CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

Annexes

SECTION A. General description of project activity

A.1 Title of the project activity:

>>
Title: Bundled wind energy power projects (2004 policy) in Rajasthan
Version: 6.0
Date of completion of PDD: 23/10/2008

A.2. Description of the project activity:

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Objective of the Project

The objective is development, design, engineering, procurement, finance, construction, operation and maintenance of bundled wind power projects totalling 24.8 MW wind power projects ("Project") in the Indian state of Rajasthan to provide reliable, renewable power to the Rajasthan state electricity grid which is part of the Northern regional electricity grid. The Project will lead to reduced greenhouse gas emissions because it displaces electricity from fossil fuel based electricity generation plants.

Nature of Project

The Project harnesses renewable resources in the region, and thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Enercon (India) Ltd ("Enercon" or "EIL") is the equipment supplier and the operations and maintenance contractor for the Project. The generated electricity will be supplied to Rajasthan Rajya Vidyut Prasaran Nigam Ltd ("RRPVN")/ Jodhpur Electricity Distribution Company Ltd ("Jodhpur Discom") under a long-term power purchase agreement (PPA). The details of the sub-projects comprising the Project are as under:

- CEPCO Industries: 12 MW
- Ushdev International: 2.4 MW
- Brindavan Agro Industies: 1.6 MW
- Amrit Bottlers Ltd.: 0.8 MW
- Deedee Enterprises: 0.8 MW
- JN Investment: 0.8 MW
- Metalfab Hightech Private Limited: 0.8 MW
- SE Investment: 0.8 MW
- Brindavan Bottlers Ltd.: 0.8 MW
- Delta Enterprises: 2.4 MW
- Sankalp International: 0.8 MW
- Malani Impex Inc.: 0.8 MW

Contribution to sustainable development

The Project meets several sustainable development objectives including:

- contribution towards the policy desire of Government of India and Government of Rajasthan of incremental capacity from renewable sources;
- contribution towards meeting the electricity deficit in Rajasthan;
- CO_2 abatement and reduction of greenhouse gas emissions through development of renewable technology;
- reducing the average emission intensity (SO_x, NO_x, PM, etc.), average effluent intensity and average solid waste intensity of power generation in the system;
- conserving natural resources including land, forests, minerals, water and ecosystems; and
- developing the local economy and create jobs and employment, particularly in rural areas, which is a priority concern for the Government of India;

A.3. Project participants:

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Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Government of India (Host)	Enercon (India) Ltd	No
Government of Japan	Japan Carbon Finance	No

The contact details of the entities are provided in Annex – 1.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

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A.4.1.1. Host Party(ies):

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The host party to the project activity is the Government of India.

A.4.1.2. Region/State/Province etc.:

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The Project is located in the State of Rajasthan that forms part of the Northern regional electricity grid of India.

A.4.1.3. City/Town/Community etc:

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The Project is located at Kita and Bhu village, in Jaisalmer District of Rajasthan state in India.

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

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The project area extends between latitude 26° 41' & 26° 46.5' North and longitude 70 ° 57.5' & 71 ° 4' East. The Project is connected to the RRVPN 33/132/220 kV substation at Amarsagar. The sites are located at a distance of 25 km from Jaisalmer by road. The nearest railway station is at Jaisalmer. A location map is attached at Appendix – 1.

A.4.2. Category(ies) of project activity:

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The project activity is considered under CDM category zero-emissions **'grid-connected electricity generation from renewable sources'** that generates electricity in excess of 15 MW (limit for small scale project). Therefore as per the scope of the project activity enlisted in the 'list of sectoral scopes and related approved baseline and monitoring methodologies (version 02 Mar 05/07:23)', the project activity may principally be categorized in Scope Number 1, Sectoral Scope - Energy industries (renewable/ non-renewable sources).

A.4.3. Technology to be employed by the project activity:

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The Project involves 31-wind energy converters (WECs) of Enercon make (800 kW E-48) with internal electrical lines connecting the Project with local evacuation facility. The WECs generates 3-phase power at 400V, which is stepped up to 33 KV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V ± 12.5%. The other salient features of the state-of-art-technology are:

- Gearless Construction - Rotor & Generator Mounted on same shaft eliminating the Gearbox.
- Variable speed function – has the speed range of 18 to 33 RPM thereby ensuring optimum efficiency at all times.
- Variable Pitch functions ensuring maximum energy capture.
- Near Unity Power Factor at all times.
- Minimum drawl (less than 1% of kWh generated) of Reactive Power from the grid.
- No voltage peaks at any time.
- Operating range of the WEC with voltage fluctuation of -20 to +20%.
- Less Wear & Tear since the system eliminates mechanical brake, which are not needed due to low speed generator, which runs at maximum speed of 33 rpm and uses Air Brakes.
- Three Independent Braking System.
- Generator achieving rated output at only 33 rpm.
- Incorporates lightning protection system, which includes blades.
- Starts Generation of power at wind speed of 3 m/s.

Enercon (India) Ltd has secured and facilitated the technology transfer for wind based renewable energy generation from Enercon GmbH, has established a manufacturing plant at Daman in India, where along with other components the "Synchronous Generators" using "Vacuum Impregnation" technology are manufactured.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

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Crediting Period for the Project: fixed for 10 years

Years	Annual estimation of emission reductions in tonnes of CO2e
15Aug2007-31Mar2008	26,204
01Apr2008-31Mar2009	41,766
01Apr2009-31Mar-2010	41,766
01Apr2010-31Mar2011	41,766
01Apr2011-31Mar2012	41,766
01Apr2012-31Mar2013	41,766
01Apr2013-31Mar2014	41,766
01Apr2014-31Mar2015	41,766
01Apr2015-31Mar2016	41,766
01Apr2016-31Mar2017	41,766
01Apr2017-14Aug2017	15,562
Total estimated reductions (tonnes of CO2e)	417,660
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO2e)	41,766

A.4.5. Public funding of the project activity:

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There is no ODA financing involved in the Project.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

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The approved consolidated baseline and monitoring methodology **ACM0002 Version 6.0** (19 May 2006) has been used. The titles of these baseline and monitoring methodologies are "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and "Consolidated monitoring methodology for grid-connected electricity generation from renewable sources.

B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

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The Project is wind based renewable energy source, zero emission power project connected to the Rajasthan state grid, which forms part of the Northern regional electricity grid. The Project will displace fossil fuel based electricity generation that would have otherwise been provided by the operation and expansion of the fossil fuel based power plants in Northern regional electricity grid.

The approved consolidated baseline and monitoring methodology ACM0002 Version 6 is the choice of the baseline and monitoring methodology and it is applicable because:

- the Project is grid connected renewable power generation project activity
- the Project represents electricity capacity additions from wind sources
- the Project does not involve switching from fossil fuel to renewable energy at the site of project activity since the Project is green-field electricity generation capacities from wind sources at sites where there was no electricity generation source prior to the Project, and
- the geographical and system boundaries of the Northern electricity grid can be clearly identified and information on the characteristics of the grid is available.

B.3. Description of the sources and gases included in the project boundary

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According to ACM0002, for the baseline emission factor, the spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to.

The Indian electricity system is divided into five regional grids, viz. Northern, Eastern, Western, Southern, and North-Eastern. Each grid covers several states. As the regional grids are interconnected, there is inter-state and inter-regional exchange. A small power exchange also takes place with neighbouring countries like Bhutan and Nepal.

The project boundary encompasses the physical extent of the northern regional electricity grid which includes the project site and all power plants connected physically to the electricity system.

Power generation and supply within the regional grid is managed by Regional Load Dispatch Centre (RLDC). The Regional Power Committees (RPCs) provide a common platform for discussion and solution to the regional problems relating to the grid. Each state in a regional grid meets its demand with its own generation facilities and also with allocation from power plants owned by the Central Sector such as NTPC and NHPC etc. Specific quotas are allocated to each state from the Central Sector power plants. Depending on the demand and generation, there are electricity exports and imports between states in the regional grid. The regional grid thus represents the largest electricity grid where power plants can be dispatched without significant constraints and thus, represents the "project electricity system" for the Project. As the Project is connected to the Northern regional electricity grid, the Northern grid is the "project electricity system".

	Source	Gas	Included?	Justification/ Explanation
B a s	Electricity generation from	CO_2	Included	Main emission source

	power plants connected to the Northern Grid	CH_4	Excluded	This source is not required to be estimated for wind energy projects under ACM0002
		N_2O	Excluded	This source is not required to be estimated for wind energy projects under ACM0002
Project Activity	Electricity generation from the Project	CO_2	Excluded	Wind energy generation does not have any direct GHG emissions.
		CH_4	Excluded	
		N_2O	Excluded	

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

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According to ACM0002, for project activities that do not modify or retrofit an existing electricity generation facility, the baseline scenario is the following:

Electricity delivered to the grid by the project 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 below.

As the Project does not modify or retrofit an existing generation facility, the baseline scenario is the emissions generated by the operation of grid-connected power plants and by the addition of new generation sources. This is estimated using calculation of Combined Margin multiplied by electricity delivered to the grid by the Project.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality): >>

The additionality of the project is being proved using additionality tool Version 2.

Step 0: Preliminary screening based on the starting date of the project activity

If project participants wish to have the crediting period starting prior to the registration of their project activity, they shall:

a) Provide evidence that the starting date of the CDM project activity falls between 1 January 2000 and the date of the registration of a first CDM project activity, bearing in mind that only CDM project activities submitted for registration before 31 December 2005 may claim for a crediting period starting before the date of registration.

b) Provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available at, or prior to, the start of the project activity.

The Project start date is prior to the date of validation of the PDD. Enercon had entered into discussions with a CER purchaser for purchase of emission reductions and a Memorandum of Understanding was signed on 1st July 2005, which is prior to the start date of the Project.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

1. Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed CDM project activity. These alternatives are to include:

- The proposed project activity not undertaken as a CDM project activity;
- All other plausible and credible alternatives to the project activity that deliver outputs and on services (e.g. electricity, heat or cement) with comparable quality, properties and application areas;
- If applicable, continuation of the current situation (no project activity or other alternatives undertaken).

Alternative(s) available to the project participants or similar project developers include:

(a) The Project is not undertaken as a CDM project activity.

(b) Setting up of comparable utility scale fossil fuel fired or hydro power projects that supply to the Rajasthan grid under a PPA.

Continuation of the current situation where no project activity or any of the above Alternatives are undertaken would not be applicable as Rajasthan had energy (MU) shortages of 3.5% and peak (MW) shortages of 13.7% in 2005-06 (Source: Northern Region Power Sector Profile, July 2006, Ministry of Power).

Sub-step 1b. Enforcement of applicable laws and regulations

2. The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. This sub-step does not consider national and local policies that do not have legally-binding status.

3. If an alternative does not comply with all applicable legislation and regulations, then show that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that non-compliance with those requirements is widespread in the country. If this cannot be shown, then eliminate the alternative from further consideration.

4. If the proposed project activity is the only alternative amongst the ones considered by the project participants that is in compliance with all regulations with which there is general compliance, then the proposed CDM project activity is not additional.

There are no legal and regulatory requirements that prevent Alternatives (a) and (b) from occurring.

Proceed to Step 2 (Investment analysis) or Step 3 (Barrier analysis). (Project participants may also select to complete both steps 2 and 3.)

Step 2: Investment Analysis

Determine whether the proposed project activity is the economically or financially less attractive than other alternatives without the revenue from the sale of certified emission reductions (CERs). To conduct the investment analysis, use the following sub-steps:

Sub-step 2a. - Determine appropriate analysis method

1. Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (sub-step 2b). If the CDM project activity generates no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III).

Sub-step 2b. – Option I. Apply simple cost analysis

2. Document the costs associated with the CDM project activity and demonstrate that the activity produces no economic benefits other than CDM related income.

Sub-step 2b. – Option II. Apply investment comparison analysis

3. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service (e.g., levelized cost of electricity production in $/kWh or levelized cost of delivered heat in $/GJ) most suitable for the project type and decision-making context.

Sub-step 2b. – Option III. Apply benchmark analysis

4. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service (e.g., levelized cost of electricity production in $/kWh or levelized cost of delivered heat in $/GJ) most suitable for the project type and decision context.

Option I – Simple cost analysis is not applicable as the project activity sells electricity to the grid and obtains economic benefits in the form of electricity tariffs.

Enercon proposes to use **Option III – Benchmark analysis**

Our project is a 24.8 MW bundled wind power project that generates and supplies electricity to the state electricity grid in the state of Rajasthan, India. Our project was initially taken under request for review on the ground that the version of the additionality tool used by us was not applicable and the benchmark needed to be justified. Further to our submissions the EB asked us to correct the PDD and change our investment analysis for the bundled project on the basis of Project IRR calculations according to the guidance given in the tool (refer foot note 7 of additionality tool version 03). It may be noted that through subsequent revisions to the Additionality tool the honorable EB has removed this requirement.

We provided the necessary clarifications in EB 35 and our submissions were accepted and the EB agreed to register the project provided we calculate the Project IRR and compare the same with an appropriate benchmark. We then determined the Weighted Average Cost of Capital (WACC) applicable to the power sector projects in India in line with the EB guidance (Additionality tool)[1]; got it certified by an independent financial expert (CARE Advisory, prominent financial advisory firm for power sector projects in India[2]). The Benchmark WACC was determined using publicly available information on the interest on Government securities and risk premium applicable for the power sector

[1] The tool under sub-step 2b paragraph 4 (a) states that benchmark can be derived from Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert.

[2] http://www.careratings.com/

investment. The certified value of WACC was used as benchmark for carrying out the Investment Analysis.

We are thankful that the EB has considered our submissions in EB-41 and has agreed to register the project provided we submit a revised PDD and the DOE submits a revised validation report which recalculates the WACC applying:

(i) The actual cost of debt applicable to the project activity; and

(ii) A beta value from an independent third party source to determine the cost of equity.

Response to point (i):

The captioned project is a wind power generation project that generates and supplies electricity to the state grid, therefore the project can have more than one possible project developers. The tool for demonstration and assessment of additionality [Sub-step 2 (b) para 4 and para 4 (c)] refer that in such cases (where the project has more than one potential developer) the benchmark should not include subjective profitability expectations or risk profile of a particular developer, and shall be based on parameters that are standard in the market, considering the specific characteristics of the project type. In the context of the same, we did not use the interest rate of the specific project developer but used the general lending rate represented by the Bank PLR.

However, as instructed by the EB, we have now used the actual cost of debt for the project activity;

This a bundled PDD comprising of many sub project activities, therefore the cost of debt for the project has been calculated as the weighted average of cost of debt of all sub projects. The weighted average cost of debt works out to **9.59%**. (Please refer Appendix 4)

Response to point (ii):

The beta values presented in the previous analysis had validated by Credit Analysis and Research Ltd. (CARE), an independent third party and a prime financial advisory firm for power sector in India.

However as per EB's guidance, the average Beta of all listed power companies in India at the time of this investment (November 2005) has now been sourced from Bloomberg (refer Appendix 5[3]: Screen Shots of Power Companies). The average Beta of power companies for the period from Oct- 2002 to Oct-2005 is shown in the table below

S No.	Bloomberg Symbol	Company	Beta[4]

[3] www.bloomberg.com

[4] The beta value used, are the regression betas calculated by Bloomberg based on periodic stock returns. Bloomberg also provides an adjusted beta value after making the following adjustments: Adjusted Beta=Regression Beta (denoted as Raw beta) *(0.67) +1.00*(0.33)

Bloomberg states that this is a default adjustment on the assumption that in future, over a period of time all betas may tend towards the average beta i.e. one. The approach outlined in corporate finance states: the conventional approach to estimate the beta of an investment is a regression of return on investment against returns on a market

1	BFUT in Equity	BF Utility	1.222
2	CESC in Equity	CESC Utility	1.600
3	GIP in Equity	GIP	1.317
4	NLC in Equity	Neyveli Lignite	1.439
5	NRELE in Equity	Reliance	1.000
6	TPWR in Equity	Tata	1.350
		Average Beta	**1.32**

The WACC works out to 13.45%, the WACC calculations submitted in EB 41 are again attached after incorporating the revisions in **cost of debt** and **beta** (all other parameters remain unchanged from the previous submissions made in EB 41, please refer benchmark note submitted in EB 41). Accordingly the pre-tax WACC applicable for the project has been determined as **13.45%**.

We would like to submit that the pre-tax project IRR of our project is **10.85%** which is less than the benchmark. The analysis holds true even with the sensitivity analysis. Therefore the project activity meets the investment analysis criteria set out in the Additionality tool.

Sub-step 2c. Calculation and comparison of financial indicators (only applicable to options II and III):

5. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but including subsidies/fiscal incentives where applicable), and, as appropriate, non-market cost and benefits in the case of public investors.

6. Present the investment analysis in a transparent manner and provide all the relevant assumptions in the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results. Clearly present critical techno-economic parameters and assumptions (such as capital costs, fuel prices, lifetimes, and discount rate or cost of capital). Justify and/or cite assumptions in a manner that can be validated by the DOE. In calculating the financial indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions (e.g. insurance premiums can be used in the calculation to reflect specific risk equivalents).

7. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.

8. Present in the CDM-PDD submitted for validation a clear comparison of the financial indicator for the proposed CDM activity and:

    (a) The alternatives, if Option II (investment comparison analysis) is used. If one of the other alternatives has the best indicator (e.g. highest IRR), then the CDM project activity can not be considered as the most financially attractive;

index (please see page no. 196 from "Corporate Finance Theory and Practice by Aswath Damodaran, attached as Appendix 6). Accordingly, the regression beta (and not the adjusted beta) value has been considered.

(b) The financial benchmark, if Option III (benchmark analysis) is used. If the CDM project activity has a less favourable indicator (e.g. lower IRR) than the benchmark, then the CDM project activity cannot be considered as financially attractive.

The key assumptions used for calculating the benchmark (pre-tax project IRR) are set out below:

Capacity of Machines in kW	800
Number of Machines	31
Project Capacity in MW	24.80
Project Commissioning Date	1-Apr-06
Project Cost per MW (Rs. In Millions)	47.5

Operations	
Plant Load Factor	22.00%
Insurance Charges @ % of capital cost	0.18%
Operation & Maintenance Cost base year @ % of capital cost	1.25%
% of escalation per annum on O & M Charges	5.0%

Tariff	
Base year Tariff (2005-06) - Rs./kWh	3.25
Annual Escalation (Rs./kWh per Year)	0.06
Tariff applicable from 2014-15 onwards (Rs/kWh)	3.79

	Rs Million
Project Cost Land and Infrastructure, Generator & Electrical Equipments, Mechanical Equipments, Civil Works, Instrumentation & Control, Other Project Cost, Pre operative Expenses, etc.	
Total Project Cost	1,178

Means of Finance		Rs Million
Own Source	30%	353
Term Loan	70%	825
Total Source		1,178
Terms of Loan		
Interest Rate	8.50%	
Tenure	10	Years
Moratorium	6	Months

Income Tax Depreciation Rate (Written Down Value basis)	
On Wind Energy Generators	80%
On other Assets	10%
Book Depreciation Rate (Straight Line Method basis)	
On all assets	7.86%
Book Depreciation up to (% of asset value)	90%

Income Tax	
Income Tax rate	30%
Minimum Alternate Tax	10%
Surcharge	10%
Cess	2%

Working capital	
Receivables (no of days)	45
O & m expenses (no of days)	30
Working capital interest rate	12%

CER Revenues	
CER Price in US$	-
Exchange rate Rs./US$*	43.59

* RBI reference rate as of 30 March 2007

Crediting period starts	15-August-07
Length of Crediting period	10

Baseline Emission Factor for Northern Region (tCO2/GWh)	873.87

The pre-tax Project IRR of the project (without CDM revenues) is 10.85%, which is lower than the benchmark rate of 13.45% and with CDM revenue is 11.63%.

Sub-step 2d. Sensitivity analysis (only applicable to options II and III):

9. Include a sensitivity analysis that shows whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favor of additionality only if it consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be the most financially attractive (as per step 2c para 8a) or is unlikely to be financially attractive (as per step 2c para 8b).

Sensitivity analysis of the pre-tax Project IRR to the Plant Load Factor (the most critical assumption) has been carried out considering a plant load factor of 20% (plant load factor as observed in recent past for other Enercon projects) and 23.97% (highest plant load factor achieved according to RERC, in its Order dated 29 September 2006). Plant Load Factor is the key variable encompassing variation in wind

profile, variation in off-take (including grid availability) including machine downtime. The pre-tax Project IRRs at the stated PLFs are as follows:

Sensitivity analysis	*Plf at 20%*	*Plf at 23.97%*
Pre tax Project IRR without CER	9.24%	12.38%
Pre tax Project IRR with CER	9.96%	13.21%

As can be seen from above, the Project is not the most financially attractive (as per step 2c para 8a) we proceed to Step 4 (Common practice analysis).

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

1. Provide an analysis of any other activities implemented previously or currently underway that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities are not to be included in this analysis. Provide quantitative information where relevant.

Sub-step 4b. Discuss any similar options that are occurring:

2. If similar activities are widely observed and commonly carried out, it calls into question the claim that the proposed project activity is financially unattractive (as contended in Step 2) or faces barriers (as contended in Step 3). Therefore, if similar activities are identified above, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially attractive (e.g., subsidies or other financial flows) or did not face the barriers to which the proposed project activity is subject.
3. Essential distinctions may include a serious change in circumstances under which the proposed CDM project activity will be implemented when compared to circumstances under which similar projects where carried out. For example, new barriers may have arisen, or promotional policies may have ended, leading to a situation in which the proposed CDM project activity would not be implemented without the incentive provided by the CDM. The change must be fundamental and verifiable.

We analyze the extent to which wind energy projects have diffused in the electricity sector in Rajasthan. In 2005 – 06, electricity generation from wind sources was 417 GWh which is expected to increase to 512 GWh in 2006 – 07. This works out to 1.35% of total generation available to the state of Rajasthan in 2005 – 06 and 1.66% of total expected generation available to the state of Rajasthan in 2006 – 07. Clearly, electricity generation from wind is not a common practice in Rajasthan.

We analyze the wind energy projects in Rajasthan that have come under different policy regimes and in different years. Briefly, the various policies have progressively decreased the electricity tariffs payable by the offtaker (RRVPN/Discoms) and have progressively passed on burden of providing or paying for transmission facilities. Below is the electricity tariff payable under different policies:

Electricity tariff (Rs/kWh)	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1999 Policy	2.89	3.03	3.18	3.34	3.51	3.69	3.87	4.06	4.27
2000 Policy		3.03	3.18	3.34	3.51	3.68	3.87	4.06	4.26
2003 Policy					3.32	3.39	3.45	3.52	3.59
2004 Policy (Original)						2.91	2.96	3.01	3.06
2004 Policy (Amended)							3.25	3.31	3.37

Out of the 279 MW installed up to 31 March 2005, the wind power projects under various policies of Government of Rajasthan are set out below:
Policy 1999 (effective 11th March 1999): 4.25 MW
Policy 2000 (effective 4th Feb 2000): 82.23 MW
Policy 2003 (effective 30th April 2003): 174.29 MW
Policy 2004 (effective 25th October 2004): 18.85 MW

Currently, there are 134.71 MW of wind projects in Rajasthan (at various stages) that are in the CDM pipeline (on the cdm.unfccc.int website) out of 279 MW and more projects are expected to come into the CDM pipeline.

With the revision of Policy 2004 (effective February 2006), the capacity additions during the three years are expected to be around 297 MW:
2005–06: 74 MW
2006-07: 36 MW
2007-08: 187 MW

Out of the 297 MW that is estimated to be installed up to 2008, this Project constitutes 24.8 MW. Enercon is further developing a 100 MW wind power project and another 60 MW as CDM project activities under the 2004 policy (amended). It is expected that other wind power projects during this period will be undertaken as CDM projects.

Clearly, wind power project development in Rajasthan is insignificant when compared to the power sector of Rajasthan. Further, wind power project development is substantially dependent on CDM mechanism and thus is not common practice.

Sub-steps 4a and 4b are satisfied and the project activity is additional.

Step 5. Impact of CDM registration

Explain how the approval and registration of the project activity as a CDM activity, and the attendant benefits and incentives derived from the project activity, will alleviate the economic and financial hurdles (Step 2) or other identified barriers (Step 3) and thus enable the project activity to be undertaken.

Registering the project activity as a CDM activity provides a significant amount of revenue, improving the project's cash flow and improving the equity IRR by 1.5%. The revenues from sale of the Certified Emission Reductions would enhance the viability of the project and would partially offset the risks associated with the possible changes in policy, wind regime, project implementation risks (time and cost overruns), etc. Further, CER revenues will be high quality cash flows coming from creditworthy parties and denominated in foreign currency. The CDM revenues will attract new players to wind investments in Rajasthan, as they provide compensation for the regulatory and project risks implicit in the wind power projects.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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According to the approved baseline methodology ACM0002, the emission reductions ***ERy*** by the project activity during a given year "y[1]" is

ERy = BEy – PEy – Ly…….(1)

where *BEy* is the baseline emissions
PEy is project activity emissions and;
Ly is the amount of emissions leakage resulting from the project activity.

Baseline Emissions for the amount of electricity supplied by project activity, *BEy* is calculated as

BEy = EGy * EFy ……..(2)

where *EGy* is the electricity supplied to the grid, *EFy* is the CO_2 emission factor of the grid as calculated below.

The emission factor *EFy* of the grid is represented as a combination of the Operating Margin (OM) and the Build Margin (BM). Considering the emission factors for these two margins as $EF_{OM,y}$ and $EF_{BM,y}$, then the *EFy* is given by:

$$EF_y = w_{OM} * EF_{OM,y} + w_{BM} * EF_{BM,y} \quad \text{……..(2)}$$

with respective weight factors w_{OM} and w_{BM} (where $w_{OM} + w_{BM} = 1$).

The Operating Margin emission factor

[1] Throughout the document, the suffix *y* denotes that such parameter is a function of the year y, thus to be monitored at least annually.

As per ACM0002, dispatch data analysis should be the first methodological choice. However, this option is not selected because the information required to calculate OM based on dispatch data is not available in the public domain for the Northern electricity regional grid.

The Simple Operating Margin approach is appropriate to calculate the Operating Margin emission factor applicable in this case. As per ACM 0002 the Simple OM method can only be used where low cost must run resources constitute less than 50% of grid generation based on average of the five most recent years. The generation profile of the Northern grid in the last five years is as follows:

Generation in GWh	**2004-05**	**2003-04**	**2002-03**	**2001-02**	**2000-01**
Low cost/must run sources					
Hydro	36,128	38,279	30,335	29,129	29,020
Wind	332	15	25	19	6
Nuclear	7,503	7,380	8,800	8,158	6,669
Other sources					
Coal	106,156	103,232	100,362	96,882	92,417
Diesel	-	-	-	24	-
Gas	19,991	18,758	17,262	17,634	16,863
Total Generation	**170,109**	**167,663**	**156,785**	**151,845**	**144,975**
Low cost/must run sources	43,962	45,674	39,160	37,305	35,695
Low cost/must run sources	26%	27%	25%	25%	25%

Source: Table 3.4 of CEA General Review 2004-05, 2003-04, 2002-03, 2001-02, 2000-01

From the available information it is clear that low cost/must run sources account for less than 50% of the total generation in the Northern grid in the last five years. Hence the Simple OM method is appropriate to calculate the Operating Margin Emission factor applicable.

Build Margin Emission Factor

The Build Margin emission factor *EF_BMy* (tCO_2/GWh) is given as the generation-weighted average emission factor of the selected representative set of recent power plants represented by the 5 most recent plants or the most recent 20% of the generating units built (summation is over such plants specified by k):

$$EF_{BM,y} = [\sum_i F_{i,m,y} * COEFi] / [\sum_k GEN_{k,m,y}] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

The summation over *i* and *k* is for the fuels and electricity generation of the plants in sample *m* mentioned above.

The choice of method for the sample plant is the most recent 20% of the generating units built as this represents a significantly larger set of plants for a large regional electricity grid having a large number of power plants connected to it and is therefore appropriate.

The Central Electricity Authority, Ministry of Power, Government of India has published a database of Carbon Dioxide Emission from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This database i.e. The CO2 Baseline

Database provides information about the Operating Margin and Build Margin Emission Factors of all the regional electricity grids in India. The Operating Margin in the CEA database is calculated ex ante using the Simple OM approach and the Build Margin is calculated ex ante based on 20% most recent capacity additions in the grid based on net generation as described in ACM0002. We have, therefore, used the Operating Margin and Build Margin data published in the CEA database, for calculating the Baseline Emission Factor.

Combined Margin Emission Factor

As already mentioned, baseline emission factor (EFy) of the grid is calculated as a combined margin (CM), calculated as the weighted average of the operating margin (OM) and build margin (BM) factor. In case of wind power projects default weights of 0.75 for EF_{OM} and 0.25 for EF_{BM} are applicable as per ACM0002. No alternate weights are proposed.

Using the values for operating margin and build margin emission factors provided in the CEA database and their respective weights for calculation of combined margin emission factor, the baseline carbon emission factor (CM) is 873.87 tCO2e/GWh or 0.87387 tCO2e/MWh.

Project Emissions:

The project activity uses wind power to generate electricity and hence the emissions from the project activity are taken as nil.

PEy = 0

Leakage:

Emissions Leakage on account of the project activity is ignored in accordance with ACM0002.

Ly = 0

B.6.2. Data and parameters that are available at validation:

>>

Data / Parameter:	$EF_{OM,y}$
Data unit:	tCO2e/MWh
Description:	Operating Margin Emission Factor of Northern Regional Electricity Grid
Source of data used:	"CO2 Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO2 Baseline Database for Indian Power Sector" is available at www.cea.nic.in
Value applied:	2002 – 03: 0.9993 2003 – 04: 0.9869 2004 – 05: 0.9756

Justification of the choice of data or description of measurement methods and procedures actually applied :	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with ACM0002.

Data / Parameter:	$EF_{BM,y}$
Data unit:	tCO2e/MWh
Description:	Build Margin Emission Factor of Northern Regional Electricity Grid
Source of data used:	"CO2 Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO2 Baseline Database for Indian Power Sector" is available at www.cea.nic.in
Value applied:	0.5335
Justification of the choice of data or description of measurement methods and procedures actually applied :	Build Margin Emission Factor has been calculated by the Central Electricity Authority in accordance with ACM0002.

B.6.3 Ex-ante calculation of emission reductions:

>>

Ex-ante calculation of emission reductions is equal to ex-ante calculation of baseline emissions as project emissions and leakage are nil.

Baseline emission factor (combined margin)
= 873.87 tCO2e/GWh

Annual electricity supplied to the grid by the Project
= 24.8 MW (Capacity) x 22% (PLF) x 8760 (hours) / 1000 GWh
= 47.795 GWh

Annual baseline emissions
= 873.87 tCO2e/GWh x 47.795 GWh
= 41,766 tCO2e

B.6.4 Summary of the ex-ante estimation of emission reductions:

>>

Year	Estimation of project activity emissions (tonnes of CO2e)	Estimation of baseline emissions (tonnes of CO2e)	Estimation of leakage (tonnes of CO2e)	Estimation of overall emission reductions (tonnes of CO2e)
15Aug2007-31Mar2008	0	26,204	0	26,204
01Apr2008-31Mar2009	0	41,766	0	41,766
01Apr2009-31Mar-2010	0	41,766	0	41,766
01Apr2010-31Mar2011	0	41,766	0	41,766
01Apr2011-31Mar2012	0	41,766	0	41,766
01Apr2012-31Mar2013	0	41,766	0	41,766
01Apr2013-31Mar2014	0	41,766	0	41,766
01Apr2014-31Mar2015	0	41,766	0	41,766
01Apr2015-31Mar2016	0	41,766	0	41,766
01Apr2016-31Mar2017	0	41,766	0	41,766
01Apr2017-14 Aug2017	0	15,562	0	15,562
Total (tonnes of CO2e)	0	417,660	0	417,660

B.7 Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

>>

Data / Parameter:	EGy
Data unit:	MWh (Mega-watt hour)
Description:	Net electricity supplied to the grid by the Project
Source of data to be used:	Electricity supplied to the grid as per the tariff invoices raised on RRVPNL/Jodhpur Discom.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Annual electricity supplied to the grid by the Project = 24.8 MW (Capacity) x 22% (PLF) x 8760 (hours) GWh = 47,795 MWh
Description of measurement methods and procedures to be applied:	Net electricity supplied to grid will be measured by main meters (export and import). The procedures for metering and meter reading will be as per the provisions of the power purchase agreement and the Metering Code of Rajasthan. As per the Power Purchase Agreement entered into with the electricity distribution utility, there will be two meters, one main meter and one check meter. Both meters would be two-way export import meters that measure both export and import of electricity and provide net electricity exported to the grid. Accordingly, we have proposed that the net electricity exported to grid would be the sole monitoring parameter for the project. Refer Annex – 4 for an illustration of the provisions for measurement methods.

QA/QC procedures to be applied:	QA/QC procedures will be as implemented by RRVPN/Jodhpur Discom pursuant to the provisions of the power purchase agreement and the Metering Code of Rajasthan and there will be no additional QA/QC procedures. Refer Annex – 4 for an illustration of the provisions for QA/QC procedures.
Any comment:	

B.7.2 Description of the monitoring plan:

>>

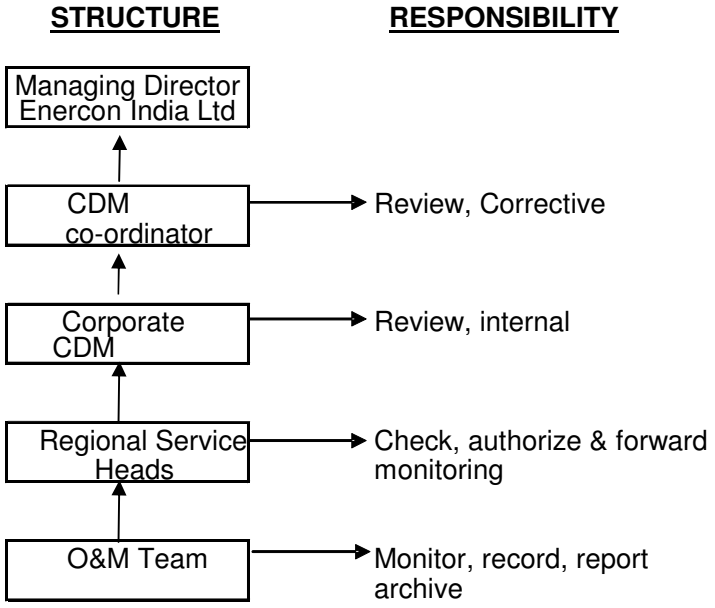
Approved monitoring methodology ACM0002 / Version 06 Sectoral Scope: 1, "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources", by CDM - Meth Panel is proposed to be used to monitor the emission reductions.

This approved monitoring methodology requires monitoring of the following:

- Electricity generation from the project activity; and
- Operating margin emission factor and build margin emission factor of the grid, where *ex post* determination of grid emission factor has been chosen

Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required.

The sole parameter for monitoring is the electricity supplied to the grid. The Project is operated and managed by Enercon (India) Ltd. The operational and management structure implemented by Enercon is as follows:



Training and maintenance:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the Wind Energy Converters (WECs), it is extremely

essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure, that Enercon's service staff is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. The Enercon Training Academy provides need-based training to meet the training requirements of Enercon projects. The training is contemporary, which results in imparting focused knowledge leading to value addition to the attitude and skills of all trainees. This ultimately leads to creativity in problem solving.

B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>
Date of completion: 30/03/2007

Name of responsible person/entity:
Pricewaterhouse Coopers Private Limited (not a Project Participant)

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

>>
24/11/2005 being the date of placement of purchase order for the first project in the bundle.

C.1.2. Expected operational lifetime of the project activity:

>>
20 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>

C.2.1.2. Length of the first crediting period:

>>

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
15/08/2007, being the beginning of the month subsequent to the month in which the Project is expected to be registered.

C.2.2.2. Length:

>>
10 years

SECTION D. Environmental impacts

>>

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>
Enercon appointed Aditya Environmental Services Private Limited to conduct rapid environmental impact assessment study to assess the impact of the project on the local environment.

Environmental Impact Assessment (EIA) of this project is not an essential regulatory requirement, as it is not covered under the categories as described in EIA Notification of 1994 or the Amended Notification of 2006. However, Enercon conducted the EIA to study impacts on the environment resulting from the project activity.

The EIA study included identification, prediction and evaluation of potential impacts of the CDM activities on air, water, noise, land, biological and socioeconomic environment within the study area. The ambient air concentrations of Suspended Particulate Matter, Respirable Particulate Matter, Oxides of Nitrogen, Sulphur dioxide and Carbon Monoxide were monitored and were found under limits as specified by CPCB. The noise levels were observed through out the study period and were found to be in the permissible range. Water quality monitoring studies were carried out for determination of physico-chemical characteristics of bore wells. The ph level of water was found to be under the specified limits.

The study area represents part of Jaisalmer district, which is part of the Thar desert. The terrain is rough comprising sandy or stony wasteland & is very sparsely populated. The windfarm is located in the mist of the Indian 'Thar' Desert and does not come in the path of the migratory birds. There is no wild life or forestland near the project sites.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>
EIA demonstrated that there is no major impact on the environment due to the installation and operation of the windmills. The desert ecology is not likely to get impacted by this type of project activity. The local population confirmed that there is no noise or dust nuisance due to windmills. The EIA also ruled out any adverse impacts due to the project activity.

SECTION E. Stakeholders' comments

>>

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

The comments from local stakeholders were invited through a local stakeholder meeting conducted at Gorbandh Palace, Jaisalmer on 18 September 2006. A letter for the meeting to be conducted was provided to the gram sarpanch 1st September 2006 inviting the local stakeholders for the meeting.

The local stakeholder consultation meeting had representatives from the nearby villages, representatives of Enercon and representative of Aditya Environmental Services (consultant to Enercon). The minutes of the meeting are set out in Appendix 2.

E.2. Summary of the comments received:

>>

The comments from local stakeholders covered the benefits the wind project activities have provided including employment opportunities to the local people, better transportation facilities to the near by towns, improved water availability, etc.

The local stakeholders did not find any negative impacts on account of the project activity on, inter alia, grazing by the cattle, affecting migratory patterns of the birds, noise levels, accidents, etc.

E.3. Report on how due account was taken of any comments received:

>>

Enercon provided the following responses in relation to the comments received from the local stakeholders:

- The benefits to the local stakeholders will be through employment opportunities provided by the project in terms of small shops and construction workers. It will also lead to better connectivity to nearby towns.
- The project does not affect the grazing by the cattle. Enercon does not use any kind for boundary wall to protect their machines and hence the accessibility of cattle to areas for grazing and drinking water is not affected.
- The Project does not fall under migratory patterns of the birds.
- Project has improved the availability of water, which can also be accessed from project site. The tube wells are located at a distance of 3 Km from project site which the people daily access.
- Enercon has appropriate protocols are in place to take care of all the safety issues. No incidence of accident has occurred.
- No noise disturbances have been observed so far and local inhabitation is far away from the project site.
- A school was reconstructed by Enercon India Limited in police lane in Jaisalmer, Rajasthan in 2004 – 05. Enercon will bear in mind the requirement of school in the village and opportunities for women in the village when it undertakes further developmental work.

The local stakeholders were satisfied with the explanations provided during the meeting.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Enercon (India) Limited
Street/P.O.Box:	A-9, Veera Industrial Estate, Veera Desai Road, Andheri West
Building:	Enercon Tower
City:	Mumbai
State/Region:	Maharashtra
Postfix/ZIP:	400 053
Country:	India
Telephone:	+91-22-66924848
FAX:	+91-22-67040473
E-Mail:	a.raghavan@enerconindia.net
URL:	
Represented by:	
Title:	Associate Vice President
Salutation:	Mr.
Last Name:	A V Raghavan
Middle Name:	
First Name:	
Department:	Corporate
Mobile:	+91-98200 45724
Direct FAX:	+91-22-5692 1175
Direct tel:	+91-22-6692 4848 extn. 7169
Personal E-Mail:	a.raghavan@enerconindia.net

Organization:	Japan Carbon Finance, Ltd.
Street/P.O.Box:	6th Floor, 1-3 Kundankita, 4-chrome
Building:	Chiyoda-ku
City:	Tokyo
State/Region:	
Postfix/ZIP:	102-0073
Country:	Japan
Telephone:	+81 3 5212 8870
FAX:	+81 3 5212 8886
E-Mail:	jcf@jcarbon.co.jp
URL:	http://www.japancarbon.co.jp/
Represented by:	
Title:	Deal Manager
Salutation:	Mr.
Last Name:	Shozo
Middle Name:	
First Name:	Watanabe
Department:	Carbon Finance Department

Mobile:	
Direct FAX:	+81 3 5212 8886
Direct tel:	+81 3 5212 8878
Personal E-Mail:	s-watanabe@jcarbon.co.jp

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No ODA financing has been used in the Project activity.

Annex 3

BASELINE INFORMATION

The Operating Margin data for the most recent three years and the Build Margin data for the Northern Region Electricity Grid as published in the CEA database are as follows:

Simple Operating Margin

	tCO2e/GWh
Simple Operating Margin - 2002-03	999.35
Simple Operating Margin - 2003-04	986.94
Simple Operating Margin - 2004-05	975.68
Average Operating Margin of last three years	987.32

Build Margin

	tCO2e/GWh
Build Margin	533.52

Combined Margin calculations

	Weights	**tCO2e/GWh**
Operating Margin	0.75	987.32
Build Margin	0.25	533.52
Combined Margin		**873.87**

Detailed information on calculation of Operating Margin Emission Factor and Build Margin Emission Factor is available at www.cea.nic.in.

Annex 4

MONITORING INFORMATION

- The electricity supplied to the grid will be metered at the 33/132/220 kV level at the RRVPN substation at Amarsagar. Representatives of RRVPN/Jodhpur Discom and Enercon will jointly take the main reading and sign the meter reading on the first day of every month. Simultaneously, the joint meter reading at the 33/132/220 kV level of the backup metering system at Temderai substation will also be taken by representatives of RRVPN/Jodhpur Discom and Enercon.

- The meters will jointly inspected/tested once in a year as per the terms of the PPA. Joint inspection and testing will also be carried out as and when difference in monthly meter readings exceeds the sum of maximum error as per accuracy class of main and back up meters.

Metering Equipment and Metering Arrangement Information

- The meter used are Trivector and the manufacturer is the Secure Meter. The meters are two-way meter and measure the electricity import and export and give the net electricity.

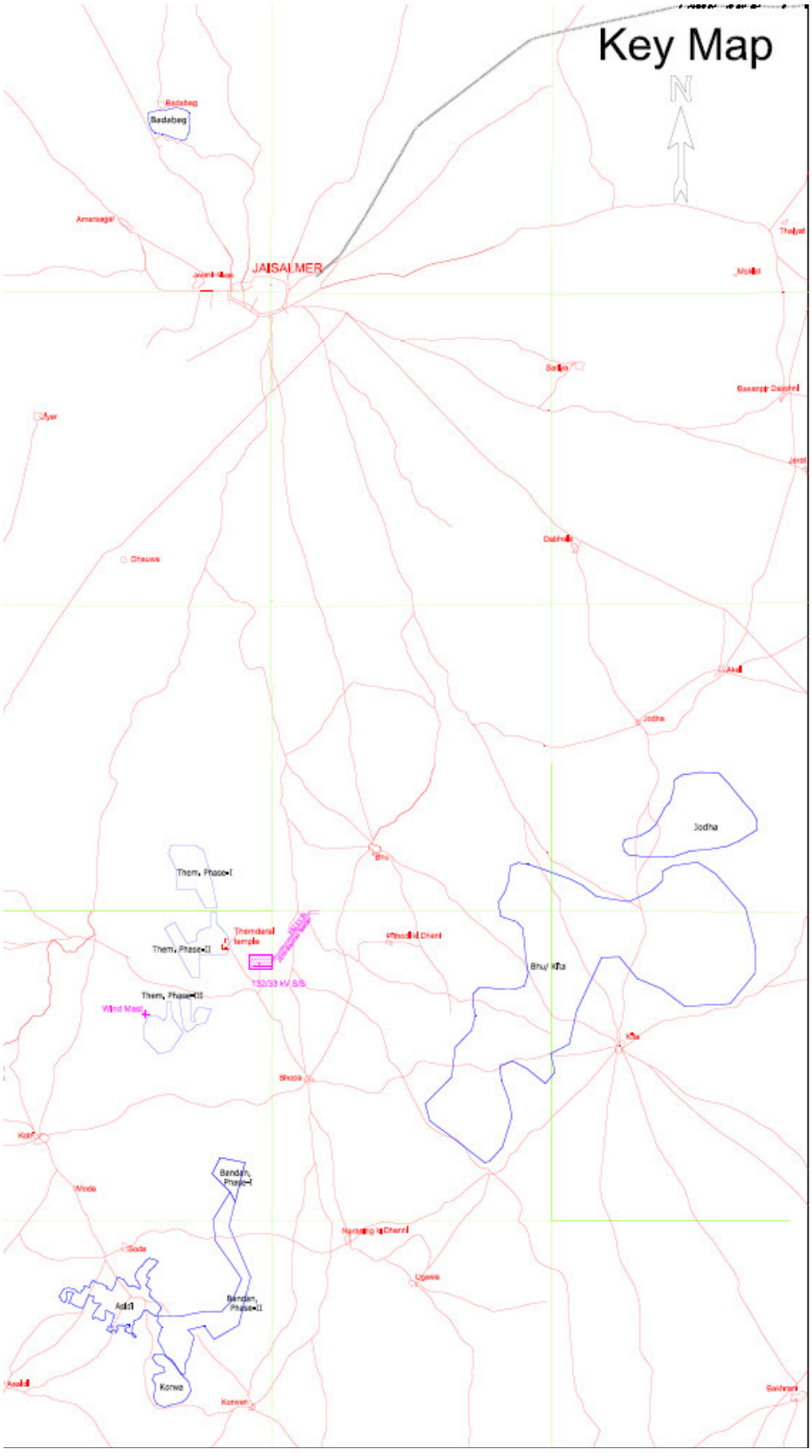
- As per the Power Purchase Agreement entered into with the electricity distribution utility, there will be two meters, one main meter and one check meter. Both meters would be two-way export import meters that measure both export and import of electricity and provide net electricity exported to the grid. Accordingly, we have proposed that the net electricity exported to grid would be the sole monitoring parameter for the project.

- In case the meters are found to operate outside the permissible limits, the meters will be either replaced immediately or calibrated. Error correction will be applied to the meter reading. Whenever a main meter goes defective, the consumption recorded by the backup meter will be referred. The details of the malfunctioning along with date and time and snaps shot parameters along with load survey will be retrieved from the main meter. The exact nature of the malfunctioning will be determined after analyzing the data so retrieved and the consumption recorded by the main meter will be assessed accordingly.

- If main as well as back up metering system becomes defective, the assessment of energy consumption for the outage period will be done from the backup meters by the concerned parties as mutually agreed or at the level of Metering Committee set up under the Metering Code.

- The main and the backup metering systems will be sealed in presence of representatives of Enercon and RRVPN/Jodhpur Discom.

Appendix 1 – Location Map



Appendix 2 – Minutes of stakeholder consultation meeting

	Public Consultation Meeting for Wind Energy Projects at Clean Development Mechanism Project of Enercon (India) Limited. situated at Kita. Bhu, Sodabhandhan ,Temderai(Phase I, PhaseII and PhaseIII), Asloi, Jodha, Korwa and Badabagh in Jaisalmer,Rajasthan **Jaisalmer, District Rajasthan, India** **MINUTES OF THE MEETING**	
	Venue: Gorbandh Palace, Jaisalmer	Date: 18 Sep 2006
	The people participated are the following:	
	Representatives:	
	Representatives from the Village: Shri. Rahim Singh Shri. Punam Singh Shri Kishan Singh The list of all other people from the villages is annexed. **Enercon (India) Limited:** Mr. Anupam Mathur Mr. Rajendra Vyas Mr. Rakesh Chhangani Mr. Dilip Sharma Mr. Neeraj Gupta **Aditya Environmental Services Pvt. Ltd.** Mr. Gurmeet Singh	
	Mr. Anupam Mathur invited Mr. Punam Singh, Ex- Sarpanch to chair the meeting. The agenda of the meeting is fixed as follows: Welcome Description of the project details Queries and responses from the proponent and the stakeholders Vote of thanks **WELCOME ADDRESS** Mr. Dilip Sharma, Security and Liasoning person from Enercon India Limited welcomed all the people who came to take part in the meeting. There were more than 20 people from all the villages that fall in the vicinity of the project sites. **Description of the Project Details.** The present stakeholder consultation is for 60 MW of Enercon Wind Farm Hindustan Limited and for 82.74 MW of the customer projects out of which 47.01 MW has been finalized and the rest 35.73 MW is in the process to be considered. Some the projects will also come up in addition to the finalised projects for CDM. The Knowledge of the wind farm was communicated to the local people in the local language. The wind farm projects falls in the category of the renewable energy. The meaning of the renewable energy was explained. The sites where the projects are located have no commercial activity and is a waste land. The best use of land is made through the project which otherwise was barren. Improved supply of electricity to the grid, and employment opportunities to local people. He explained	

	function advantages of the windmill to the people. Self reliance on using renewable energy sources is observed in Jaisalmer. The comparison between the wind farm projects and other alternatives is drawn in order to convey the advantages that wind power possess over other alternatives. The sites are located near Badabagh, Sodabandhan, Korwa, Asloi, Bhu, Temderai (Phase I, Phase II and Phase III) and Kita. In addition several other support services augmented by Enercon to local people in terms of transportation, mid –day meals to school children, renovation of Temedarai temple etc. as its social community initiatives. **SPEECH BY MR. PUNAM SINGH** The chairperson of the meeting briefed the advantages of the wind farm. The project has provided the employment opportunities to the local people as the result of which the income of the people have increased. He also praised Enercon India Limited for investing in district of Jaisalmer. **Mr. Rahim Singh (BHU Sarpanch)** The villagers in this part of the state are very backward but the times are changing with coming up of the wind farm projects of the Enercon India Limited. The project has provided the employment opportunities to the people. Security, drivers and labour people are selected among the local villagers.
	Mr. Gurmeet Singh, Aditya Environmental Services briefed the environmental benefits of wind power generation as compared to that of thermal power generation based on coal. Similarly, a briefing on GHG and its role in global warming / increasing temperatures on the earth was given. The benefits in terms of pollution free environment and safeguard to human health were also communicated to the stakeholders while comparing coal-based generation to wind based generation. The Government of Rajasthan is also encouraging the development of renewable energy. Summary on Kyoto Protocol and CDM were made available.

	The concerns, suggestions, opinions of the stakeholders have been specially invited. The participants expressed the queries as given below. The representatives from ENERCON clarified them as given below.	
	Queries	**Responses**
1.	What are the benefits of the wind power projects the stakeholders have observed?	The project has provided the people with the employment opportunities. The project has given jobs and economic opportunities in terms of small shops and construction workers. The transportation facilities has improved and has increased their accessibility to the near by town.
2.	Has the project affected the grazing of local cattle?	No, the project does not affect the grazing by the cattle. Enercon India Limited does not use any kind for boundary wall to protect their machines and hence the accessibility of cattle to areas for grazing and drinking water is not affected.
3.	Has the project affected any migratory patterns of birds or fauna?	The project does not fall under migratory patterns of the birds. The major birds migrating in the

		region, but away from project site are *" Gatta", Tilor,* and *Solan*, which usually take their path away from the project site.
4.	Has the project affected the water availability? How far are the tube wells located from the site?	The project has improved the availability of water, which can also be accessed from project site. The tube wells are located at a distance of 3 Km from project site which the people daily access.
5.	During construction and erection has any incident of accident or damage occurred?	As to date no incidence of accident has occurred.
6.	Do Enercon take care of safety issues?	The Enercon India Limited takes care about the safety issues. Appropriate protocols are in place to take care of all the safety issues.
7.	Have you observed any noise disturbances from the project during construction and operation of the project has occurred by the local people?	No noise disturbances have been so far. Local inhabitation is far away from the project site.

Women Representative

The women representative asked if school could be provided for the education of the children. The school can provide the much need education to the children. Also, women should be provided with the good opportunities.

Vote of thanks

Mr. Dilip Sharma thanked all the people for sparing their time for this meeting and requested them to continue their support towards the projects of Enercon India Limited. The representatives of the villages and also the local population represented their happiness towards Enercon India Limited.

Appendix 3:
CARE Letter

CARE Advisory

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Somaiya Hospital Road,
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Sion (East), Mumbai - 400 022, INDIA.
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E-mail : advisory@care-advisory.com
www.care-advisory.com

February 5, 2008

M/s Enercon India Limited
Enercon Tower,
A-9, Veera Industrial Estate,
Veera Desai Road,
Andheri West,
Mumbai-400053
Maharashtra

Dear Sir,

Benchmark weighted average cost of capital for power sector projects

Please refer to the assignment titled "**Validation of the Benchmark Project IRR (PIRR) for the power generating projects in India**", to determine the benchmark Weighted Average Cost of Capital (WACC) applicable for electricity generation projects in India. We understand that the context (as explained in the note attached as annexure) for such an exercise is to arrive at the value of the benchmark financial indicator required for carrying out the benchmark analysis in conformity with sub-step 2(b) option III of the tool for demonstration and assessment of additionality (version 2.0, 3.0 and 4.0) approved by the CDM Executive Board, UNFCCC.

Accordingly, we carried out a review of the benchmark note prepared by you. We hereby confirm that the approach and calculations used for determining the benchmark WACC are consistent with financial principles and practices that are widely accepted. Key data and assumptions used for carrying out the benchmark analysis and the conclusions are set out below.

1. **Cost of Debt (K_d)**- 10.63% - The Prime Lending Rate (PLR) of five major banks in India[1] for the year 2004-05 was between 10.25-11.00%; accordingly the appropriate cost of debt has been considered as 10.63%
2. **Cost of Equity (K_e)**- 23.7% - Calculated using Capital Asset Pricing Model as follows:
    a. **Risk free rate of return (R_f)**: 6.87% - Yield on 10 – year Government securities as on March 31, 2005.

[1] Source: Reserve Bank of India, www.rbi.org.in

CARE Advisory

b. **Beta (β)**: 2.26 - Calculated by averaging the betas obtained for each company in the business of conventional power generation and then un-levering them and re-levering those values using prevailing tax rates and normative debt:equity value for power projects.

c. **Market rate of return (Rm)**: - 17.86%- The return on investment based on variations in Bombay Stock Exchange Index since its inception in 1978-79.

3. **Debt Equity ratio**: 70:30 – as per regulatory practices.

4. **Based on the above, the Pre-tax Weighted Average Cost of Capital applicable for the year 2005-06 works out to 17.00%.**[2]

The approach, data and calculations used for arriving at the above values are explained in detail in annexure.

Yours Faithfully,

P.N.Sathees Kumar
(Head – Advisory Services)

[2] Note titled "Benchmark Weighted Average Cost of Capital for Power Projects in India" by Enercon India Ltd, demonstrating the methodology, and data used to arrive the WACC is annexed.

Appendix 4

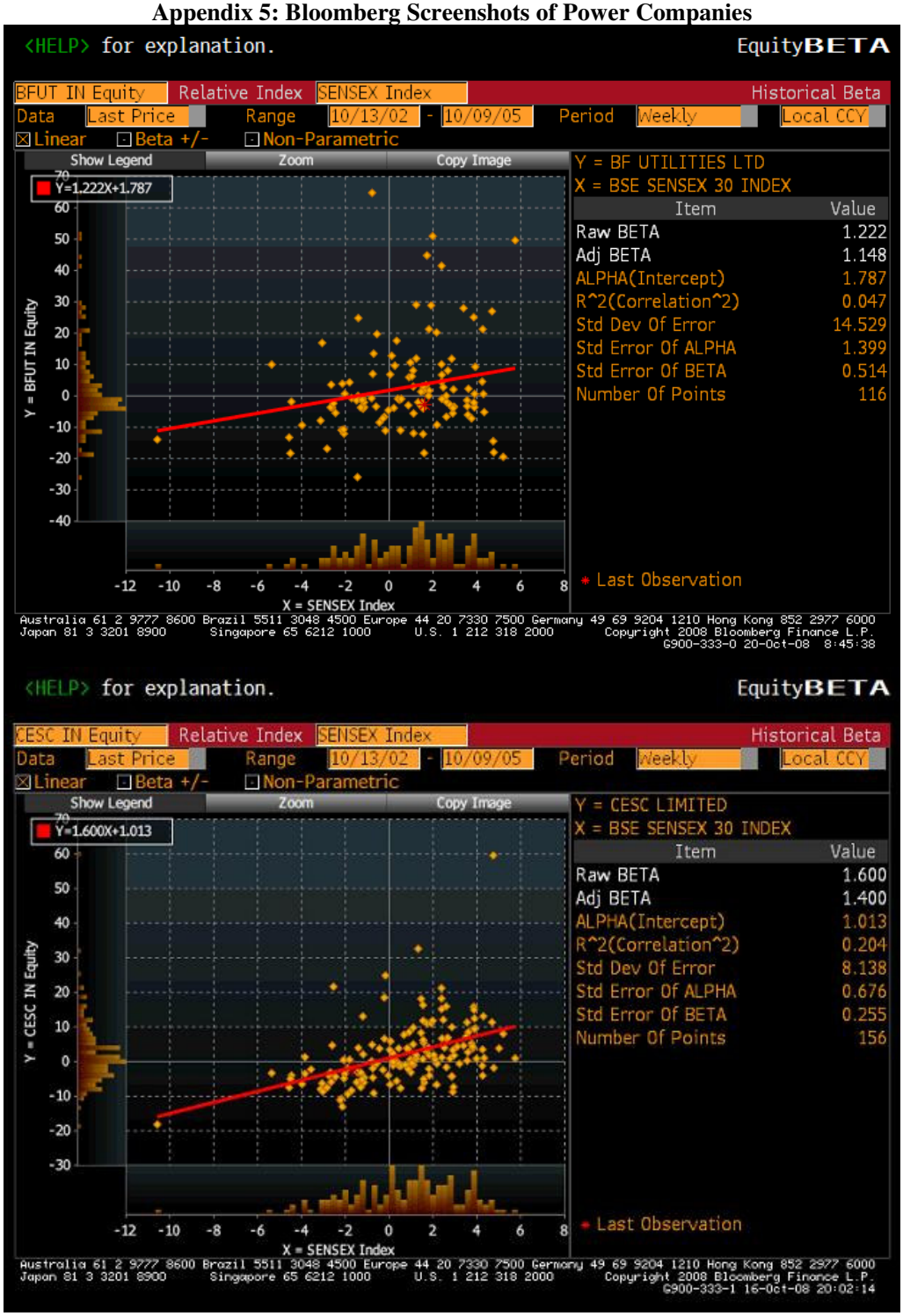
WEIGHTED AVERAGE COST OF DEBT

Sr. No. (1)	Name of the Customer (2)	Project Capacity MW (3)	Project Cost Rs. Mio (4)	Debt % (5)	Loan Amount (6)	Interest Rate (7)	Interest Amount (8)
1	CEPCO	9.6	462.00	70.00%	323.40	9.00%	29.11
2	CEPCO	2.4	115.50	0.00%	-	0.00%	-
3	Ushdev International	2.4	120.00	0.00%	-	0.00%	-
4	Brindavan Agro Industries	1.6	78.00	70.51%	55.00	12.50%	6.87
5	Amrit Bottlers Ltd.	0.8	38.50	0.00%	-	0.00%	-
6	Deedee Enterprises	0.8	39.00	0.00%	-	0.00%	-
7	JN Investment	0.8	38.50	0.00%	-	0.00%	-
8	Metalfab Private Limited	0.8	38.50	50.13%	19.30	13.00%	2.51
9	SE Investment	0.8	38.50	70.00%	26.95	9.00%	2.43
10	Brindavan Bottlers Ltd.	0.8	35.00	60.00%	21.00	9.00%	1.89
11	Delta Enterprises	2.4	116.10	71.06%	82.50	9.50%	7.84
12	Sankalp International	0.8	39.00	0.00%	-	0.00%	-
13	Malani Impex Inc.	0.8	39.00	0.00%	-	0.00%	-
	TOTAL	**24.8**			**528.15**[5]		**50.64**

Weighted Average Cost of Debt (8)/(6)	**9.59%**

[5] The EB advised us to change the cost of debt in the **benchmark calculation** to the actual cost of debt of the project; hence the actual debt value was taken for calculation of **the benchmark WACC**. Please note that the details of debt given in this table are slightly different from the values taken as input values in the investment analysis. The input values taken in the investment analysis are the assumptions that were applicable at the time of investment decision (this is in accordance to EB's guidance). You would appreciate that since the benchmark is now based on project IRR, the debt structuring will have no bearing on the pre-tax project IRR i.e. the Project IRR will be the same irrespective of the debt structuring.

Appendix 5: Bloomberg Screenshots of Power Companies




<HELP> for explanation.
EquityBETA
GIP IN Equity
Relative Index
SENSEX Index
Historical Beta
Data
Last Price
Range
10/13/02
10/09/05
Period
Weekly
Local CCY
Linear
Beta +/-
Non-Parametric
Show Legend
Zoom
Copy Image
Y=1.317X+0.394
Y = GUJARAT INDS POWER CO LTD
X = BSE SENSEX 30 INDEX
Item
Value
Raw BETA 1.317
Adj BETA 1.211
ALPHA(Intercept) 0.394
R^2(Correlation^2) 0.232
Std Dev Of Error 6.171
Std Error Of ALPHA 0.512
Std Error Of BETA 0.193
Number Of Points 156
Last Observation
Y = GIP IN Equity
X = SENSEX Index
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2008 Bloomberg Finance L.P.
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<HELP> for explanation.
EquityBETA
NLC IN Equity
Relative Index
SENSEX Index
Historical Beta
Data
Last Price
Range
10/13/02
10/09/05
Period
Weekly
Local CCY
Linear
Beta +/-
Non-Parametric
Show Legend
Zoom
Copy Image
Y=1.439X+0.052
Y = NEYVELI LIGNITE CORPORATION
X = BSE SENSEX 30 INDEX
Item
Value
Raw BETA 1.439
Adj BETA 1.293
ALPHA(Intercept) 0.052
R^2(Correlation^2) 0.316
Std Dev Of Error 5.454
Std Error Of ALPHA 0.453
Std Error Of BETA 0.171
Number Of Points 156
Last Observation
Y = NLC IN Equity
X = SENSEX Index
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2008 Bloomberg Finance L.P.
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<HELP> for explanation.
EquityBETA
NRELE IN Equity
Relative Index
SENSEX Index
Historical Beta
Data
Last Price
Range
10/13/02
10/09/05
Period
Weekly
Local CCY
Linear
Beta +/-
Non-Parametric
Show Legend
Zoom
Copy Image
Y=1.000X+0.056
Y = RELIANCE ENERGY LTD
X = BSE SENSEX 30 INDEX
Item
Value
Raw BETA 1.000
Adj BETA 1.000
ALPHA(Intercept) 0.056
R^2(Correlation^2) 0.241
Std Dev Of Error 4.571
Std Error Of ALPHA 0.380
Std Error Of BETA 0.143
Number Of Points 156
Y = NRELE IN Equity
X = SENSEX Index
Last Observation
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2008 Bloomberg Finance L.P.
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<HELP> for explanation.
EquityBETA
TPWR IN Equity
Relative Index
SENSEX Index
Historical Beta
Data
Last Price
Range
10/13/02
10/09/05
Period
Weekly
Local CCY
Linear
Beta +/-
Non-Parametric
Show Legend
Zoom
Copy Image
Y=1.350X+0.185
Y = TATA POWER CO LTD
X = BSE SENSEX 30 INDEX
Item
Value
Raw BETA 1.350
Adj BETA 1.234
ALPHA(Intercept) 0.185
R^2(Correlation^2) 0.438
Std Dev Of Error 3.938
Std Error Of ALPHA 0.327
Std Error Of BETA 0.123
Number Of Points 156
Y = TPWR IN Equity
X = SENSEX Index
Last Observation
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2008 Bloomberg Finance L.P.
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Appendix 6: Page 196 of text book on "Corporate Finance Theory and Practice"

Betas

The second set of inputs that we need to put risk and return models into practice are the betas for investments. In the CAPM, the beta of an investment is the risk that the investment adds to a market portfolio. In the APM and multifactor model, the betas of the investment relative to each factor have to be measured. Three approaches are available for estimating these parameters. One is to use historical data on market prices for individual investments; the second is to estimate the betas from the fundamental characteristics of the investment; and the third is to use accounting data. We describe all three approaches in this section.

Historical Market Betas The conventional approach to estimating the beta of an investment is a regression of returns on the investment against returns on a market index. For firms that have been publicly traded for a length of time, it is relatively straightforward to estimate returns that an investor would have made by investing in the firm's stock each interval (such as a week or a month) over that period. In theory, these stock returns on the assets should be related to returns on a market portfolio, that is, a portfolio that includes all traded assets, to estimate the betas of the assets. In practice, we tend to use a stock index, such as the S&P 500, as a proxy for the market portfolio, and we estimate betas for stocks against the index.

The standard procedure for estimating betas is to regress stock returns (R_j) against market returns (R_m).

$$R_j = a + bR_m$$

where

a = Intercept from the regression

$$b = \text{Slope of the regression} = \frac{\text{Covariance } (R_j, R_m)}{\sigma^2_m}$$

The *slope* of the regression corresponds to the beta of the stock and measures the riskiness of the stock.

The *intercept* of the regression provides a simple measure of performance of the investment during the period of the regression, when returns are measured against the expected returns from the capital asset pricing model. To see why, consider the following rearrangement of the capital asset pricing model:

$$R_j = R_f + \beta\,(R_m - R_f)$$
$$= R_f\,(1 - \beta) + \beta\,R_m$$

Compare this formulation of the return on an investment to the return equation from the regression:

$$R_j = a + bR_m$$

Thus, a comparison of the intercept (a) to $R_f\,(1 - \beta)$ should provide a measure of the stock's performance, at least relative to the capital asset pricing model.[14] In summary, then:

[14] The regression is sometimes calculated using returns in excess of the riskless rate, for both the stock and the market. In that case, the intercept of the regression should be zero if the actual returns equal the expected returns from the CAPM, greater than zero if the stock does better than expected, and less than zero if it does worse than expected.