of the projects including steps to demonstrate the “real and continuing” efforts have presented and verified by DOE.</p> <p><u>The Project Start date as validated by the DOE is - 11/08/2004, and the proof of the same was submitted during validation.</u></p> <ul style="list-style-type: none"> <li>• The board meeting resolution dated 21/06/2004 , evidencing CDM consideration , has been submitted to DOE, where in the board meeting states that company intends to invest in the renewable energy sources and set up wind power projects under clean development mechanism “CDM” activity.</li> <li>• The resolution also records that the management has already invested in another CDM project in which the group company Leo Fasteners has participated as member of a bundled project along with other companies. The meeting also records that the PDD work for that project is underway, and same is expected to be registered. (Subsequently the project has been registered as project # 1049 in June 2007).</li> <li>• So the management had already thought and committed on CDM consideration for their, first project and based on the same CDM was considered for the second project (Project # 2813) also. Taking into consideration the delays experienced the management wanted the second CDM project to be done by them without getting into a bundle.</li> <li>• Also it was envisaged by the PP that in order to secure this as a successful CDM project , this project would be carried out in three phases because the Board has decided it safe to go in for a phased approach to ensure that the supplier capabilities and the financial strategy could be well balanced by the staggered approach . This fact is also recorded in the minutes of the meeting and submitted to DOE.</li> <li>• The minutes of the board meeting has been provided to DOE.</li> </ul> <p><u>Continuing real actions were taken up by GRACE to secure CDM benefit :</u></p> <ul style="list-style-type: none"> <li>• Originally the project was expected to have a capacity of 37.5 MW in 3 phases. The progress was formally reviewed on 28/07/2004, 29/07/2005 and 31/03/2006. The planned and actual progresses were reviewed in these meeting and finally the capacity was fixed at 31 MW. The third phase was completed on 08/04/2007. The records of the review documents have been provided to DOE.</li> <li>• In parallel, consultants were contacted for the purpose of contracting. Expression of Intent for CDM development was communicated on 11/08/2004 to two consultants of which one consultant was the one who was associated with a previous project. Various clarifications like capacity fixation etc were being provided to them. Correspondence to them in this direction of contracting in terms information sharing, data collection at Grace Office, proposals and legal contracting etc were presented in the time line .Finally of the two, URS was approved as the CDM consultant and the approval of the proposal along with PIN with the available data was completed, on 20/06/2006 which is less than</li> </ul>

	<p>two years from the project start date. The approved legal version of the contract by the project participant as per our internal requirements was communicated to URS on 01/01/2007.</p> <ul style="list-style-type: none"> <li>• The detailed list of chronology given above has been presented in the PDD.</li> <li>• Reliable evidence pertaining to the above in terms of documents related to correspondence has been provided to DOE.</li> <li>• From the above clarifications, it can be evidenced that this CDM project activity has taken real continuing actions to secure CDM status in, compliance with EB41 – Annex 46.</li> </ul>
Response of DOE	<p>TUV Nord would like to clarify in particular the questions raised by the EB members, based on the following provided explanations:</p> <p>TUV Nord as per the VVM Para 100 (b) guidance has validated the real and continuing actions by the PP for CDM benefits based on the following chronological events and documented evidences :</p> <ul style="list-style-type: none"> <li>• The PP has placed the Purchase Order No.1 to 10 dated <u>11/08/2004</u> to M/s. Suzlon Energy Ltd, Pondicherry for the supply, Installation and commissioning of 10 Nos of Suzlon S6-1250kW WTGs by M/s Grace Infrastructure Pvt Ltd. (Attachment 1)</li> <li>• Simultaneously the same day 11/08/2004 along with the placement of PO, the PP has sent enquiries for CDM consultancy to two consultants namely M/s. Urs Productively and M/s. Senergy Global (Attachment 2).</li> <li>• In response to the enquiry for CDM consultancy from project participant, M/s. Urs Productively on 18/08/2004 has expressed its interest in associating with Project participant to structure and develop their project as CDM (Attachment 3).</li> <li>• Based on telephonic conversation from M/s. Urs productively the project participant sent the project details of Phase I on 12/02/2005 (Attachment 4).</li> <li>• The minutes of the minutes of 28/07/2005 by Board of Directors stating the delay in installation of Phase I, increase in project cost and expected returns being less than 12%. The minutes have also recorded that only with additional revenue from CDM the project would be viable (Attachment 5).</li> <li>• Email from M/s. Senergy Global on 10/08/2005 regarding Introduction of different type of trading offers and intimation of availability for meeting 16th to 20th of August to project participant (Attachment 6)</li> <li>• With regards to the telephonic conversation regarding the capacity of project, project participants have intimated that the capacity has not yet been confirmed and only after installation of second phase the capacity can be finalized. The same is communicated through a letters on 19/08/2005 to M/s. Urs Productively by the project participant (Attachment 7).</li> <li>• Letter on 14/12/2005 from project participants for M/s. Urs Productively regarding the consideration of 1500kW capacity WTGs for phase III (Attachment 8).</li> <li>• Based on communication from M/s. Urs productively the project participant sent</li> </ul>

	<p>the project details of Phase II on 16/02/2006 (Attachment 9).</p> <ul style="list-style-type: none"> <li>Minutes of the meeting of the Review of implementation of Phase II on 31/03/2006 by Board of Directors stating that increase in project cost and expected returns were less than 10%. The PP has also recorded the decision to proceed due to CDM benefits. (Attachment 10).</li> <li>Later dated 24/04/2006 letter from project participant regarding change in capacity of machines to be installed in Phase III and the revised capacity of project would be 31 MW to the consultants M/s. Urs Productively (Attachment 11).</li> <li>Letter dated 20/05/2006 to M/s. Urs Productively confirming the capacity and calling for discussion (Attachment 12).</li> <li>Letter from M/s. Urs Productively dated 27/05/2006 conveying that they will meet at the Project participant in the third week of June and submit the PIN and Proposal (Attachment 13).</li> <li>Submission of PIN to project participant along with the proposal dated 20/06/2006 by M/s. Urs Productively and subsequent confirmation by the intimating correction in PIN on 26/06/2006 and the proposal signed by project participant (Attachment 14 &amp; 14.1).</li> <li>Letter from project participant on 01/01/2007 referring their earlier acceptance of the proposal by M/s. Urs Productively and intimating about the signing of Agreement as per their administrative requirement (Attachment 15 &amp; 15.1).</li> </ul> <p>Based on the above mentioned events and the documentary evidences TUV Nord was convinced that the continuing and real actions have been under taken to secure CDM status as acceptable.</p>
<b>Request for Review (2)</b>	
Issue raised by EB Members	<p>2. <i>The DOE shall clarify how it has validated the investment analysis in accordance with VVM para. 109 &amp; 110, in particular (a) the suitability of the input values at the time of investment decision; and (b) the details for calculation of the benchmark with the submission of the WACC analysis excel worksheet as indicated in page 12 of the PDD.</i></p>
Response of PP	<p><u>(a) the suitability of the input values at the time of investment decision:</u></p> <p>For investment Analysis as stated in the PDD, Project IRR has been taken as the Financial Indicator for the Bench Mark analysis. (Ref PDD: <i>Sub-step 2b: Option III - Apply benchmark analysis</i>)</p> <p>The following documents have been submitted by the PP to provide input values for critical parameters to calculate the project IRR.</p> <ul style="list-style-type: none"> <li><b>CUF estimation letter</b> from Machine Manufacturer dated 30/06/2004, to estimate Net annual expected electricity supply to grid.</li> <li><b>Purchase Orders</b> starting from 11/08/2004 to support the total cost of the</li> </ul>

	<p>project</p> <ul style="list-style-type: none"> <li>• <b>PPAs</b> with TNEB to arrive at Electricity tariff</li> <li>• <b>Purchase Orders and Manufactures contract</b> starting from 11/08/2004 ,to arrive at Operational and Maintenance Expenses</li> <li>• <b>Allowable Depreciation Rate based on Indian companies act 1956</b> , applicable in the year 2004</li> <li>• <b>CUF estimation letter</b> from machine manufacturer, dated 30/06/2004, to estimate Capacity Utilization Factor</li> <li>• <b>Bank loan sanction letters</b> to arrive at the interest rate ( However this does not influence the pre tax Project IRR)</li> <li>• <b>Purchase orders starting</b> from 11/08/2004 , to support the Installed capacity</li> </ul> <p><u>Suitability :</u></p> <p>The project start date is 11/08/2004 which is also the date of the Purchase Order. As far as the suitability of these input values at the time of investment decisions, is concerned, the P.O date which also the project starting date is the key reference point. All the input values are taken from documents ( Such as POs , contracts , invoices) pertaining to this date</p> <p><u>(b) the details for calculation of the benchmark with the submission of the WACC analysis excel worksheet as indicated in page 12 of the PDD</u></p> <p>The work sheet Grace – WACC analysis with all the details of calculation has already been submitted to DOE,</p> <p>The work sheet Grace – WACC Analysis is submitted once again. (Annex-1)</p>
Response of DOE	<p>TUV Nord has validated the input values used in investment analysis in particular the questions raised by the EB members, based on the following provided explanations and documentary evidences:</p> <ul style="list-style-type: none"> <li>• Capacity utilization factor 27% for 1250kW machines and 32% for 1650kW machines was based on the details provided by the equipment supplier and the validation team was convinced on the conservativeness of the same as per the following references. <ul style="list-style-type: none"> <li>○ Based on MNES Annual Report 2003-04 (Refer to chapter 5 page 3) actual generation and capacity of wind mills the actual PLF achieved by wind mills in Tamil Nadu is stated as 18.34% based on the data available at the time of investment decision according to data of the generation<sup>1</sup> (1305501.417MWh) during 2002-03 and the installed capacity<sup>2</sup> (857.6MW) up to 2001-02 as a conservative approach.</li> </ul> </li> </ul>

<sup>1</sup> [http://mnre.gov.in/annualreport/2003\\_2004\\_English/ch5\\_pg3.htm](http://mnre.gov.in/annualreport/2003_2004_English/ch5_pg3.htm)

<sup>2</sup> [http://mnre.gov.in/annualreport/2003\\_2004\\_English/ch5\\_pg3.htm](http://mnre.gov.in/annualreport/2003_2004_English/ch5_pg3.htm)

	<ul style="list-style-type: none"> <li>○ Also as per Wind power directory 2002, the CUF is 20% (Attachment 16)</li> <li>○ And later the amendment<sup>3</sup> (Page 1) dated 18/05/2006 to TNERC order no 3<sup>4</sup> (page 70) dated 15/05/2006 states that the CUF of projects installed prior to date of this order is 25.9% (Group I)</li> </ul> <ul style="list-style-type: none"> <li>• The project cost which includes WTG cost, land cost, infrastructure cost, charges to EB has been considered based on the actual. As the project has been commissioned before validation the validation team considers that it is appropriate to use the actual financial values for the IRR calculations. The installation of WTGs are in different periods hence the WTG cost, land cost, infrastructure cost, charges to EB is considered based on purchase order for supply, Installation and commissioning of 10 Nos of Suzlon S6-1250kW WTGs dated 11/08/2004, purchase order for supply, Installation and commissioning of 10 Nos of Suzlon S6-1250kW WTGs dated 12/09/2005 and purchase order for supply, Installation and commissioning of 5 Nos of Suzlon 1500kW WTGs dated 20/02/2007. The cost as per the above mentioned purchase orders has been verified to be correctly used in financial analysis spread sheet for all the groups.</li> <li>• The tariff rate of Rs. 2.7 /kWh has been considered from the power purchase agreement between the project participant and the Tamil Nadu State Electricity Board (Statutory body), the agreement period is for 20 years and the tariff is fixed, hence the chosen value is appropriate.</li> <li>• The considered O&amp;M cost is based on the purchase order for supply, Installation and commissioning of 10 Nos of Suzlon S6-1250kW WTGs dated 11/08/2004, purchase order for supply, Installation and commissioning of 10 Nos of Suzlon S6-1250kW WTGs dated 12/09/2005 and purchase order for supply, Installation and commissioning of 5 Nos of Suzlon 1500kW WTGs dated 20/02/2007. The values as per the purchase order is used in financial analysis hence the chosen value is deemed to be appropriate.</li> <li>• The interest rates has been used based on Bank Sanction Letters of Term Loan from State Bank of India (29/10/2004), State Bank of Hyderabad (21/07/2005), HDFC (21/12/2005), Pondicherry the actual values has been used in financial analysis.</li> <li>• The depreciation considered is as per the Income Tax Rules for taxation and appropriate to the time of decision taken. TUV Nord, thus, is able to confirm that the input values used in the investment analysis are correct.</li> </ul> <p>The DOE has validated the details of calculation of applied benchmark based on the following.</p> <ul style="list-style-type: none"> <li>• Weighted average costs of capital (WACC) have 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 till the date of placement of first purchase order of the project has been analyzed and the value during 2003-04<sup>5</sup> the weighted average is 5.71%. Sensex<sup>6</sup> details for various years till the project start date 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 seven power generating industries has been carried out to arrive at the average beta applicable to this project activity. Along with this, RBI PLR<sup>7</sup> of average 10.25%</li> </ul>
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<sup>3</sup> <http://tnerc.gov.in/orders/NCESamend.pdf>

<sup>4</sup> <http://tnerc.gov.in/orders/ncses%20order%20approved%20order%20host%20copy.pdf>

<sup>5</sup> <http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/80303.pdf>

<sup>6</sup> <http://www.bseindia.com/scripsearch/scripts.aspx?myScrip=gip&flag=sp&Submit=GO>

<sup>7</sup> <http://www.rbi.org.in/scripts/WSSView.aspx?Id=9359>



	<p>on the debt and cost of equity have been added together to arrive at benchmark WACC of 14.01%. The excel sheet has been attached herewith as Annexure 1. Hence the values considered for benchmark calculation was deemed appropriate at the time of investment decision and also the chosen bench mark is suitable for the project activity.</p> <p>Based on the above clarifications and the evidence referred for the input values used in investment analysis were deemed to be appropriate.</p>
<b>Request for Review (3)</b>	
Issue raised by EB Members	<p>3. <i>The DOE shall explain how it has validated the common practice analysis in accordance with the "Tool for the demonstration and assessment of additionality" and VVM para. 118 requirements.</i></p>
Response of PP	<p>The Geographical region selected for the common practice analysis is Tamilnadu, since the investment parameters in other regions within India are different. For instance, the electricity tariffs in different regions are different. Other regional government policies are also different in different regions. So for the common practice analysis the Tamilnadu region is considered appropriate.</p> <p>In the PDD in page no 16 the common practice is analyzed. Here attempt is made to determine similar operational projects, other than CDM projects using data from official sources. The PDD states , in the period 2002-2007 , the installed capacity in the Tamilnadu Region , is 2618 MW , of which 1549 MW are projects registered or under validation according to the data compiled by PP. The PDD also states that even in the remaining of the projects, majority of the projects are seeking carbon revenues either as CDM projects or VER projects. These projects are in the initial stages. This data is not readily available as many of them are in the pre-GSP stage. It is roughly estimated by the PP that projects seeking carbon revenue under various stages will be more than 75 % .So it can be seen that a wide majority of the wind projects in this region are taken up only as CDM projects.</p> <p>From this is can be concluded that, in the Tamilnadu region similar and operational projects, of which many of the projects opted for CDM, are not widely observed and commonly carried out.</p> <p>Besides this as noted in the PDD, mostly power intensive companies invest in wind power in Tamil Nadu, to use the generation as captive consumption. Grace Infrastructure is part of the Leo Fasteners Group, which is an auto components company supplying to OEMs. This company is situated in an industrially backward town enjoying concessions in power and tax. It is not business as usual for such a company to invest in wind power. Moreover, the total power requirement of the Grace group of companies is only 2% of the estimated power generation from the wind project.</p>

Response of DOE	<p>TUV Nord has validated the common practice analysis in accordance with the “Tool for the demonstration and assessment of additionality” and VVM para. 118 requirements, based on the following provided explanations and documented evidences:</p> <p>a) The PP has chosen Tamil Nadu State in India (Host country) for the common practice analysis. The policies and legislation related to promotion of power from renewable energy sources were different and varied from state to state in the India. As per the Electricity Act 2003 and the subsequent National Electricity policy the different state electricity regulatory commissions have issued regulations/ tariff orders regarding renewable energy and tariff orders for purchase of power from renewable energy sources. As the project activity is located in the state of Tamil Nadu, the common practice analysis has been carried out by the project participant in the region of Tamil Nadu, which is deemed to be appropriate and acceptable.</p> <p>b) As per the published data by the Tamilnadu Energy Development Agency (TEDA)<sup>8</sup> the total installed capacity of the wind mill in the Tamil Nadu state was to be around 2618 MW. TEDA is part of Government of Tamilnadu and the agency was setup with specific objectives in promoting the new and renewable sources of energy in the state, the data published by the agency is more authentic for proving the similar activities which are commonly carried out in the region. The data till the date during the validation has been taken from 2002-03 to 2006-07 which is appropriate for the analysis and the time period for decision of the project activity. Accordingly, CDM projects that were registered and under validation (during 2007) in UNFCCC is around 2009 MW. The same has been verified the documents list<sup>9</sup> given by the project participant and further confirmed in the UNFCCC website<sup>10</sup>.</p> <p>c) From the above explanation, it is evident that more than 75% of the installed capacities of wind mills were seeking CDM revenue.</p> <p>As discussed above, thus, TUV is able to confirm that the project activity is not a common practice being followed in the region.</p>
<b>Request for Review (4)</b>	
Issue raised by EB Members	4. <i>The validation report shall be revised to contain a direct confirmation on the correctness of the values of the emission factors applied in the PDD.</i>
Response of PP	Not applicable
Response of DOE	<p>TUV would like to reconfirm that the correctness of values of emission factor applied in PDD has been confirmed as follows in section 4.3 of validation report</p> <p>ACM0002 (Version 7) states that Electricity delivered to the grid by the project 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”. In this case the Combined Margin (weighted average of Simple Operating Margin and Build Margin) is estimated based on three years average (04-05,</p>

<sup>8</sup> <http://www.teda.gov.in/page/growth%20of%20wind%20mills.pdf>

<sup>9</sup> Attachment 17 – List of Projects in CDM

<sup>10</sup> <http://cdm.unfccc.int/Projects/registered.html>  
<http://cdm.unfccc.int/Projects/validation.index.html>



	<p>05-06 and 06-07) of Simple Operating Margin (<u>1.003019583 kgCO<sub>2</sub>/kWh</u>) and 20 % Build Margin of current year (06-07) (<u>0.705459702 kgCO<sub>2</sub>/kWh</u>) is in line with steps of “Tool to calculate the emission factor for an electricity system”. Both the value of Simple Operating Margin and Build Margin are selected under ex-ante approach. The emission factor (combined margin) works out to <u>0.9286296125 kgCO<sub>2</sub>/ kWh</u>. The grid boundary with respect to the connected state grid is Southern Grid of India.</p> <p>In accordance with “Tool to calculate the emission factor for an electricity system”, ‘Dispatch Data Analysis’ is the first methodological choice out of four options of calculating OM emission factor. Nevertheless the “Dispatch data analysis operating margin” is ruled out in India due to lack of necessary dispatch data of the grids. The same fact is also considered by the Central Electricity Authority <sup>/cea/</sup> (Ref the user guide for CO<sub>2</sub> Baseline Database for the Indian Power Sector version 3, December 2007).</p> <p>Out of other 3 options of calculating OM Project Participant has rightly selected simple OM emission factor calculation as the share of low cost / must run resources of the selected grid over the three most recent years (04-05, 05-06 and 06-07) is &lt; 50% of the gross grid generation<sup>/cea/</sup>. For wind and solar projects, “Tool to calculate the emission factor for an electricity system” allows the usage of the default weights are as follows: <math>w_{OM} = 0.75</math> and <math>w_{BM} = 0.25</math>. Using the above values the combined margin emission factor is valued at <u>0.9286296125 kgCO<sub>2</sub>/ kWh</u>.</p> <p>The calculation of <math>EF_y</math> is publicly available and published by the Central Electricity Authority on its web-site<sup>/cea/</sup>. Thus, the validation team is able to ascertain that the values implied for the EF computation are correct.</p> <p>We sincerely hope that the Board accepts our aforementioned explanations and we look forward to the registration of the project activity</p>
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