

Response of Bajaj Auto Ltd
to
the Issues raised in the Review Request

Project Title: “Grid-connected electricity generation from renewable sources at Satara by M/s Bajaj Auto Ltd. (BAL) using wind Power ”

Registration Request Identity: UNFCCC 0000221 CDMP

Communication Reference of Review Request: Mail from Kai-Uwe Barani Schmidt dated 17th March 2006

In this document, we present, ‘**Preamble and Response Summary**’ in the first five pages and in subsequent pages ‘**Responses to the issues raised in the Individual Review Requests**’

Preamble and Response Summary

The request for registration for the project “Grid-connected electricity generation from renewable sources at Satara by M/s Bajaj Auto Ltd. (BAL) using wind Power” was made on 17th January 2006.

There have been 4 requests for review. We take this opportunity to respond to the concerns raised in the review requests by the members of the Executive Board.

We find that all the four requests address the issues of additionality, baseline and monitoring methodology.

We find that the reasons specified in the review request I, II, III and IV are strikingly similar incorporating concerns on the additionality of the project activity while considering that the technological barriers presented by the project participant either apply to the identified alternatives to the proposed CDM project activity or are simply generic business risks that should be managed anyway.

In addition to the above, review request III & IV also raises concern on the Debt service coverage ratio of the project activity and in view of the similarity with the CDM project 0224 “Grid-connected electricity generation from renewable sources at Supa, Taluka Parner, Dist. Ahmednagar by M/s Bajaj Auto Ltd. (BAL) using wind Power” the reasons of review requests from the said project activity have been requested to be appropriately answered while addressing the review concerns raised in the project activity under discussion in this review process.

We appreciate that reasons that have been mentioned in the review request are interrelated by paragraph 43 of CDM modalities and procedures which can be stated as “project activity is additional if an approved and applicable baseline methodology has been followed and the emissions from the project activity is lower than that of baseline emissions”.

We therefore believe that our clarifications relating to use of tool **for demonstration and assessment of additionality (which is to be used for demonstration of additionality in ACM0002)** and demonstration that the project activity faced prohibitive barriers below will suffice as clarification to all the issues raised by the CDM EB members.

With reference to the above, the project participant BAL provides the clarifications as below to the common and salient points raised in the review requests:

A. Additionality Demonstration

Firstly, the major issue in the review request is that the additionality of the project activity is not convincing. It is stated in the PDD and Validation opinion that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices. We would like to clarify that these barriers are not mentioned in the PDD in order of their significance / importance. However, below the barriers in

the order of significance (it is not reproduction of the text in the PDD but rewording and reformatting of the text) is presented:

1. Barrier due to prevailing practice (first of its kind):

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. At the time of investment, the prevailing practice was small capacities (0.4 MW to 2 MW) involving small investments and exporting power to the State Electricity Board. As opposed, this project is of large capacity (**45.2 MW**) involving large investment and for **captive consumption**. In this respect, the project is “the first of its kind” and “no such project activity was operational in the region” at the time of investment decision. For the reasons above, in its risk profile, the present project activity is different from that of the prevailing practice as larger investment is at risk. Similarly, the policy and regulatory uncertainties are more in the case of project activities involving wheeling of power.

Also, the projects of BAL are first amongst wind turbines located in non-coastal areas that otherwise have better infrastructure support.

At the time of investment decision there were only two identified active sites for wind power installations in Maharashtra namely Satara and Supa. The Satara project of BAL is located in high terrains, with little or no human habitation and infrastructure etc. During the time of investment there was no evacuation facility on the site of the CDM project activity, available to the project participant in order to connect the power generated to a substation. The generated power was connected to the substation which was 30 to 40 km away from the site with inadequate capacity, which caused poor grid availability and loss of generation till 2003.

2. Other barriers:

Regulatory uncertainties:

At the time of the investment the project participant faced the uncertainty on tariff (introduction of TOD metering), uncertainty regarding the interpretation of transmission loss charges which were revised from 0-1% to 10% and then to 5%, Uncertainty of State Govt. notifications on power credits and also delay in getting such credits. Such uncertainties in tariffs, transmission losses and power credits (this is applicable to projects with wheeling of power and no other wind power installations, other than that of this project participant faced such regulatory uncertainty) would have prevented investment in to the project activity but for the potential CDM benefit.

3. Investment barrier:

Bajaj Auto Ltd (BAL), the Project Participant, is the world's 4th largest manufacturer of 2 wheelers and are in the business of manufacture of 2 & 3 wheelers. The investment in the Wind Power project undertaken by BAL is substantial compared to any other project in the similar activity in the region or in comparison to the investments by BAL in its core business expansion or supplementation.

In the year 2000 – 2001, BAL decided to get in to wind power generation for captive use. In entering this phase, BAL computed the cost of power generation under different alternatives and the same is given below as mentioned in the PDD -

The alternatives to the project activity are identified as –

- Purchase of power from the grid
- Power generation using coal
- Power generation using windmill without CDM
- Power generation using windmill with CDM

Comparative unit cost of power generation using various alternatives are given hereunder –

Rs. Per Kwh				
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
<u>Energy charge</u>	<u>3.28</u>	<u>2.30</u>	<u>4.16</u>	<u>3.97</u>
<u>Demand charge</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>
<u>Total</u>	<u>4.42</u>	<u>3.44</u>	<u>5.30</u>	<u>5.11</u>

The project participant has chosen wind power generation with CDM revenue even though the other alternatives i.e. purchase from grid and generation using coal would have been cheaper options for BAL. The cost of electricity generation using the wind energy is considerably higher than the alternatives for producing the same amount of power.

Maharashtra Electricity Regulatory Commission (MERC), a Commission appointed under the Electricity Regulatory Commissions (ERC) Act, 1998, after hearing from all parties and interviews with the persons came out with the unit cost of power generation as under –

As per MERC Order in 2003, Electricity Board tariff to industrial consumers is Rs. 3.34 per KWH, cost of thermal is Rs. 3.24 per KWH and the cost of power generated using wind turbines of Rs. 4.10 per KWH without Sales tax incentives and Rs. 3.46 per KWH with Sales tax incentives.

The above data clearly brings out that the unit cost of power generation in windmill is higher than the other alternatives.

4. Technological barrier:

The project activity is at a high altitude and thus has higher possibility of lightning strokes. While the installed lightning arrestors may avoid any physical damage to the wind turbines but they fail to avoid any electrical / electronics disruptions that may be caused due to such lightning. Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing; unavailability of technical skill set within the firm and need for further training of the manpower (also retention of such manpower in tough and isolated terrains)

The above mentioned barriers justifies that the risks faced by the CDM project activity are not simply generic business risks but are unusual risks. Hence the project scenario is considered additional in comparison to the baseline scenario.

B. Investment Analysis and Barrier Analysis

Also, the review request has stated that in using the additionality tool the project participant muddled up the arguments using the barrier analysis and investment analysis. The arguments similar to that of investment analysis have been used in the barrier analysis. The data and analysis rigor required for undertaking step 2 could not be carried out, due to lack of data in the public domain that is specific to the project activity. BAL computed the unit cost of power generation under different alternatives. As per Maharashtra Energy Regulatory Commission [MERC] Case No 17(3) 3,4,5 of 2002 dated 24/11/2003, Electricity Board tariff to industrial consumers is Rs. 3.34 per KWH, cost of thermal is Rs. 3.24 per KWH and the cost of power generated using wind turbines of Rs. 4.10 per KWH without Sales tax incentives and Rs. 3.46 per KWH with Sales tax incentives. This data is based on 1 1/2 years study and extensive consultation by MERC. The data clearly shows that the unit cost of power for windmill is higher than the unit cost of power for one other alternative viz. coal power plant. The unit cost of wind power generation worked out by BAL is in line with the same. As this is a very strong argument for demonstrating additionality, which in fact is the barrier that the investment decision for the project activity faced, is included as an investment barrier.

C. The CDM revenue does not help crossing hurdle rate

The review request, has pointed out that IRR with and without CDM revenue is not very different. This is agreed, but it may be pertinent to point out that the computation is based on 4 USD price per CER which is very conservative. In any case, the IRR argument is only used to supplement the other arguments on investment barrier.

D. Validation report is not sufficiently transparent

In addition, other comments pertain to the DOE's activity- 'The validation report is not sufficiently transparent and clear in assessing the acceptance of the additionality of the project activity' and 'The DOE has pointed out the need to correct the additionality arguments, but hasn't stated that the project participant has done so'- apart from a concern on DOE's independent qualitative assessment which in our view is best left to the DOE to respond.

E. Some Additional Points

The project participant further wants to emphasize that the reformatted arguments to demonstrate that the project activity faced prohibitive barriers without CDM project activity, do not use any additional data and information more than that is presented in our PDD submitted for registration or that is not presented to the DOE during the process of validation.

Also, it may be pertinent to point out that the project activities that faced similar barriers, located at the same location, that have come up subsequent to this project activity, with technologies that are similar and involving smaller investments, are already registered as CDM project activities by the CDM EB.

F. Our Request

The issues raised in the Review Request are pertinent. To address these concerns required us to restate and reformat our arguments to improve clarity but did not require addition of any new information and data that needs validation. Keeping this in view, we request that the review process be not conducted and the project may be registered.

Responses to the issues raised in the Individual Review Requests

Request for Review I:

The CDM EB board member has requested for review seeking clarification on validation requirements under :

- a) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 52 of the CDM modalities and procedures.
- b) The Baseline and monitoring methodologies comply with requirements pertaining to methodologies previously approved by the Executive Board

Reasons and background for request for review:

Quote

“I. a) The project participant did not provide any convincing argument to justify why the project activity is considered to be additional and the DOE did not make an independent qualitative assessment of this aspect of the PDD.

I. b) In using the Additional Tool the PP muddled up the arguments using barrier analysis and investment analysis. Moreover, the investment analysis indicated that two alternatives considered would have been cheaper than the proposed project activity.

I. c) The technological barriers presented by the project participant either apply to the identified alternatives to the proposed CDM project activity or are simply generic business risks that should be managed anyway.”

Response to Review Request I:

Response to reason I. a):

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2.**

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

We would like to clarify that these barriers are not mentioned in the PDD in their significance / importance. However the text below provides the barriers in the order of significance (it is not reproduction of the text in the PDD but rewording and reformatting of the text)

Barrier due to prevailing practice:

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. (Page 15, under section Sub-step 4b of the PDD. The details of the ownership and the sizes are as given below :

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
NEPC India Ltd	NEPC	0.450	2	Chalkewadi	1997
REPL Eng Ltd	BONUS	0.320	1	Chalkewadi	1997
Sub-Total		0.770			
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	30-3-1998
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	29-9-1998
Bharat Forge Ltd	Enercon	2.070	9	Thoseghar	23-6-1998
HMTD Eng Pvt. Ltd	Vestas	0.225	1	Thoseghar	23-8-1998
Seth & Sura Engineers	Vestas	0.225	1	Thoseghar	24-3-1999
Sahani Enterprises	Vestas	0.225	1	Thoseghar	24-3-1999
Ghodawat Pan Masala Ph I	Suzlon	0.350	1	V'vade	18-11-1998
Ghodawat Pan Masala Ph II	Enercon	0.230	1	Thoseghar	31-11-1998
Sub-Total		3.775			
Ghodawat Pan Masala Ph III	Suzlon	3.500	10	V'vade	12-3-1999
Savita Chemicals Ltd	Suzlon	1.050	3	V'vade	20-3-1999
Nav. Mah. Chakan Oil Ltd	Suzlon	0.350	1	V'vade	22-3-1999
Dhariwal Industries Ltd	Suzlon	7.000	20	V'vade	24-3-1999
Ghodawat Pan Masala Ph IV	Suzlon	1.400	4	V'vade	27-3-1999
Patankar Wind Farms P. Ltd	Suzlon	0.350	1	V'vade	27-3-1999
Prestress India Pvt. Ltd	Vestas	0.225	1	Thoseghar	31-3-1999

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
Snow cem India Ltd	Vestas	0.450	2	Chalkewadi	31-3-1999
Khanna Indust. Pipes Ltd	Vestas	0.225	1	Thoseghar	7-5-1999
Borax Moranji Ltd	Vestas	0.450	2	Thoseghar	17-7-1999
Bajaj Electricals Ltd Ph I	Suzlon	2.800	8	V'vade	22-8-1999
Sharp Engineers Ph I	Vestas	0.225	1	Thoseghar	26-8-1999
Sharp Engineers Ph II	Vestas	0.225	1	Thoseghar	27-8-1999
Bharat Forge Ltd Ph II	Enercon	1.610	7	Thoseghar	28-12-1999
Sub-Total		19.860			
Grand Total		24.405			

Source : Maharashtra Energy Development Agency : Annual Report – 2001-2002

As per the table above, the prevailing practice of investment in wind power in the State of Maharashtra was mainly into low capacity installations and primarily for sale to the State Electricity Board.

At the time of investment (in the year 2000), this project activity was significantly larger installation in size (capacity) than the largest wind power installation in the region (Page 14, under section Sub-step 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 48, section CAR 3**). The order of investment was also highest in comparison to the wind farm establishments that existed in the region.

The prevailing practice was small capacities (0.4 MW to 2 MW) involving small investments and exporting power to the State Electricity Board. As opposed, this project is of large capacity (**45.2 MW**) involving large investment and for **captive consumption**. In this respect, the project is “the first of its kind” and “no such project activity was operational in the region” at the time of investment decision.

In its risk profile, the present project activity is different from that of the prevailing practice as larger investment is at risk. Similarly, the policy and regulatory uncertainties are more in the case of project activities involving wheeling of power.

At the time of investment decision there were only two identified active sites for wind power installations in Maharashtra namely Satara and Supa, which is clear from the table highlighted above.

The Satara project of BAL is located in high terrains, with little or no human habitation and infrastructure etc. During the time of investment there was no evacuation facility on the site of the CDM project activity, available to the project participant in order to connect the power generated to a substation. The generated power was connected to the substation which was 30 to 40 km away from the site with inadequate capacity, which caused poor grid availability and loss of generation till 2003. Also, BAL was the first to install 1000 KW wind turbines on large scale (1000 Kw x 6 windmills) at Satara site.

Also, this project activity is one of the first non coastal wind installation and coastal installation have better infrastructure support.

Other barriers:

Regulatory uncertainties:

At the time of the investment the project participant faced the uncertainty on tariff (introduction of TOD metering), uncertainty regarding the interpretation of transmission loss charges which were revised from 0-1% to 10% and then to 5%, Uncertainty of State Govt. notifications on power credits and also delay in getting such credits. (Page 11 & 15, under section Sub-step 3 & 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 49, CAR 3**). The interpretation of the transmission loss charges by State Electricity Board and Wind power producers were different and lead to dispute. The dispute took a long period to get clarified by MERC.

Such uncertainties in tariffs, transmission losses and power credits (this is applicable to projects with wheeling of power and no other wind power installations , other than that of this project participant faced such regulatory uncertainty) would have prevented investment in to the project activity but for the potential CDM benefit.

Investment barrier:

The investment is substantial compared to any other project in the similar activity in the region.

Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001. The investment into the project activity is substantial in comparison to that of BAL's investment into the expansion of its core business activity.

The alternatives to the project activity are identified as –

- Purchase of power from the grid
- Power generation using coal
- Power generation using windmill without CDM
- Power generation using windmill with CDM

Comparative unit cost of power generation using various alternatives are given hereunder –

	Rs. Per Kwh			
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
<u>Energy charge</u>	<u>3.28</u>	<u>2.30</u>	<u>4.16</u>	<u>3.97</u>
<u>Demand charge</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>
<u>Total</u>	<u>4.42</u>	<u>3.44</u>	<u>5.30</u>	<u>5.11</u>

The project participant has chosen wind power generation with CDM revenue even though the other alternatives i.e. purchase from grid and generation using coal would have been cheaper options for BAL (Page 6, under section B.2 and Page 13, under section Step 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 11 & 12, section 3.2**). The cost of electricity generation using the wind energy is considerably higher than the alternatives for producing the same amount of power. (Refer Annex I)

The internal rate of return and debt equity ratios with and without CDM benefits is presented in the PDD as an additional argument to support investment barrier.

The IRR of 8.76% without CDM revenue and 9.17% with CDM revenue was calculated on a stand alone windmill project basis without considering sales tax incentives, capital subsidy, accelerated depreciation under income tax that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. The PDD in its answer to one of the public comments highlights that IRR has been computed on a stand alone basis. This has been addressed in **Validation Report No. BVQI/INDIA/7.49, page 58 to 61**. (Refer Annex II)

The estimate of IRR with CDM revenue was estimated at CER price of US\$4. BAL was aware that the forecast of prices ranged from US\$4 to US\$20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the IRR with CDM revenue at 9.17%. At US\$ 20 the comparative figures is 10.70% with CDM revenues. At a CER price of US\$20 the IRR is significant for BAL to go ahead with CDM project activity.

Technological barrier:

The project activity is at a high altitude and thus has higher possibility of lightning strokes (Page 11, under section Step 3, point no 4 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 56, Appendix B**). Such risks are higher at this site. While the installed lightning arrestors may avoid any physical damage to the wind turbines

but they fail to avoid any electrical / electronics disruptions that may be caused due to such lightning.

Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing (here compare with IRR's expected from investments in to known automobile business and unknown wind power generation), which made BAL face barriers due to unavailability of technical skill set within the firm and further training of the manpower (also retention of such manpower in tough and isolated terrains). (Page 10, under section Step 3, Point no 1 to 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 12, Section 3.2**).

We expect that the DOE would respond to concern raised on the independent qualitative assessment of the aspect of the PDD.

Response to reason I. b):

BAL in the PDD has argued the following under investment barrier:

- Uncertainties in the wind speed and direction and subsequent power output pattern (as it was not proven at the time of investment decision), as stated under section step 3 of the additionality in page 11, point 5 of the PDD.
- Regulatory risks like uncertainty on tariff (introduction of TOD metering) and uncertainty regarding the interpretation of transmission loss charges, uncertainty of State Govt. notifications on power credits and also delay in getting such credits etc. (as mentioned in section step 3, page 11, point 7 of the PDD)
- Quantum of investments in comparison to investments into wind power generation till that time (section Sub-step 4b. page 14 of the PDD) and further pointed out that there were options available that would provide less unit cost of power (section step 3 page 12, point 9 of the PDD)

As per the tool for demonstration and assessment of additionality, version 02, dated 28/11/05, BAL has chosen step 3 instead of step 2. But the arguments on Unit Cost of Power, IRR, and DSCR; and their comparison to bench mark, was brought out as supporting arguments in investment barriers. The arguments similar to that of investment analysis have been used in the barrier analysis. The data and analysis rigor required for undertaking step 2 could not be carried out, due to lack of data in the public domain that is specific to the project activity. BAL computed the unit cost of power generation under different alternatives. As per Maharashtra Energy Regulatory Commission [MERC] Case No 17(3) 3,4,5 of 2002 dated 24/11/2003, Electricity Board tariff to industrial consumers is Rs. 3.34 per KWH, cost of thermal is Rs. 3.24 per KWH and the cost of power generated using wind turbines of Rs. 4.10 per KWH without Sales tax incentives and Rs. 3.46 per KWH with Sales tax incentives. This data is based on 1 1/2 years study and extensive consultation by MERC. The data clearly shows that the unit cost of power for windmill is higher than the unit cost of

power for one other alternative viz. coal power plant. The unit cost of wind power generation worked out by BAL is in line with the same. As this is a very strong argument for demonstrating additionality, which in fact is the barrier that the investment decision for the project activity faced, is included as an investment barrier.

Response to reason I c):

The technological barriers presented by the project participant do not apply to the identified alternatives but are applicable necessarily to the project activity. The below given table justifies that the barriers faced by the CDM project activity are not simply generic business risks but are unusual risks:

Barrier	Alternative 1	Alternative 2	Project Activity	Remarks
Technological barriers	Use of high GHG intensive fuel like coal	Import of power from grid	Usage of wind energy for power generation	Unusual business risk
Investment into a non-core and new (unknown/renewable) business activity	It is very well known activity and required one third investment for the same power output	This did not require any such investment	This alternative required huge investment for setting up the entire wind farm and laying infrastructure related to power evacuation	This is not generic business risk considering the track history of BAL not making significant investment into any non-core business. The investment is substantial compared to any other project and also in comparison with BAL's investment in its core business viz. manufacturing of motorized two and three wheeler vehicles. Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3

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				billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001
Unavailability of expertise to operate	Expertise is available and can be sourced easily as coal based power plant are well established in India due to huge coal reserves at various locations	No skilled manpower was required for importing from the grid.	Implementation of the project and its operation require skilled manpower who would have had the know-how in wind turbines and handling breakdowns caused in them. Such skilled manpower were not easily available as at the time of investment decision wind power penetration in Maharashtra was 2.64%. It was not a business where the expertise could have been obtained easily.	It is not a generic business risk as the expertise at the time of investment decision was not available internally and difficult to source externally. This is compounded by a) difficult and isolated terrain where the personnel is required to operate b) Dependence on a third party for critical input like power
Upgradation of skill set	This alternative did not face the barrier, due to earlier experience of power generation through DG sets	This alternative required no such upgradation of skill sets as operations processes are minimal in import of power from the grid.	Having lack of skilled man power internally required BAL to conduct upgradation of skill sets of the manpower	This is normal business risk but required additional efforts in terms of upgrading the skills.

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<p>Risk caused to business due to lightning strikes</p>	<p>The alternative faces no such barrier</p>	<p>The alternative faces no such barrier</p>	<p>BAL was aware of the fact that any lightning strike in the region may cause complete destruction of the entire connected circuit.</p>	<p>This is not a generic business risk. The risk is quiet significantly higher in comparison to the core or the normal business operations of BAL. This is evident from the insurance premia that BAL has to pay more for wind projects</p>
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Request for Review II:

The CDM EB board member has requested for review seeking clarification on validation requirements under :

- a) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 52 of the CDM modalities and procedures.
- b) The Baseline and monitoring methodologies comply with requirements pertaining to methodologies previously approved by the Executive Board

Reasons and background for request for review:

Quote

“II. a) The project participant did not provide any convincing argument to justify why the project activity is considered to be additional and the DOE did not make an independent qualitative assessment of this aspect of the PDD.

II. b) In using the Additional Tool the PP muddled up the arguments using barrier analysis and investment analysis. Moreover, the investment analysis indicated that two alternatives considered would have been cheaper than the proposed project activity.

II. c) The technological barriers presented by the project participant either apply to the identified alternatives to the proposed CDM project activity or are simply generic business risks that should be managed anyway.”

Response to Review Request II:

Response to reason II. a):

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2.**

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

We would like to clarify that these barriers are not mentioned in the PDD in their significance / importance. However the text below provides the barriers in the order of significance (it is not reproduction of the text in the PDD but rewording and reformatting of the text)

Barrier due to prevailing practice:

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. (Page 15,

under section Sub-step 4b of the PDD). The details of the ownership and the sizes are as given below :

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
NEPC India Ltd	NEPC	0.450	2	Chalkewadi	1997
REPL Eng Ltd	BONUS	0.320	1	Chalkewadi	1997
Sub-Total		0.770			
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	30-3-1998
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	29-9-1998
Bharat Forge Ltd	Enercon	2.070	9	Thoseghar	23-6-1998
HMTD Eng Pvt. Ltd	Vestas	0.225	1	Thoseghar	23-8-1998
Seth & Sura Engineers	Vestas	0.225	1	Thoseghar	24-3-1999
Sahani Enterprises	Vestas	0.225	1	Thoseghar	24-3-1999
Ghodawat Pan Masala Ph I	Suzlon	0.350	1	V'vade	18-11-1998
Ghodawat Pan Masala Ph II	Enercon	0.230	1	Thoseghar	31-11-1998
Sub-Total		3.775			
Ghodawat Pan Masala Ph III	Suzlon	3.500	10	V'vade	12-3-1999
Savita Chemicals Ltd	Suzlon	1.050	3	V'vade	20-3-1999
Nav. Mah. Chakan Oil Ltd	Suzlon	0.350	1	V'vade	22-3-1999
Dhariwal Industries Ltd	Suzlon	7.000	20	V'vade	24-3-1999
Ghodawat Pan Masala Ph IV	Suzlon	1.400	4	V'vade	27-3-1999
Patankar Wind Farms P. Ltd	Suzlon	0.350	1	V'vade	27-3-1999
Prestress India Pvt. Ltd	Vestas	0.225	1	Thoseghar	31-3-1999
Snow cem India Ltd	Vestas	0.450	2	Chalkewadi	31-3-1999
Khanna Indust. Pipes Ltd	Vestas	0.225	1	Thoseghar	7-5-1999
Borax Moranji Ltd	Vestas	0.450	2	Thoseghar	17-7-1999

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
Bajaj Electricals Ltd Ph I	Suzlon	2.800	8	V'vade	22-8-1999
Sharp Engineers Ph I	Vestas	0.225	1	Thoseghar	26-8-1999
Sharp Engineers Ph II	Vestas	0.225	1	Thoseghar	27-8-1999
Bharat Forge Ltd Ph II	Enercon	1.610	7	Thoseghar	28-12-1999
Sub-Total		19.860			
Grand Total		24.405			

Source : Maharashtra Energy Development Agency : Annual Report – 2001-2002

As per the table above, the prevailing practice of investment in wind power in the State of Maharashtra was mainly into low capacity installations and primarily for sale to the State Electricity Board.

At the time of investment (in the year 2000), this project activity was significantly larger installation in size (capacity) than the largest wind power installation in the region (Page 14, under section Sub-step 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 48, section CAR 3**). The order of investment was also highest in comparison to the wind farm establishments that existed in the region.

The prevailing practice was small capacities (0.4 MW to 2 MW) involving small investments and exporting power to the State Electricity Board. As opposed, this project is of large capacity (**45.2 MW**) involving large investment and for **captive consumption**. In this respect, the project is “the first of its kind” and “no such project activity was operational in the region” at the time of investment decision.

In its risk profile, the present project activity is different from that of the prevailing practice as larger investment is at risk. Similarly, the policy and regulatory uncertainties are more in the case of project activities involving wheeling of power.

At the time of investment decision there were only two identified active sites for wind power installations in Maharashtra namely Satara and Supa, which is clear from the table highlighted above.

The Satara project of BAL is located in high terrains, with little or no human habitation and infrastructure etc. During the time of investment there was no evacuation facility on the site of the CDM project activity, available to the project participant in order to connect the power generated to a substation. The generated power was connected to the substation which was 30 to 40 km away from the site with inadequate capacity, which caused poor grid availability and loss of generation

till 2003. Also, BAL was the first to install 1000 KW wind turbines on large scale (1000 Kw x 6 windmills) at Satara site.

Also, this project activity is one of the first non coastal wind installation and coastal installation have better infrastructure support.

Other barriers:

Regulatory uncertainties:

At the time of the investment the project participant faced the uncertainty on tariff (introduction of TOD metering), uncertainty regarding the interpretation of transmission loss charges which were revised from 0-1% to 10% and to 5%, Uncertainty of State Govt. notifications on power credits and also delay in getting such credits. (Page 11 & 15, under section Sub-step 3 & 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 49, CAR 3**). The interpretation of the transmission loss charges by State Electricity Board and Wind power producers were different and lead to dispute. The dispute took a long period to get clarified by MERC.

Such uncertainties in tariffs, transmission losses and power credits (this is applicable to projects with wheeling of power and no other wind power installations , other than that of this project participant faced such regulatory uncertainty) would have prevented investment in to the project activity but for the potential CDM benefit.

Investment barrier:

The investment is substantial compared to any other project in the similar activity in the region.

Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001. The investment into the project activity is substantial in comparison to that of BAL's investment into the expansion of its core business activity.

The alternatives to the project activity are identified as –

- Purchase of power from the grid
- Power generation using coal
- Power generation using windmill without CDM
- Power generation using windmill with CDM

Comparative unit cost of power generation using various alternatives are given hereunder –

	Rs. Per Kwh			
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
<u>Energy charge</u>	<u>3.28</u>	<u>2.30</u>	<u>4.16</u>	<u>3.97</u>
<u>Demand charge</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>
<u>Total</u>	<u>4.42</u>	<u>3.44</u>	<u>5.30</u>	<u>5.11</u>

The project participant has chosen wind power generation with CDM revenue even though the other alternatives i.e. purchase from grid and generation using coal would have been cheaper options for BAL (Page 6, under section B.2 and Page 13, under section Step 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 11 & 12, section 3.2**) The cost of electricity generation using the wind energy is considerably higher than the alternatives for producing the same amount of power. (Refer Annex I)

The internal rate of return and debt equity ratios with and without CDM benefits is presented in the PDD as an additional argument to support investment barrier.

The IRR of 8.76% without CDM revenue and 9.17% with CDM revenue was calculated on a stand alone windmill project basis without considering sales tax incentives, capital subsidy, accelerated depreciation under income tax that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. The PDD in its answer to one of the public comments highlights that IRR has been computed on a stand alone basis. This has been addressed in **Validation Report No. BVQI/INDIA/7.49, page 58 to 61.** (Refer Annex II)

The estimate of IRR with CDM revenue was estimated at CER price of US\$4. BAL was aware that the forecast of prices ranged from US\$4 to US\$20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the IRR with CDM revenue at 9.17%. At US\$ 20 the comparative figures is 10.70% with CDM revenues. At a CER price of US\$20 the IRR is significant for BAL to go ahead with CDM project activity.

Technological barrier:

The project activity is at a high altitude and thus has higher possibility of lightning strokes (Page 11, under section Step 3, point no 4 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 56, Appendix B**). Such risks are higher at this site. While

the installed lightning arrestors may avoid any physical damage to the wind turbines but they fail to avoid any electrical / electronics disruptions that may be caused due to such lightning.

Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing (here compare with IRR's expected from investments in to known automobile business and unknown wind power generation), which made BAL face barriers due to unavailability of technical skill set within the firm and further training of the manpower (also retention of such manpower in tough and isolated terrains). (Page 10, under section Step 3, Point no 1 to 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 12, Section 3.2**).

We expect that the DOE would respond to concern raised on the independent qualitative assessment of the aspect of the PDD.

Response to reason II. b):

BAL in the PDD has argued the following under investment barrier:

- Uncertainties in the wind speed and direction and subsequent power output pattern (as it was not proven at the time of investment decision), as stated under section step 3 of the additionality in page 11, point 5 of the PDD.
- Regulatory risks like uncertainty on tariff (introduction of TOD metering) and uncertainty regarding the interpretation of transmission loss charges, uncertainty of State Govt. notifications on power credits and also delay in getting such credits etc. (as mentioned in section step 3, page 11, point 7 of the PDD)
- Quantum of investments in comparison to investments into wind power generation till that time (section Sub-step 4b. page 14 of the PDD) and further pointed out that there were options available that would provide less unit cost of power (section step 3 page 12, point 9 of the PDD)

As per the tool for demonstration and assessment of additionality, version 02, dated 28/11/05, BAL has chosen step 3 instead of step 2. But the arguments on Unit Cost of Power, IRR, and DSCR; and their comparison to bench mark, was brought out as supporting arguments in investment barriers. The arguments similar to that of investment analysis have been used in the barrier analysis. The data and analysis rigor required for undertaking step 2 could not be carried out, due to lack of data in the public domain that is specific to the project activity. BAL computed the unit cost of power generation under different alternatives. As per Maharashtra Energy Regulatory Commission [MERC] Case No 17(3) 3,4,5 of 2002 dated 24/11/2003, Electricity Board tariff to industrial consumers is Rs. 3.34 per KWH, cost of thermal is Rs. 3.24 per KWH and the cost of power generated using wind turbines of Rs. 4.10 per KWH without Sales tax incentives and Rs. 3.46 per KWH with Sales tax incentives. This

data is based on 1 1/2 years study and extensive consultation by MERC. The data clearly shows that the unit cost of power for windmill is higher than the unit cost of power for one other alternative viz. coal power plant. The unit cost of wind power generation worked out by BAL is in line with the same. As this is a very strong argument for demonstrating additionality, which in fact is the barrier that the investment decision for the project activity faced, is included as an investment barrier.

Response to reason II. c):

The technological barriers presented by the project participant do not apply to the identified alternatives but are applicable necessarily to the project activity. The below given table justifies that the barriers faced by the CDM project activity are not simply generic business risks but are unusual risks:

Barrier	Alternative 1	Alternative 2	Project Activity	Remarks
Technological barriers	Use of high GHG intensive fuel like coal	Import of power from grid	Usage of wind energy for power generation	Unusual business risk
Investment into a non-core and new (unknown/renewable) business activity	It is very well known activity and required one third investment for the same power output	This did not require any such investment	This alternative required huge investment for setting up the entire wind farm and laying infrastructure related to power evacuation	This is not generic business risk considering the track history of BAL not making significant investment into any non-core business. The investment is substantial compared to any other project and also in comparison with BAL's investment in its core business viz. manufacturing of motorized two and three wheeler vehicles. Total additions to Plant and Machinery in core business during 5 years (1997 – 2002)

Response of Bajaj Auto Ltd to the Issues raised in the Review Request

				was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001
Unavailability of expertise to operate	Expertise is available and can be sourced easily as coal based power plant are well established in India due to huge coal reserves at various locations	No skilled manpower was required for importing from the grid.	Implementation of the project and its operation require skilled manpower who would have had the know-how in wind turbines and handling breakdowns caused in them. Such skilled manpower were not easily available as at the time of investment decision wind power penetration in Maharashtra was 2.64%. It was not a business where the expertise could have been obtained easily.	It is not a generic business risk as the expertise at the time of investment decision was not available internally and difficult to source externally. This is compounded by a) difficult and isolated terrain where the personnel is required to operate b) Dependence on a third party for critical input like power
Upgradation of skill set	This alternative did not face the barrier, due to earlier experience of power generation through DG sets	This alternative required no such upgradation of skill sets as operations processes are minimal in import of power from the grid.	Having lack of skilled man power internally required BAL to conduct upgradation of skill sets of the manpower	This is normal business risk but required additional efforts in terms of upgrading the skills.

Response of Bajaj Auto Ltd to the Issues raised in the Review Request

<p>Risk caused to business due to lightning strikes</p>	<p>The alternative faces no such barrier</p>	<p>The alternative faces no such barrier</p>	<p>BAL was aware of the fact that any lightning strike in the region may cause complete destruction of the entire connected circuit.</p>	<p>This is not a generic business risk. The risk is quiet significantly higher in comparison to the core or the normal business operations of BAL. This is evident from the insurance premia that BAL has to pay more for wind projects</p>
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Request for review III:

The CDM EB board member has requested for review seeking clarifications on validation requirements as mentioned below:

- a) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 52 of the CDM modalities and procedures.
- b) The Baseline and monitoring methodologies comply with requirements pertaining to methodologies previously approved by the Executive Board

Reasons and background for request for review:

Quote

“III. a) The PDD is identical to the PDD for Project 0224 – Grid-connected electricity generation from renewable sources at Supa, for which a review has been requested. All the concerns raised with 0224 are valid for this project as well.

III. b) Again the main point is additionality. None of the arguments put forward regarding technological and investment barriers were convincing. The described technological barriers either apply to all the identified alternatives or are simply generic business risks that need to be managed anyway. The investment barrier analysis indicates no much difference between the debt service coverage ratio (of 0.72) with or (of 0.69) without CDM revenues.

III. c) The DOE in its validation report merely repeated these arguments without an independent assessment or interrogation of their validity.”

Response to Review Request III:

Response to reason III. a):

All the concerns that have been raised in the review for request for Project 0224 – Grid-connected electricity generation from renewable sources at Supa, that are valid for this project, have been adequately addressed as mentioned below :

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2.**

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

We would like to clarify that these barriers are not mentioned in the PDD in their significance / importance. However the text below provides the barriers in the order of significance (it is not reproduction of the text in the PDD but rewording and reformatting of the text)

Barrier due to prevailing practice:

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. (Page 15, under section Sub-step 4b of the PDD). The details of the ownership and the sizes are as given below :

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
NEPC India Ltd	NEPC	0.450	2	Chalkewadi	1997
REPL Eng Ltd	BONUS	0.320	1	Chalkewadi	1997
Sub-Total		0.770			
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	30-3-1998
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	29-9-1998
Bharat Forge Ltd	Enercon	2.070	9	Thoseghar	23-6-1998
HMTD Eng Pvt. Ltd	Vestas	0.225	1	Thoseghar	23-8-1998
Seth & Sura Engineers	Vestas	0.225	1	Thoseghar	24-3-1999
Sahani Enterprises	Vestas	0.225	1	Thoseghar	24-3-1999
Ghodawat Pan Masala Ph I	Suzlon	0.350	1	V'vade	18-11-1998
Ghodawat Pan Masala Ph II	Enercon	0.230	1	Thoseghar	31-11-1998
Sub-Total		3.775			
Ghodawat Pan Masala Ph III	Suzlon	3.500	10	V'vade	12-3-1999
Savita Chemicals Ltd	Suzlon	1.050	3	V'vade	20-3-1999
Nav. Mah. Chakan Oil Ltd	Suzlon	0.350	1	V'vade	22-3-1999
Dhariwal Industries Ltd	Suzlon	7.000	20	V'vade	24-3-1999
Ghodawat Pan Masala Ph IV	Suzlon	1.400	4	V'vade	27-3-1999

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
Patankar Wind Farms P. Ltd	Suzlon	0.350	1	V'vade	27-3-1999
Prestress India Pvt. Ltd	Vestas	0.225	1	Thoseghar	31-3-1999
Snow cem India Ltd	Vestas	0.450	2	Chalkewadi	31-3-1999
Khanna Indust. Pipes Ltd	Vestas	0.225	1	Thoseghar	7-5-1999
Borax Moranji Ltd	Vestas	0.450	2	Thoseghar	17-7-1999
Bajaj Electricals Ltd Ph I	Suzlon	2.800	8	V'vade	22-8-1999
Sharp Engineers Ph I	Vestas	0.225	1	Thoseghar	26-8-1999
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Bharat Forge Ltd Ph II	Enercon	1.610	7	Thoseghar	28-12-1999
Sub-Total		19.860			
Grand Total		24.405			

Source : Maharashtra Energy Development Agency : Annual Report – 2001-2002

As per the table above, the prevailing practice of investment in wind power in the State of Maharashtra was mainly into low capacity installations and primarily for sale to the State Electricity Board.

At the time of investment (in the year 2000), this project activity was significantly larger installation in size (capacity) than the largest wind power installation in the region (Page 14, under section Sub-step 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 48, section CAR 3**). The order of investment was also highest in comparison to the wind farm establishments that existed in the region.

The prevailing practice was small capacities(0.4 MW to 2 MW) involving small investments and exporting power to the State Electricity Board. As opposed, this project is of large capacity (**45.2 MW**) involving large investment and for **captive consumption**. In this respect, the project is “the first of its kind” and “no such project activity was operational in the region” at the time of investment decision.

In its risk profile, the present project activity is different from that of the prevailing practice as larger investment is at risk. Similarly, the policy and regulatory uncertainties are more in the case of project activities involving wheeling of power.

At the time of investment decision there were only two identified active sites for wind power installations in Maharashtra namely Satara and Supa, which is clear from the table highlighted above.

The Satara project of BAL is located in high terrains, with little or no human habitation and infrastructure etc. During the time of investment there was no evacuation facility on the site of the CDM project activity, available to the project participant in order to connect the power generated to a substation. The generated power was connected to the substation which was 30 to 40 km away from the site with inadequate capacity, which caused poor grid availability and loss of generation till 2003. Also, BAL was the first to install 1000 KW wind turbines on large scale (1000 Kw x 6 windmills) at Satara site.

Also, this project activity is one of the first non coastal wind installation and coastal installation have better infrastructure support.

Other barriers:

Regulatory uncertainties:

At the time of the investment the project participant faced the uncertainty on tariff (introduction of TOD metering), uncertainty regarding the interpretation of transmission loss charges which were revised from 0-1% to 10% and to 5%, Uncertainty of State Govt. notifications on power credits and also delay in getting such credits.(Page 11 & 15, under section Sub-step 3 & 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 49, CAR 3**). The interpretation of the transmission loss charges by State Electricity Board and Wind power producers were different and lead to dispute. The dispute took a long period to get clarified by MERC.

Such uncertainties in tariffs, transmission losses and power credits (this is applicable to projects with wheeling of power and no other wind power installations, other than that of this project participant faced such regulatory uncertainty) would have prevented investment in to the project activity but for the potential CDM benefit.

Investment barrier:

The investment is substantial compared to any other project in the similar activity in the region.

Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001. The investment into the project activity is substantial in comparison to that of BAL's investment into the expansion of its core business activity.

The alternatives to the project activity are identified as –

- Purchase of power from the grid
- Power generation using coal
- Power generation using windmill without CDM
- Power generation using windmill with CDM

Comparative unit cost of power generation using various alternatives are given hereunder –

	Rs. Per Kwh			
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
<u>Energy charge</u>	<u>3.28</u>	<u>2.30</u>	<u>4.16</u>	<u>3.97</u>
<u>Demand charge</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>
<u>Total</u>	<u>4.42</u>	<u>3.44</u>	<u>5.30</u>	<u>5.11</u>

The project participant has chosen wind power generation with CDM revenue even though the other alternatives i.e. purchase from grid and generation using coal would have been cheaper options for BAL (Page 6, under section B.2 and Page 13, under section Step 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 11 & 12, section 3.2**). The cost of electricity generation using the wind energy is considerably higher than the alternatives for producing the same amount of power. (Refer Annex I)

The internal rate of return and debt equity ratios with and without CDM benefits is presented in the PDD as an additional argument to support investment barrier.

The IRR of 8.76% without CDM revenue and 9.17% with CDM revenue was calculated on a stand alone windmill project basis without considering sales tax incentives, capital subsidy, accelerated depreciation under income tax that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. The PDD in its answer to one of the public comments highlights that IRR has been computed on a stand alone basis. This has been addressed in **Validation Report No. BVQI/INDIA/7.49, page 58 to 61**. (Refer Annex II)

The estimate of IRR with CDM revenue was estimated at CER price of US\$4. BAL was aware that the forecast of prices ranged from US\$4 to US\$20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the IRR with CDM revenue at 9.17%. At US\$ 20 the comparative figures is 10.70% with CDM revenues. At a CER price of US\$20 the IRR is significant for BAL to go ahead with CDM project activity.

Technological barrier:

The project activity is at a high altitude and thus has higher possibility of lightning strokes (Page 11, under section Step 3, point no 4 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 56, Appendix B**). Such risks are higher at this site. While the installed lightning arrestors may avoid any physical damage to the wind turbines but they fail to avoid any electrical / electronics disruptions that may be caused due to such lightning.

Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing (here compare with IRR's expected from investments in to known automobile business and unknown wind power generation), which made BAL face barriers due to unavailability of technical skill set within the firm and further training of the manpower (also retention of such manpower in tough and isolated terrains). (Page 10, under section Step 3, Point no 1 to 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 12, Section 3.2**).

All concerns on the validation process of the DOE raised in review for request for Project 0224 and that are valid for this project would be addressed by the DOE.

Response to reason III. b):

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2**.

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

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Barrier due to prevailing practice:

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. (Page 15, under section Sub-step 4b of the PDD). The details of the ownership and the sizes are as given below :

Response of Bajaj Auto Ltd to the Issues raised in the Review Request

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- Power generation using windmill without CDM
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Comparative unit cost of power generation using various alternatives are given hereunder –

	Rs. Per Kwh			
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
<u>Energy charge</u>	<u>3.28</u>	<u>2.30</u>	<u>4.16</u>	<u>3.97</u>
<u>Demand charge</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>	<u>1.14</u>
<u>Total</u>	<u>4.42</u>	<u>3.44</u>	<u>5.30</u>	<u>5.11</u>

The project participant has chosen wind power generation with CDM revenue even though the other alternatives i.e. purchase from grid and generation using coal would have been cheaper options for BAL (Page 6, under section B.2 and Page 13, under section Step 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 11 & 12, section 3.2**) The cost of electricity generation using the wind energy is considerably higher than the alternatives for producing the same amount of power. (Refer Annex I)

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The IRR of 8.76% without CDM revenue and 9.17% with CDM revenue was calculated on a stand alone windmill project basis without considering sales tax incentives, capital subsidy, accelerated depreciation under income tax that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. The PDD in its answer to one of the public comments highlights that IRR has been computed on a stand alone basis. This has been addressed in **Validation Report No. BVQI/INDIA/7.49, page 58 to 61.** (Refer Annex II)

The estimate of IRR with CDM revenue was estimated at CER price of US\$4. BAL was aware that the forecast of prices ranged from US\$4 to US\$20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the IRR with CDM revenue at 9.17%. At US\$ 20 the comparative figures is 10.70% with CDM revenues. At a CER price of US\$20 the IRR is significant for BAL to go ahead with CDM project activity.

Technological barrier:

The project activity is at a high altitude and thus has higher possibility of lightning strokes (Page 11, under section Step 3, point no 4 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 56, Appendix B**). Such risks are higher at this site. While the installed lightning arrestors may avoid any physical damage to the wind turbines

but they fail to avoid any electrical / electronics disruptions that may be caused due to such lightning.

Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing (here compare with IRR's expected from investments in to known automobile business and unknown wind power generation), which made BAL face barriers due to unavailability of technical skill set within the firm and further training of the manpower (also retention of such manpower in tough and isolated terrains). (Page 10, under section Step 3, Point no 1 to 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 12, Section 3.2**).

The technological barriers presented by the project participant do not apply to the identified alternatives but are applicable necessarily to the project activity. The below given table justifies that the barriers faced by the CDM project activity are not simply generic business risks but are unusual risks:

Barrier	Alternative 1	Alternative 2	Project Activity	Remarks
Technological barriers	Use of high GHG intensive fuel like coal	Import of power from grid	Usage of wind energy for power generation	Unusual business risk
Investment into a non-core and new (unknown/renewable) business activity	It is very well known activity and required one third investment for the same power output	This did not require any such investment	This alternative required huge investment for setting up the entire wind farm and laying infrastructure related to power evacuation	This is not generic business risk considering the track history of BAL not making significant investment into any non-core business. The investment is substantial compared to any other project and also in comparison with BAL's investment in its core business viz. manufacturing of motorized two and three

Response of Bajaj Auto Ltd to the Issues raised in the Review Request

				wheeler vehicles. Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001
Unavailability of expertise to operate	Expertise is available and can be sourced easily as coal based power plant are well established in India due to huge coal reserves at various locations	No skilled manpower was required for importing from the grid.	Implementation of the project and its operation require skilled manpower who would have had the know-how in wind turbines and handling breakdowns caused in them. Such skilled manpower were not easily available as at the time of investment decision wind power penetration in Maharashtra was 2.64%. It was not a business where the expertise could have been obtained easily.	It is not a generic business risk as the expertise at the time of investment decision was not available internally and difficult to source externally. This is compounded by a) difficult and isolated terrain where the personnel is required to operate b) Dependence on a third party for critical input like power
Upgradation of skill set	This alternative did not face the barrier, due to earlier experience of	This alternative required no such upgradation	Having lack of skilled man power internally required BAL to conduct upgradation of	This is normal business risk but required additional efforts in terms of

	power generation through DG sets	of skill sets as operations processes are minimal in import of power from the grid.	skill sets of the manpower	upgrading the skills.
Risk caused to business due to lightning strikes	The alternative faces no such barrier	The alternative faces no such barrier	BAL was aware of the fact that any lightning strike in the region may cause complete destruction of the entire connected circuit.	This is not a generic business risk. The risk is quiet significantly higher in comparison to the core or the normal business operations of BAL. This is evident from the insurance premia that BAL has to pay more for wind projects

The DSCR of 0.69% without CDM revenue and 0.72% with CDM revenue was calculated considering the revenue from and expenditure on the project activity - windmill project - without considering sales tax benefits and income tax benefits (accelerated depreciation) that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. This has been also clarified in the **Validation Report No. BVQI/INDIA/7.49, page 58 to 60**. Such benefits could also accrue to the other segments of the business due to investment in alternatives to the project activity.

The CDM revenue was calculated with a CER price of US\$ 4. BAL was aware of the forecasts of potential prices ranging up to US\$ 20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the DSCR with CDM revenues at 0.72%. At US\$ 20 the comparative figures is 0.84% with CDM as against 0.69% without CDM.

We request this response be read in conjunction with **Validation Report no. BVQI/INDIA/7.49, Page 58 to 61** reproduced as Annex II.

Response to reason III. c):

We understand the response to this comment is to be provided by the DOE, and so we have left it to the DOE to interpret and respond to the EB members concern on the validation report.

Request for Review IV:

The CDM EB board member has requested for review seeking clarification on validation requirements mentioned below :

- a) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity, in accordance with paragraphs 43 to 52 of the CDM modalities and procedures.
- b) The Baseline and monitoring methodologies comply with requirements pertaining to methodologies previously approved by the Executive Board

Reasons and background for request for review:

Quote :

“IV. a) The PDD is identical to the PDD for Project 0224 – Grid-connected electricity generation from renewable sources at Supa, for which a review has been requested. All the concerns raised with 0224 are valid for this project as well.

IV. b) Again the main point is additionality. None of the arguments put forward regarding technological and investment barriers were convincing. The described technological barriers either apply to all the identified alternatives or are simply generic business risks that need to be managed anyway. The investment barrier analysis indicates no much difference between the debt service coverage ratio (of 0.72) with or (of 0.69) without CDM revenues.

IV. c) The DOE in its validation report merely repeated these arguments without an independent assessment or interrogation of their validity.”

Response to Review Request IV:

Response to reason IV. a):

All the concerns that have been raised in the review for request for Project 0224 – Grid-connected electricity generation from renewable sources at Supa, that are valid for this project, have been adequately addressed as mentioned below :

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2.**

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

We would like to clarify that these barriers are not mentioned in the PDD in their significance / importance. However the text below provides the barriers in the order of

significance (it is not reproduction of the text in the PDD but rewording and reformatting of the text)

Barrier due to prevailing practice:

Before the establishment of wind farms by BAL in **2000**, in Maharashtra, the total electricity generation through wind totaled to only **24 MW** in the State. (Page 15, under section Sub-step 4b of the PDD). The details of the ownership and the sizes are as given below :

Owner	Make	Total Installed capacity (MW)	No of wind turbines	Location	Date / Year of Commissioning
NEPC India Ltd	NEPC	0.450	2	Chalkewadi	1997
REPL Eng Ltd	BONUS	0.320	1	Chalkewadi	1997
Sub-Total		0.770			
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	30-3-1998
Borax Moraji Ltd	Vestas	0.225	1	Thoseghar	29-9-1998
Bharat Forge Ltd	Enercon	2.070	9	Thoseghar	23-6-1998
HMTD Eng Pvt. Ltd	Vestas	0.225	1	Thoseghar	23-8-1998
Seth & Sura Engineers	Vestas	0.225	1	Thoseghar	24-3-1999
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Ghodawat Pan Masala Ph I	Suzlon	0.350	1	V'vade	18-11-1998
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Nav. Mah. Chakan Oil Ltd	Suzlon	0.350	1	V'vade	22-3-1999
Dhariwal Industries Ltd	Suzlon	7.000	20	V'vade	24-3-1999
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Bharat Forge Ltd Ph II	Enercon	1.610	7	Thoseghar	28-12-1999
Sub-Total		19.860			
Grand Total		24.405			

Source : Maharashtra Energy Development Agency : Annual Report – 2001-2002

As per the table above, the prevailing practice of investment in wind power in the State of Maharashtra was mainly into low capacity installations and primarily for sale to the State Electricity Board.

At the time of investment (in the year 2000), this project activity was significantly larger installation in size (capacity) than the largest wind power installation in the region (Page 14, under section Sub-step 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 48, section CAR 3**). The order of investment was also highest in comparison to the wind farm establishments that existed in the region.

The prevailing practice was small capacities (0.4 MW to 2 MW) involving small investments and exporting power to the State Electricity Board. As opposed, this project is of large capacity (**45.2 MW**) involving large investment and for **captive consumption**. In this respect, the project is “the first of its kind” and “no such project activity was operational in the region” at the time of investment decision.

In its risk profile, the present project activity is different from that of the prevailing practice as larger investment is at risk. Similarly, the policy and regulatory uncertainties are more in the case of project activities involving wheeling of power.

At the time of investment decision there were only two identified active sites for wind power installations in Maharashtra namely Satara and Supa, which is clear from the table highlighted above.

The Satara project of BAL is located in high terrains, with little or no human habitation and infrastructure etc. During the time of investment there was no evacuation facility on the site of the CDM project activity, available to the project participant in order to connect the power generated to a substation. The generated power was connected to the substations which was 30 to 40 km away from the site with inadequate capacity, which caused poor grid availability and loss of generation till 2003. Also, BAL was the first to install 1000 KW wind turbines on large scale (1000 Kw x 6 windmills) at Satara site.

Also, this project activity is one of the first non coastal wind installation and coastal installation have better infrastructure support.

Other barriers:

Regulatory uncertainties:

At the time of the investment the project participant faced the uncertainty on tariff (introduction of TOD metering), uncertainty regarding the interpretation of transmission loss charges which were revised from 0-1% to 10% and to 5%, Uncertainty of State Govt. notifications on power credits and also delay in getting such credits.(Page 11 & 15, under section Sub-step 3 & 4b of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 49, CAR 3**). The interpretation of the transmission loss charges by State Electricity Board and Wind power producers were different and lead to dispute. The dispute took a long period to get clarified by MERC.

Such uncertainties in tariffs, transmission losses and power credits (this is applicable to projects with wheeling of power and no other wind power installations, other than that of this project participant faced such regulatory uncertainty) would have prevented investment in to the project activity but for the potential CDM benefit.

Investment barrier:

The investment is substantial compared to any other project in the similar activity in the region.

Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001. The investment into the project activity is substantial in comparison to that of BAL's investment into the expansion of its core business activity.

The alternatives to the project activity are identified as –

- Purchase of power from the grid
- Power generation using coal
- Power generation using windmill without CDM
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Comparative unit cost of power generation using various alternatives are given hereunder –

	Rs. Per Kwh			
	<u>Cost of unit power on purchase from grid</u>	<u>Cost of unit Power generated using Coal</u>	<u>Cost of unit power generated using wind mill(without CDM)</u>	<u>Cost of unit power generated (with CDM revenue)</u>
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The internal rate of return and debt equity ratios with and without CDM benefits is presented in the PDD as an additional argument to support investment barrier.

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Due to the above given risks the project participant required additional O&M requirement for electrical circuits.

In addition to the above barriers the project activity faced other technical barriers, such as, BAL entering a new field of power generation at a large scale, which completely differs from their core activity of automobile manufacturing (here compare with IRR's expected from investments in to known automobile business and unknown wind power generation), which made BAL face barriers due to unavailability of technical skill set within the firm and further training of the manpower (also retention of such manpower in tough and isolated terrains). (Page 10, under section Step 3, Point no 1 to 3 of the PDD, **Validation Report No. BVQI/INDIA/7.49, Page 12, Section 3.2**).

All concerns on the validation process of the DOE raised in review for request for Project 0224 and that are valid for this project would be addressed by the DOE.

Response to reason IV. b):

To demonstrate additionality the project participant has chosen barrier analysis in preference to the investment analysis as stated under section Step 2 at page 10, of the PDD, **Validation Report No. BVQI/INDIA/7.49, page 12, under section 3.2**.

It is stated that the project activity faces technology barrier, investment barrier and barrier due to prevailing practices.

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Response of Bajaj Auto Ltd to the Issues raised in the Review Request

				Total additions to Plant and Machinery in core business during 5 years (1997 – 2002) was Rs. 7.3 billion and investment in windmill projects was Rs. 2.9 billion during 2 years 2000 & 2001
Unavailability of expertise to operate	Expertise is available and can be sourced easily as coal based power plant are well established in India due to huge coal reserves at various locations	No skilled manpower was required for importing from the grid.	Implementation of the project and its operation require skilled manpower who would have had the know-how in wind turbines and handling breakdowns caused in them. Such skilled manpower were not easily available as at the time of investment decision wind power penetration in Maharashtra was 2.64%. It was not a business where the expertise could have been obtained easily.	It is not a generic business risk as the expertise at the time of investment decision was not available internally and difficult to source externally. This is compounded by a) difficult and isolated terrain where the personnel is required to operate b) Dependence on a third party for critical input like power
Upgradation of skill set	This alternative did not face the barrier, due to earlier experience of power generation	This alternative required no such upgradation of skill sets	Having lack of skilled man power internally required BAL to conduct upgradation of skill sets of the	This is normal business risk but required additional efforts in terms of upgrading the

	through DG sets	as operations processes are minimal in import of power from the grid.	manpower	skills.
Risk caused to business due to lightning strikes	The alternative faces no such barrier	The alternative faces no such barrier	BAL was aware of the fact that any lightning strike in the region may cause complete destruction of the entire connected circuit.	This is not a generic business risk. The risk is quiet significantly higher in comparison to the core or the normal business operations of BAL. This is evident from the insurance premia that BAL has to pay more for wind projects

The DSCR of 0.69% without CDM revenue and 0.72% with CDM revenue was calculated considering the revenue from and expenditure on the project activity - windmill project - without considering sales tax benefits and income tax benefits (accelerated depreciation) that accrue to the other segments of the business. The project participant would have enjoyed substantially higher sales tax benefits if the investments were made in alternatives to the project activity. This has been also clarified in the **Validation Report No. BVQI/INDIA/7.49, page 58 to 60**. Such benefits could also accrue to the other segments of the business due to investment in alternatives to the project activity.

The CDM revenue was calculated with a CER price of US\$ 4. BAL was aware of the forecasts of potential prices ranging up to US\$ 20. On a conservative basis, it has been worked out at CER price of US\$ 4 resulting in the DSCR with CDM revenues at 0.72%. At US\$ 20 the comparative figures is 0.84% with CDM as against 0.69% without CDM.

We request this response be read in conjunction with **Validation Report no. BVQI/INDIA/7.49, Page 58 to 61** reproduced as Annex II.

Response to reason IV. c):

We understand the response to this comment is to be provided by the DOE, and so we have left it to the DOE to interpret and respond to the EB members concern on the validation report.
