VALIDATION REPORT

Birla Corporation Limited

ENERGY EFFICIENCY MEASURES AT CEMENT PRODUCTION PLANT IN CENTRAL INDIA

SGS Climate Change Programme
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ENERGY EFFICIENCY MEASURES AT CEMENT PRODUCTION PLANT IN CENTRAL INDIA	SGS Climate Change Programme
Revision number	Client:
1	Birla Corporation Limited

Summary

This validation report consists of the assessment of the project "Energy efficiency measures at cement plant in central India" at Birla Corporation Limited, unit – Satna Cement Works . This includes the project summary, objective, scope of validation, validation protocol, findings/checklist, stakeholders' consultation and validation opinion.

The project activity is energy efficiency measures in cement plant which reduces energy consumption by 13 different measures. The source of electricity is the western regional grid. Thus the activity reduces the anthropogenic GHG emissions which otherwise would have been generated by grid connected power plants to produce the same amount of electricity.

The project meets the requirement of SSC project criteria and applicable for AMS II.D version 8 methodology.

Subject.:			
CDM validation			**Indexing terms**
Work carried out by			
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Technical review			
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Abbreviations

PDD	Project Design Document
CDM	Clean Development Mechanism
UNFCCC	United Nation Framework Convention on Climate Change
CER	Certified Emission Reduction
MP	Monitoring Plan
CEA	Central Electricity Authority
SSC	Small Scale Category
LSC	Large Scale Category
kWh	Kilo Watt Hour
GWh	Giga Watt Hour
OM	Operating Margin
BM	Build Margin
CM	Combined Margin
GHG	Green House Gas
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
CO2e	Carbon di-oxide equivalent
CAR	Corrective Action Request
NIR	New Information Request
OBS	Observation
DNA	Designated National Authority
LoA/HCA	Letter of Approval / Host Country Approval
Ref	Reference
QA	Quality Assurance
QC	Quality Control
DOE	Designated Operational Entity
PP	Project Participant
NGO	Non-Governmental Organization

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1. Introduction

1.1 Objective

The Birla Corporation Limited has commissioned SGS to perform the validation of the project: 'Energy efficiency measures at cement plant in Central India' with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

1.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 GHG Project Description

The proposed CDM project activity is the energy efficiency measures in cement plant which reduces across the clinkerization unit by 13 different measures. The source of electricity is the western regional grid. Thus the activity reduces the anthropogenic GHG emissions which otherwise would have been generated by grid connected power plants to produce the same amount of electricity.

Baseline Scenario:

Under the baseline scenario, the continuation of pre-project scenario is the most likely scenario. The energy efficiency improvements by different measures faced barriers due to prevailing practice and technological barriers. The source of energy is the western regional grid. The electricity saved by project activity would otherwise have been generated by the power plants of the regional grid which has the mix of mainly thermal, hydro and nuclear plants.

With Project Scenario:

The project activity saves electricity by reducing specific electricity consumption across the clinkerization unit and the same was achieved by installing VFDs for fans, modifications/retrofits to reduce fan draught and replacing fans with energy efficient one. The saving is electrical saving and measurable. The associated anthropogenic emission of greenhouse gases is less than that was occurring prior to the project activity when specific energy consumption was higher even for the same production.

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Leakage:

There is no equipment transferred from another activity and the existing equipment is also not transferred to another activity. So no leakage is to be considered.

Environmental & Social Impacts:
There are no negative environmental and social impacts expected with the project activity, the same has been cross-checked during local stakeholder consultation process.

1.4 The names and roles of the validation team members

Name	***Role***
Jochen Gross – SGS Germany	*Team Leader*
Sanjeev Kumar - SGS India	*Assessor*
Nikunj Agarwal - SGS India	*Local Assessor*
Irma Lubrecht - SGS Netherlands	*Technical Reviewer*

2. Methodology

2.1 Review of CDM-PDD and additional documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

2.2 Use of the validation protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements are linked to checklist questions the project should meet.	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**Y**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **New Information Request (NIR)** is used when the validation team has identified a need for further clarification.*

The completed validation protocol for this project is attached as Annex 2 to this report

2.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. mistakes have been made with a direct influence on project results;

II. validation protocol requirements have not been met; or

III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

2.4 Internal quality control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Determination Findings

3.1 Participation requirements

The host Party for this project is India. India has ratified the Kyoto protocol on 26 Aug 2002. A Letter of Approval for the project activity was provided dated 13th January 2006 and issued by the Indian DNA (reference number 4/24/2005-CCC).

Initially, no reference regarding the Letter of Approval from Indian DNA was provided to the validator and a CAR (01) was raised. Later on, this was made available by project proponent and CAR(01) was closed out.

No Annex I Party has been identified in the PDD and therefore no further Letter of Approval was obtained. It is observed that the CDM EB has agreed that the registration of a CDM project activity can take place without an Annex I Party being involved at the stage of registration although it should be noted that before CER can be transferred to an Annex I Party, a Letter of Approval will need to be submitted.

3.2 Baseline selection and additionality

The project has applied AMS-II.D/Version 08 “Energy efficiency and fuel switching measures for industrial facilities”. The project activity is the energy efficiency improvements in cement plant. The expected electrical energy saving is 7.70 GWhe and well below than 60 GWhe per year.

The continuation of the previous situation was the most likely baseline scenario. The project is using the specific energy consumption approach to justify the energy saving measure made in the plant up to clinkerization. All the measures were tested for their previous specific electricity consumption prior to the project activity for the baseline. Any reduction in specific electricity consumption leads to energy saving and emission reduction for each measure. The uncertainty in the approach was resolved by raising a number . of CARs and NIRs. The project is finally saving the electricity which otherwise would have been generated by the northern regional grid which comprises of mainly thermal, hydro and nuclear power plants.

CAR(04) was raised on the energy baseline, baseline model, calculation reliability and the approach conservativeness. The same was verified during site visit. The baseline was found calculated transparently as per enclosure 3 baseline information. The project proponent also explained how project baseline model was selected. The model was found to be transparent and verifiable. The values used in the calculation were audited during site visit and found correct as per financial audited values under schedule 16. CAR(04) was closed out.

NIR (09) was raised to get more information on used equipments on site. This was found that new equipments were purchased for the project activity which was verified by purchase orders. Thus, there was no transboundary impact expected from the project activity and NIR (09) was closed out.

The project participant wishes to have the fixed ten years crediting period starting from 28th July 2000.

The starting date of the project activity has been verified as 02 February 2000 and the first project was commissioned on 28th July 2000. In order to provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, minutes of a Board meeting of the project participant were provided. These minutes were reviewed during the site visit and the excerpts of the meeting duly signed by the managing director have been submitted to the validator. It was found that the relevant meetings took place on 03 Jan, 17 Jan and 02 Feb 2000. The minutes showed the carbon credit was taken into account during the decision on going ahead with the project activity.

The project has adopted the barriers due to prevailing practice and technological barriers to justify the additionality of the project. This was verified that the less technologically advanced alternative which was continuation of previous scenario involved lower risks due to the performance uncertainty and was the most likely scenario for the project developer and would have led to higher emissions. The risks involved for the project activity were:

1) degradation in cement quality, may affect the market share
2) more maintenance required, may cause to more investment
3) may cause to more stoppage and less production rate
4) thermal/material stabilization risk due to retrofit measures

In order to get all the related documents/information on which basis the project was shown additional, CAR (11) was raised. The information regarding capacity expansion plan in relation to CDM project, investment sum and project income, financing, similar project activity/similar technology with/without financial assistance and the recent available technology were asked and reviewed. The information was found realistic and CAR(11) was closed out.

CAR(12), (13) & NIR (31) were raised for more information on using similar technology in other cement plants. The similar efforts were not found likely to be implemented in other plants at the time of project activity starting in the region as per information available which was again verified with Ex Plant Head of another cement plant and former president of Cement Manufacturing Association. The energy efficiency improvements were evident with the plant data during site visit and can be said overall better performance of the system. CAR(12), (13) & NIR (31) were closed out.

NIR (30) was raised if the project design engineering reflects current good practice and possible alternatives available to the project activity. It was found that the project activity was the implementation of recent available technologies with older mill. There had been barrier due to prevailing practice. The most likely alternative was verified as the continuation of previous scenario. The Minutes of meetings held before the project implementation has been received and reviewed for CDM consideration prior to project implementation to go ahead with the project activity. NIR (30) was closed out.

To verify the information on project technology if this is likely to be substituted by other or more efficient one within the crediting period, NIR (32) was raised. The technology being used in the plant was found the recent one that was available to the project developer as per discussion with developer and other sources. This does not seem to be replaced in next four years of crediting period as the six years are already over. NIR (32) was closed out.

NIR (33) was raised if the technology leads to additional training. The training was conducted for the new instalments and in house training for the retrofits measures. The training procedures have been verified as per ISO standards and NIR (33) was closed out.

NIR (34) was raised on how the project interacts with the whole plant. No adverse effect was observed during site visit with the project activity and NIR (34) was closed out.

Based on the findings above, it is concluded that the project activity was not a likely baseline scenario

and hence additional to any which would have happened in absence of project activity.

3.3 Application of Baseline methodology and calculation of emission factors

The project has applied the small scale AMS-II.D methodology version 8 dated 23rd December 2006, for "Energy efficiency and fuel switching measures for industrial facilities" for small-scale CDM project activities and meets the small scale limits.
This category covers project activities aimed primarily at energy efficiency; the measures may replace, modify or retrofit existing facilities or be installed in a new facility. The aggregate energy savings of a single project may not exceed the equivalent of 60 GWhe per year. All these applicability conditions of AMS.IID. version 08 have been met by the project activity.

CAR(10) was raised for determinations of emission reductions and baseline. In response to CARthe project participant provided all the detail calculations for emission reduction with explanation. The same is attached to the revised PDD as enclosure 3. The emission reduction calculation was found conservative and in line with the methodology. The emission reduction calculations are again subjected to be checked at the time of verification and hence CAR(10) was closed out.

CAR(05), (06), (07) & (08) were raised on grid emission factor calculation. In response to the CARs, the project proponent recalculated the grid emission factor based on western regional grid using most recent published factor available which was reviewed and found satisfactory as per CEA website http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm. The grid emission factor as combined margin is 0.89 tCO2/MWh for 2004-05. The factor will be updated ex-post as per latest available CEA published factor. CAR(05), (06), (07) & (08) were closed out.

In response to the CARs, the total estimated emission reductions were reduced from 110975 tCO2 to 68636 tCO2 for the ten year crediting period.

3.4 Application of Monitoring methodology and Monitoring Plan

The project activity uses monitoring methodology as described in paragraph 6 of the small scale methodology AMS.II.D version 08 that is in the case of replacement, modification and retrofit measures the monitoring shall consist of:
(a) Documenting the specifications of the equipment replaced;
(b) Metering the energy use of the industrial facility, processes or the equipment affected by the project activity;
(c) Calculating the energy savings using the metered energy obtained from subparagraph

The document on specifications on the replaced equipment has been provided. The detail calculation on emission reduction is in enclosure 3 to the PDD. The table D.3 of the PDD mentions the parameter to be monitored as per the methodology. Out of 18 efficiency measures, five efficiency measures were taken on cement mill output where savings come per tonne of cement and others are up to clinkerization where the savings can be justified per tonne of clinker output. In order to make the monitoring plan simpler, these five efficiency measures have been excluded from project activity.

NIR (14) was raised for the monitoring methodology and the requirement of the monitoring of parameter required. The explanation was required for the calculation affected due to deterioration of the equipment efficiency with time and more information on the calibration of the metering system. In response, the monitoring plan was corrected in revised PDD. The deterioration of equipment efficiency will itself will be taken care of during emission reduction calculation because the efficiency with time is

subjected to decrease and hence the emission reduction may be lesser and that can be taken care of during verification. The calibration is the part of QA/QC procedure under ISO 9001 and can be taken care during verification hence this has been converted to observation (01). NIR (14) was closed out.

The monitoring plan includes all the data that is required to be verified. CAR(15) was raised to avail QA/QC procedure for which the separate document 'GHG performance procedure' was provided. This document contains all the information about management system and responsibilities, procedure for training, emergency preparedness, calibration, maintenance of monitoring equipment, monitoring, measurement, reporting, records handling, adjustments, uncertaintities, review, internal audits and corrective actions. NIR (17) & (18) were closed out with CAR (15) based on the information available in the above document.

3.5 Project design

In PDD, few corrections were required in accordance with the guidelines for SSC PDD and CAR(02) & (26) were raised for the same. The PDD has been revised in accordance with the guideline for completion of the SSC project design document and CAR(02) & (26) were closed out. NIR (27), (28) & (29) were raised for justification of all specific requirements for the PDD. The PDD was revised to address the issues and provided to the validator. NIR (27), (28) & (29) were closed out.

CAR(03) was raised to get the information were direct links were missing in the PDD. The project developer provided the information in hard copies. This information were reviewed during site visit and found reliable. CAR(03) was closed out.

CAR(35) was raised on the starting date of crediting period and operational life of the project, the PDD was revised as per document available and given the date of minute of meeting as starting date of project activity and commissioning date of first measure as crediting period starting date. The expected life time of the project was more than 15 years. CAR(35) was closed out.

3.6 Environmental Impacts

The project was found in compliance with local/legal regulation. The same was checked during local stakeholder consultation process. Though the project had short-term negative impacts on various components of socio-economic environment due to increase in population comprising of workmen and labour during construction phase, that was for short duration and these impacts were minimised and contained within the site. It was verified with MoEF documents that EIA study was not require for present project activity as the present project activity is not listed under schedule for S.O.1533. http://envfor.nic.in/legis/eia/so1533.pdf

The plant has less GHG emission in comparison to previous practice; this contributes towards global environmental improvement. The project reduces GHG emission which otherwise would have been generated by other fossil fuel being used in grid connected power plants. In accordance with the requirements of Indian regulations/laws, the plant in which the project activity is installed has obtained "Consent to establish and operate" from State Pollution Control Board which is an indication of regulatory acceptance. Also the host country approval has been given to project activity from Ministry of Environment and Forests. These documents were reviewed and found satisfactory.

In order to get more information how the project contributes to sustainable development and causes no negative impact, NIR 16 was raised. It has been confirmed that no EIA is required for the project activity and the LoA confirms the projects leads to sustainable development. Evidence was obtained that Birla Corporation Limited is active as social responsible corporation and NIR 16 was closed out.

To get more information on any adverse effects like noise or vibration on the site, NIR (19) was raised. The project activity was not found with any additional noise/vibration other than the baseline scenario and NIR (19) was closed out.

NIR (20) was raised to confirm any transbounadry impact due to the project activity. This was ensured that no second hand equipment was being used at the site. The projects activity involves mainly retrofits measures and other equipments were newly purchased. NIR (20) was closed out.

3.7 Local stakeholder comments

In order to verify whether the project details were made publicly available and how the public comments to project activity were invited; NIR (21), (22), (24) & (25) were raised. The project developer provided the copy of communication letters with stakeholders' comments to prove the transparency in the LSC process and NIR (21), (22), (24) & (25) were closed out.

To ensure the requirement of LSC process by law, NIR (23) was raised. This is found that the process is conducted by pollution control board prior to give the consent to establish or operate a project. However, the same has also been conducted by the project developer however this was not mandatory by law for them. NIR 23 was closed out.

The local stakeholders' comments on the project activity were reviewed to verify any adverse impact to local community. It was found that no public complain was registered to State Pollution Control Board office on project activity as consent to establish has been made available to validator. The written local stakeholder comments were obtained and verified.

4. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

4.1 Description of how and when the PDD was made publicly available

The PDD and the monitoring plan for this project were made available on the SGS website http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/ and were open for comments from 05 November 2005 until 05 December 2005. Comments were invited through the UNFCCC CDM homepage http://cdm.unfccc.int/Projects/Validation/DB/TGNFGA8LTIQQQBEF9YUXEGJM3JE5VS/view.html

4.2 Compilation of all comments received

Comment number	*Date received*	*Submitter*	*Comment*
1	03/12/2005	Perumal Kalyani Arumugam	I would like to know whether project has seriously considered the incentive from the CDM in decision to go ahead with the project. Does any documentary evidence is available for that? The investment barrier is debatable. Investment = 80 million The annual energy saving is 13.18 Gwh. Based on the electricity tariff of min 3.5/kwh The total monetary saving would be 46.13 million/yr The simple pay back would be = 1.7 months Any energy efficiency project has a pay back of less than two years is a viable project under any energy efficiency initiatives. I would also like to know how this CDM revenue will help in the viability of the project and how does it helps to overcome the stated barrier. Being a second major constituent of the production cost the energy efficiency initiative in cement sector is need of the hour with respect to the prevailed and prevailing market condition/situation. To the best of my knowledge any EE project with more than 3 years payback only will have a financial barrier. Barrier analysis should be used whether there are significant non-quantifiable barriers that prevent the happening of projects or similar activities. Rather a descriptive investment analysis approach should have been adopted to see whether the projects are financially viable on their own. The reason is that the relevant barriers that are identified are all quantifiable.Hence it should be easy to see using an investment analysis whether these are significant. The barrier analysis is should be made much more robust.

4.3 Explanation of how comments have been taken into account

Project Participant:

The comment truly reflects the fact that the projects are financially very viable. The payback and IRR analysis also shows a very attractive figure. And in general the same holds true for the large share of energy efficiency projects not only in India but also across various industrial, commercial and residential energy usage.

However, being so lucrative, at least financially, the energy efficiency initiatives should have happened long back. But actually, the same had not taken a high growth rate. Considering India only, the average potential for energy savings in India stands as high as 20% of the energy use that is evidenced from the following table that is available on bureau of energy efficiency, Government of India website, www.bee-india.nic.in.

Table- : Scope for Energy Conservation in Energy – Intensive Industries

Data	Aluminum	Textile	Chlor Alkali	Petro chemicals	Fertilizer	Sugar	Paper	Cement
Energy Consumption (million Gcal)	30.1	52.5	20.0	5.8	112	100	26	67
Energy cost as a % of manufacturing Cost	40	13	30-35	7	60	12	25	40
Scope of energy conservation (%)	15-20	20-25	15	15	10	20	20	10

The main reason for such non implementation was mainly the knowledge barrier and risk of experimentation with existing practice. In the same website it has also evidenced the various causes/barriers to such energy efficiency projects like:

(a) Lack of Awareness: The main barrier to energy conservation is the lack of awareness of industry managers of the potential gains from improved efficiency. Industries as well as the Government and customers, are yet to take into consideration factors such as tax credits, depreciation benefits, electricity price escalation, and life cycle savings of the investment.

(b) Lack of Widespread Education and Training: Shortage of widespread educational opportunities in energy management and conservation and appropriate facilities; lack of trainers and auditors.

(c) Economic and Market Distortions: Irrational response to conservation measures because of inappropriate pricing and other market distortions, or socio-economic factors.

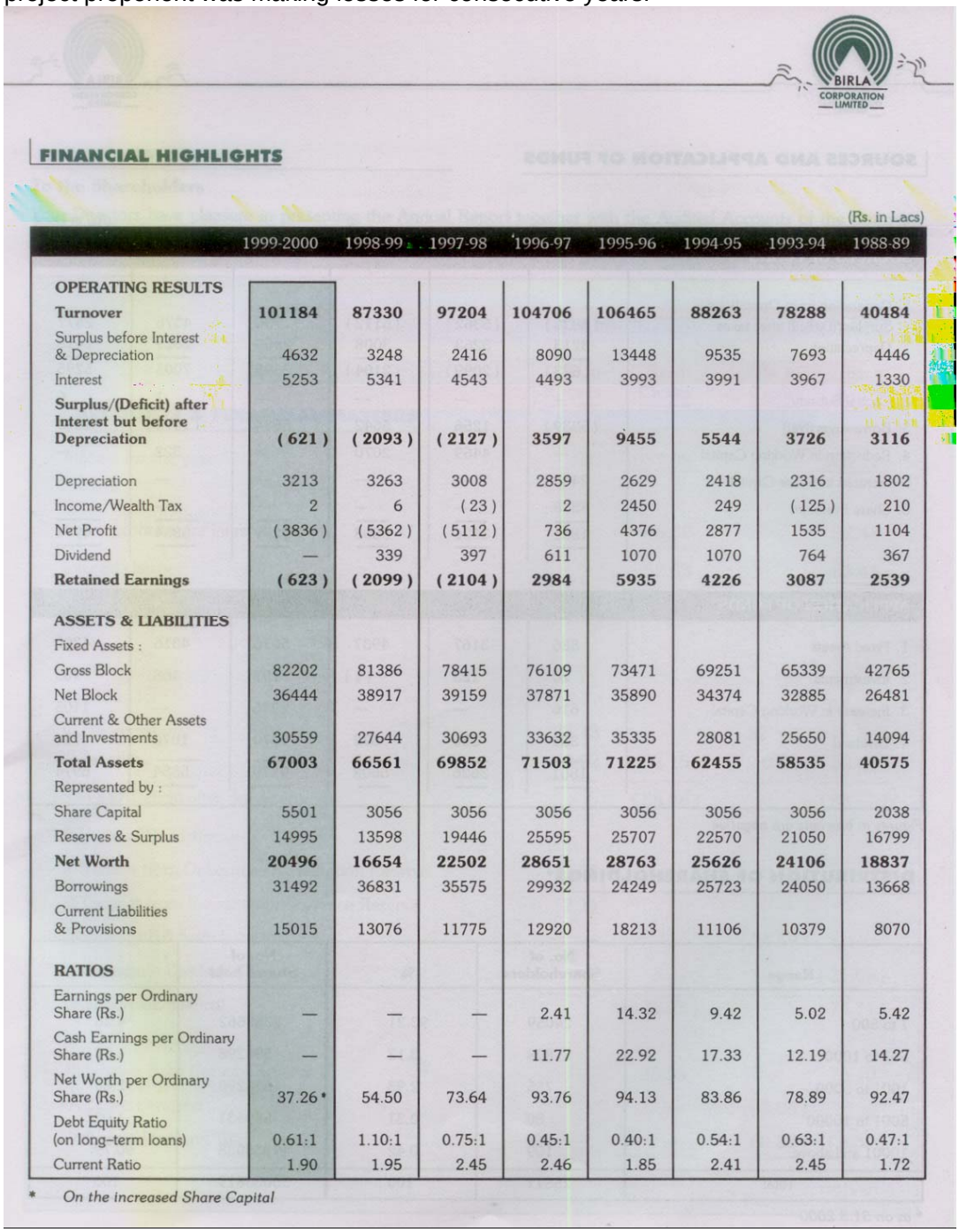
(d) Lack of Standardization and Labeling of Equipment / devices: Slow rate of progress in achieving higher standards of energy consumption in equipment and appliances.

(e) Lack of financing: The lack of credit and the inability to obtain financing for projects are strong deterrents to investments in energy efficiency in India.

(f) Lack of Effective Co-ordination: In India, the lack of effective national-level coordination and promotion of energy conservation activities have been a major constraint to achieving energy efficiency.

Also to mention that, the plant is of late eighty's and the operators are accustomed with traditional production processes. The ground situation is that the plants are run by operation people and hardly by project people who are focussed on quality production only. A change-over or a shut down costs much more loss in terms of production loss than that can be saved by energy efficiency.

The cement industries, as a whole were running under poor condition during late ninety's and the project proponent was making losses for consecutive years.



BIRLA CORPORATION LIMITED

FINANCIAL HIGHLIGHTS

(Rs. in Lacs)

	1999-2000	1998-99	1997-98	1996-97	1995-96	1994-95	1993-94	1988-89
OPERATING RESULTS								
Turnover	**101184**	**87330**	**97204**	**104706**	**106465**	**88263**	**78288**	**40484**
Surplus before Interest & Depreciation	4632	3248	2416	8090	13448	9535	7693	4446
Interest	5253	5341	4543	4493	3993	3991	3967	1330
Surplus/(Deficit) after Interest but before Depreciation	**(621)**	**(2093)**	**(2127)**	**3597**	**9455**	**5544**	**3726**	**3116**
Depreciation	3213	3263	3008	2859	2629	2418	2316	1802
Income/Wealth Tax	2	6	(23)	2	2450	249	(125)	210
Net Profit	(3836)	(5362)	(5112)	736	4376	2877	1535	1104
Dividend	—	339	397	611	1070	1070	764	367
Retained Earnings	**(623)**	**(2099)**	**(2104)**	**2984**	**5935**	**4226**	**3087**	**2539**
ASSETS & LIABILITIES								
Fixed Assets :								
Gross Block	82202	81386	78415	76109	73471	69251	65339	42765
Net Block	36444	38917	39159	37871	35890	34374	32885	26481
Current & Other Assets and Investments	30559	27644	30693	33632	35335	28081	25650	14094
Total Assets	**67003**	**66561**	**69852**	**71503**	**71225**	**62455**	**58535**	**40575**
Represented by :								
Share Capital	5501	3056	3056	3056	3056	3056	3056	2038
Reserves & Surplus	14995	13598	19446	25595	25707	22570	21050	16799
Net Worth	**20496**	**16654**	**22502**	**28651**	**28763**	**25626**	**24106**	**18837**
Borrowings	31492	36831	35575	29932	24249	25723	24050	13668
Current Liabilities & Provisions	15015	13076	11775	12920	18213	11106	10379	8070
RATIOS								
Earnings per Ordinary Share (Rs.)	—	—	—	2.41	14.32	9.42	5.02	5.42
Cash Earnings per Ordinary Share (Rs.)	—	—	—	11.77	22.92	17.33	12.19	14.27
Net Worth per Ordinary Share (Rs.)	37.26 *	54.50	73.64	93.76	94.13	83.86	78.89	92.47
Debt Equity Ratio (on long-term loans)	0.61:1	1.10:1	0.75:1	0.45:1	0.40:1	0.54:1	0.63:1	0.47:1
Current Ratio	1.90	1.95	2.45	2.46	1.85	2.41	2.45	1.72

* *On the increased Share Capital*

Therefore, it was not the financial viability of the projects that was the deciding factor, the managing Director of the company has initiated the projects as CDM activity and the energy efficiency projects were implemented.

SGS Comment:

The project faced the barriers due to prevailing practice and the risk involved to the project viability due to new technology and retrofits measures. The main risk for any retrofits is the production facility stabilization which is crucial for any cement production unit. The project participant took initiative considering CDM benefits to overcome these barriers even although the financial condition was not favourable. The project proved the barriers due to prevailing practice as per attachment A to Appendix B. The same has been verified during site visit. The comment above is found addressed by the project proponent.

5. Validation opinion

SGS has performed a validation of the project: "Energy efficiency measures at cement plant in central India" at Birla Corporation Limited at Satna unit in the state of Madhya Pradesh in India. The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by SGS for registration with the UNFCCC.

SGS has received confirmation by the host Party that the project activity assists it in achieving sustainable development.

By increasing the energy efficiency and reducing the energy consumption for per tonne of clinker production, the project results in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the barrier due to prevailing practice and technological barrier associated with project activity at the time of project implementation demonstrates that the proposed project activity was not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The project is already implemented and is likely to achieve the estimated amount of emission reductions.

The validation is based on the information made available to SGS and the engagement conditions detailed in the report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence SGS can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

The DOE declares herewith that in undertaking the validation of this proposed CDM project activity it has no financial interest related to the proposed CDM project activity and that undertaking such a validation does not constitute a conflict of interest which is incompatible with the role of a DOE under the CDM.

6. List of persons interviewed

Date	*Name*	*Position*	*Short description of subject discussed*
14th Nov 2005	Mr. P.S. Marwah	President	Project Description, Project Additionality, reduction in specific energy consumption, Financial risk associated in project activity
14th Nov 2005	Mr.Rajesh Kakkar	VP (Electrical)	Project description and Financial risk associated in project activity, reduction in specific energy consumption, Monitoring methodology, personnel role & responsibility, record handling
14th Nov 2005	Mr.Tanmay Maitra	DGM Process	GHG performance procedure and monitoring plant, technical addditionality
14th Nov 2005	Mr.Ashim Bhattacharya	Dy. Manager (Process)	GHG performance procedure and monitoring plant
14th Nov 2005	Mr. J.K Mathur	Sr. Mgr Mechanical	Monitoring methodology, personnel role & responsibility, record handling
14th Nov 2005	Mr. Dependra Sharma	Mgr (Electrical)	Monitoring, daily reporting plan and data recording facility
14th Nov 2005	Mr.Shuvendu Bose	Sr.Consultant	Project description, Additionality, monitoring practises, calculations, data authenticity for calculating the BM/OM.

7. Document references

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Project Design Document, Encl 03 and Encl 04

/2/ Letter of Approval

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/3/ SN01 - HCA letter

/4/ SN02 - Feasibility report s for the projects, expecting savings and project commissioning
Energy consumption before and after project activity implementation for different measures

/5/ SN03 – Minutes of meetings

/6/ SN04 – GHG performance procedure

/7/ SN05 – Electrical circuit diagram and calibration detail

/8/ SN06 – Annual reports and electricity consumption

/9/ SN07 – LSC' comments`

/10/ Modalities of communication

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Annex 1 Local Assessment Checklist

Additional information to be verified by local assessors / site visit

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
12.1 Please confirm that the project makes no use of official development assistance (See 1.7 above)	PDD	DR/I	The project has been funded by internal accrual. The purchase order copies and relevant expenses were checked. No ODA funds are evidenced.	Ok	Ok
12.2 Please confirme that no other SSC project is within 1 km of project boundary and no use of similar technology in other cement plants in a larger region around Rajastan takes place. If this is not practicable please check on the UNFCCC website if there are any projects with the same characteristics. Please find out which are the other plants in the discussed cluster. (see 1.9 and 9.2)	PDD	I	As per UNFCCC website, no other projects have web-hosted for international Stakeholder commenting processes either by the project proponent or by any other cement plant in Madhya Pradesh.	Ok	Ok
12.3 Please confirme the description of the grid and the selection of plants. (see 1.10 and 4.2 above)	PDD and Encl. IV		As per Central Electricity Authority (CEA) publication, the Madhya Pradesh comes under Western regional grid and the calculations complied with ACM0002 for determination of grid emission factor. PDD uses the same	Ok	Ok
12.4 Please confirm the following data sources: (see 1.10 and 2.3.0 -2.3.8 and 3.2.1 to 3.2.10 above)	PDD public avai-lable docs	DR/I	As per CEA excel sheet working. http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm	Ok	Ok
12.5 Please confirme the list of the most recent plants which represent 20 % of grid (see 2.3 above)	PDD enclosure IV public avai-	DR/I	As per CEA excel sheet working.	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	lable docs				
12.6 Please confirm the protocol of decision from BCL-Satna to take up the project execution (page 14, line 5). This is very important to assess the additionality. (See 3.2 above)	PDD	DR	Protocol followed properly. The letters comes from the topmost authority (Managing Director) to plant head for execution and subsequent approval obtained for execution	Ok	Ok
12.7 Please find out if the normal life cycle of the replaced equipments was at the end. (See 3.2.10 above)	PDD	DR	The replaced equipments (fans) are kept as stand-by at site and in operational condition. For other its retrofit on exiting equipment and hence confirmed	Ok	Ok
12.8 Are drafts of QA/QC procedures available? (see 4.5 above)	PDD	DR	The data collection follows ISO processes	Ok	Ok
12.9 Will the monitoring of sustainable development or environmental Impact indicators take place or not? (see 5.1 above)	PDD	DR/I	Environmental Impact: Not relevant Sustainable Developemnt : Annual social activities/publications available	Ok	Ok
12.10 What are the names of the responsible people for monitoring, GHG reports and calibration of meters? How are they trained for these responsibilities? Training records? (see 5.2 above)	PDD	I	Mr Tanmoy Moitra, DGM Mr Ashim BHattachary, Manager Training procedures are followed	Ok	Ok
12.11 Are there procedures for training, emergency preparedness, calibration, maintenance of monitoring equipment, monitoring, measurement, reporting, records handling, adjustments, uncertainties, review, internal audits and corrective actions? (see 5.2.3 – 5.2.13 above)	PDD	DR/I	Yes, GHG performance procedure have been obtained for the same.	Ok	Ok
12.13 Please find out if it is true that the project does not need EIA after last changes from 1994-01-27 of Environmental protection act.	PDD	DR	The project does not need EIA. http://envfor.nic.in/legis/eia/so1533.pdf	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
(see 6.2 and 6.6 above)					
12.14 Several open points on stakeholder consultation. Is there a summary of the comments available and how are the comments taken into account? Which media have been used to invite comments? Which were the criteria to identify the relevant stakeholders? No objective evidence available. (see 7.1 to 7.5 above)	PDD	DR/I	The generation notice inviting comments were evidenced. The summary of comments are commensurable with the written comments received	Ok	Ok
12.15 Please check each of the 18 measures from 2000 to 2003 (listed on p 6 to 10). Is second hand equipment installed? Are the devices able to result in energy savings as descirbed? Is the equipment common in Madhya Pradesh or in the cluster? Is other state of the art technology used in this region? Is this other technology cheeper, better, more efficient? (see 8.2.1 to 8.2.5 above)	PDD		Checked. No second hand instrument as per purchase order. The devices saves energy which is evidenced by overall energy consumption also. As per published data available, at the time of start of project activity, the project activity was not common. Some of the projects are published in refereed journal and local presentations in the cluster. The technology is state of the art	Ok	Ok
Letter from DNA (Host country Approval)	PDD	LOA	The scan copy has been received and is attached as SN 01.	CAR 01	CAR 01 is closed out.
Project Details (SCW & BVC)	PDD		Few energy efficiency projects were implemented in two divisions of Birla Corporation Limited, one is Satna Cement Works (SCW) and other is Birla Vikas Cement Works (BVCW). These are located at Satna and headed by Mr. P. S. Marwah.	OK	OK
Cause of Specific Power Consumption (SEC) reduction (other than technology	PDD	I	Interview was conducted to check the cause of	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
detailed in PDD)			reduction in Specific Energy Consumption (SEC). Effect of other parameters such as change in raw material quality is not significant and Energy saving can be treated solely due to project activity.		
Commissioning date of projects with purchase order	PDD page 31	I	Commissioning dates of projects have been checked with project detailed report which consists of project write-up, saving calculation, required investment and copy of purchase order. The same with project list is attached as annex-2.	OK	OK
Is the crediting period justified?	PDD page 9		Crediting period is justified from year 2001 as first project was commissioned on March 3, 2000.	OK	OK
Is Baseline selection justified?	PDD page 16	I	Interview was conducted to check the baseline scenario for the project activity and found satisfactory.	OK	OK
Supporting evidence that CDM was seriously considered at the time of commissioning. (Minutes of Meeting of Board of Directors of SCW)	PDD		Copy of same is attached as Annex- 3.	OK	OK
Are the project's system boundaries clearly defined?	PDD		Project activity consists of many mini projects and for these, individual boundaries have been identified and parameters are being monitored accordingly.	OK	OK
Monitoring methodology to be checked. Are the plant's employees aware of the monitoring protocol? Do they know how to monitor and who is responsible? What kind of system do they use? How do they check their own procedures? Do	PDD page 31	I	GHG performance procedure has been prepared for the same. Copy is attached as annex – 4. Interview was conducted	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
they undertake internal audits? What kind of system is being used to collect the data? Who is responsible and who has access to these data? What happens if data is missing? Electric circuit with point of metering for different project activity and calibration of meters			to check the awareness of monitoring methodology, data recording, personnel role & responsibility and found satisfactory. Plant in charge is responsible for data collection and recording. All Instruments are calibrated with one master calibrator and frequency of calibration is 6 months. The in house calibration reports with electrical circuit showing point of metering are attached as annex – 5.		
Calibration Certificate of instruments used for monitoring (energy meter)	PDD		The master calibrator certificate from a NABL accredited lab is not available with us. The calibration detail has been provided by the project proponent. The same will be again verified at the time of verification.	OK	OK
Estimation of Energy conserved by the project activity	PDD page 41		The difference in Specific Energy consumption before & after project activity is taken from the audited document file as the basis of amount of energy saved due to each project activity. Monthly Specific Energy Consumption of both the plant named as Satna Cement works (SCW) and Birla Vikas Cement Works (BVCW) from 1998 to 2005 is attached as annex – 6. Specifications of old fans replaced with high efficiency fans have been obtained and checked for	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			their efficiency.		
Local Stakeholder consultation process (has it been undertaken in accordance with the regional/national legislation? Check with some stakeholders whether their comments were taken into account, meaning did the project listen to them? Are there still complaints outstanding?)	PDD page 45		Procedure to get comments on energy efficiency project and Local stakeholders comments were found satisfactory and attached herewith as annex – 7.	OK	OK
Energy source data Data used to calculate simple OM emission factor NCV, Ef_{CO2}, & Oxid. Factor Data used to calculate BM emission factor	PDD		Data used for baseline calculation is referred as per source given in the data tables and mentioned in bibliographic reference below: Table An-6 Data used for Simple OM Emission Factor (PDD page 61-63) Table An-8 Data used for BM Emission Factor(PDD page 69-70) Enclosure II gives all the information of source of data used for CER calculation.	OK	OK
Baseline emission factor (weightage)	PDD		Equal weightage has been given to operating margin & build margin emission factor.	OK	OK
Is any leakage incorporated in the PDD?	PDD		During discussion of project activity, no leakage identified.	OK	OK
Site snaps project activity specific.	PDD		Snaps were taken at site and attached as annex – 8.	OK	OK

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Annex 2 Validation Protocol

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
1.1 The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	DR	Annex 2 of PDD	No funding of Annex I party available Project can proceed as unilateral project	ok	Ok
1.2 The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	DR	PDD	No letter of approval from Indian DNA available	CAR 1.2	Ok, Closed out
1.3 All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	DR	PDD	India has ratified the KP No engagement of Annex I party to date Unilateral project	ok	Ok
1.4 The project results in reductions of GHG emissions or increases in sequestration when compared to the baseline; and the project can be reasonably shown to be different from the baseline scenario	DR	PDD and AMS-II.d	Maybe. The project will result in reductions of GHG emissions and will be different from baseline scenario, in case that CARs and NIRs are closed out	open	Ok, Closed Out
1.5 Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days (45 days for AR projects), and the project design document and comments have been made publicly available	DR	UNFCCC and SGS web page	ISC ends on 04th of December 2005 1 comment received on 3rd of December 2005	Ok	Ok
1.6 The project has correctly completed a Project Design Document, using the current version and exactly following the guidance	DR	PDD and UNFCCC web page	PDD uses current version, but several changes of the document were identified and guidance was not exactly followed (see table 8)	CAR 1.6	Ok, Closed Out
1.7 The project shall not make use of Official Development Assistance (ODA), nor result in the diversion of such ODA	DR/I	PDD	To be confirmed during site visit	site visit	Ok, Close

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
					d Out
1.8 For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?			Not relevant		
1.9 Does the project meet the additional requirements detailed in: Table 9 for SSC projects Table 10 for AR projects Table 11 for AR SSC projects	DR	PDD and SSC modalities	Seem so, but debundeling has to be confirmed during site visit (cluster of 4 plants is discussed on page 16)	Site visit	Ok, Closed Out
1.10 Does the PDD use accurate and reliable information that can be verified in an objective manner?	DR	PDD	No. There are several links to public available information which may by verifiable in an objective manner. It is not known if the sources are reliable. Direct links to the documents are missing, hard copies are not available. No link to protocol of BCL-Satna decision to take up the project execution (page 14, 5th line)	CAR 1.10 and site visit	Ok, Closed Out

Table 2 Baseline methodology(ies) (Ref: PDD Section B and E and Annex 3 and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.1 Does the project meet all the applicability criteria listed in the methodology	AMS-II.D/ PDD	DR	Project meets all applicability criteria	Ok	Ok
2.2 Is the project boundary consistent with the approved methodology?	AMS-II.D	DR	Yes, definition of boundary is consistent with	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	/ PDD		methodology		
2.3 Are the baseline emissions determined in accordance with the methodology described	AMS -II.D PDD	DR	No 2.3.0 Section B refers to Appendix B Type IID, calculations in enclosure IV to ACM0002 **In Section B:** Step 1: energy baseline: Energy baseline is not transparent. 2.3.1: numbers and calculations are not transparent. Calculations for energy savings are not shown, enclosure IV uses wrong methodology and is in pdf format, not excel 2.3.2 no objective evidence Step 2: carbon intensity of Grid Step (a) Choice of grid: 2.3.3 description of grid selection is not transparent: 2.3.4 No objective evidence for data available, no direct link available. Open questions: are data most recent as required in paragraph 7 for category I.D of Appendix B? Are data reliable? Is choice of plants correct? Step II (b) is missing (see PDD page 20/21) Link to enclosure IV: 2.3.5: Numbers and Calculations are not	CARs 2.3.0 to 2.3.8 Site visit	Ok, Closed Out

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			transparent, wrong methodology and no objective evidence available, no direct link available, enclosure IV in pdf format, not excel 2.3.6: Not transparent if losses are taken into account as required 2.3.7: Link to IPCC factors is not shown (they use IPCC 1996 emission factors for Sub-Bitumen coal and for natural gas (dry) and diesel. It is not shown if the EFs are representative for the burned fuels. 2.3.8 Enclosure IV, It is not clear if most recent 20 % of existing plants are used. Objective evidence is not available		
2.4 Are the project emissions determined in accordance with the methodology described	AMS-II.D PDD section E	DR	The project emissions are 0	Ok	Ok
2.5 Is the leakage of the project activity determined in accordance with the methodology described	PDD	DR	No leakage effects described. It is not clear if second hand equipment is used for the project	NIR 2.5	Ok, Closed Out
2.6 Are the emission reductions determined in accordance with the methodology described	AMS-II.D / PDD	DR	No, because baseline is not in accordance with methodology.	CAR 2.6	Ok, Closed Out

Table 3 Additionality (Ref: PDD Section B3 and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
3.1 Does the PDD follow all the steps required in the methodology to determine the additionality	PDD	DR	All steps are followed.	Ok	Ok
3.2 Is the discussion on the additionality clear and have all assumptions been supported by transparent and documented evidence	PDD	DR	No! 3.2.1: No quantitative evidence provided. 3.2.2: No support by transparent and documented evidence. Additionality test: **a)** Investment barrier 3.2.3: No information about investment sum and ratio of project income through energy saving/ investment (p 17). It is not possible to assess if the project is commercially attractive. Other companies in a cluster of unknown plants took the risks to invest in retrofit measures without CDM (see page 17, line 8). 3.2.4: No information about financing. 3.2.5: No information about capacity expansion plan in relation to this CDM project. **b)** technological barrier the PDD describes several technological risks associated with the project. The sum of all risks should be the technological barrier. 3.2.6: No explanations about the experience in other cement plants (cluster) which use similar technology. 3.2.7: The technology	CAR 3.2.1 to 3.2.10 Site visit	Ok, Closed Out

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			chosen for up-gradation is from late ninety's. No discussion about state of the art or other more recent technologies, literature not available, no technical details about equipment **c)** Barrier due to prevailing practice 3.2.8: choice of measures not supported by evidence. 3.2.9: Direct Links to official documents are missing. 3.2.10: Was the normal life cycle of replaced equipment at the end?		
3.3 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	AMS -II.D / PDD	DR	The selected baseline may be the most likely scenario.	Ok	Ok
3.4 Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	PDD	DR	Not clear yet. It is not explained if similar measures in the cluster are representative for business as usual.	CAR 3.4	Ok, Closed Out

Table 4 Monitoring methodology (PDD Section D and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
4.1 Does the project meet all the applicability criteria listed in the monitoring methodology?	AMS -II.D	DR	Yes, all applicability criteria are met	Ok	Ok
4.2 Does the PDD provide for the monitoring of the baseline emissions as required in the monitoring methodology?	AMS -II.D / PDD	DR	Not clear yet. The description of the grid and the selection of plants has to be confirmed on site	CAR 4.2 site visit	Ok, Closed Out
4.3 Does the PDD provide for the monitoring of the project emissions as required in the monitoring methodology	AMS -II.D	DR	General explanation of monitoring methodology	CAR 4.3.1	Ok, Close

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	/ PDD		seems to be ok. 4.3.1: some details are missing, for example pre-project stage historical data: fixed value might be used but decrease of efficiency over time should take into account 4.3.2: It is general explained that meters will be state of the art and calibrated. No support by objective evidence. 4.3.3: It is not transparent and explained which meters will be used for the metering of each measure (18 measures between 2000 and 2003 are listed on page 6 to 10)	to 4.3.3	d Out
4.4 Does the PDD provide for the monitoring of the leakage as required in the monitoring methodology	PDD	DR	It is not clear if monitoring of leakage is not relevant. See also 2.5 above	NIR 4.4	Ok, Closed Out
4.5 Does the PDD provide for Quality Control (QC) and Quality Assurance (QA) Procedures as required in the monitoring methodology	PDD	DR	No procedures available. QA/QC system is not defined	CAR 4.5 Site visit	Ok, Closed Out

Table 5 Monitoring plan (PDD Annex 4)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
5.1 Monitoring of Sustainable Development Indicators/ Environmental Impacts	PDD	DR	No monitoring of sustainable development indicators or environmental Impact is planed.	NIR 5.1	Ok, Closed Out
5.1 Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD	DR	Monitoring of sustainable development indicators or environmental Impact is not discussed in the PDD	NIR 5.1.1 site visit	Ok, Closed Out

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
5.1.1 Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	PDD	DR	Monitoring of sustainable development indicators or environmental Impact is not discussed in the PDD	NIR 5.1.2	Ok, Closed Out
5.1.2 Will it be possible to monitor the specified sustainable development indicators?	PDD	DR	Monitoring of sustainable development indicators or environmental Impact is not discussed in the PDD	NIR 5.1.3	Ok, Closed Out
5.1.3 Are the sustainable development indicators in line with stated national priorities in the Host Country?	PDD	DR	Monitoring of sustainable development indicators or environmental Impact is not discussed in the PDD	NIR 5.1.4	Ok, Closed Out
5.2 Project Management Planning					
5.2.1 Is the authority and responsibility of project management clearly described?	PDD	DR	No verbal description, only operational structure as figure, management is not described, operational structure is shown but not detailed	NIR 5.2.1	Ok, Closed Out
5.2.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD	DR	No verbal description	NIR 5.2.2	Ok, Closed Out
5.2.3 Are procedures identified for training of monitoring personnel?	PDD	DR	No procedures for training	NIR 5.2.3 site visit	Ok, Closed Out
5.2.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD	DR	No procedures for emergency preparedness	NIR 5.2.4 site visit	Ok, Closed Out
5.2.5 Are procedures identified for calibration of monitoring equipment?	PDD	DR	No procedures	NIR 5.2.5 site visit	Ok, Closed Out
5.2.6 Are procedures identified for maintenance of monitoring equipment and installations?	PDD	DR	No procedures	NIR 5.2.6 site visit	Ok, Closed Out
5.2.7 Are procedures identified for monitoring, measurements and reporting?	PDD	DR	No procedures	NIR 5.2.7 site visit	Ok, Closed Out

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
5.2.8 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	PDD	DR	No procedures	NIR 5.2.8 site visit	Ok, Closed Out
5.2.9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD	DR	No procedures	NIR 5.2.9 site visit	Ok, Closed Out
5.2.10 Are procedures identified for review of reported results/data?	PDD	DR	No procedures	NIR 5.2.10 site visit	Ok, Closed Out
5.2.11 Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	PDD	DR	No procedures	NIR 5.2.11 site visit	Ok, Closed Out
5.2.12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD	DR	No procedures	NIR 5.2.12 site visit	Ok, Closed Out
5.2.13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD	DR	No procedures	NIR 5.2.13 site visit	Ok, Closed Out

Table 6 Environmental Impacts (Ref PDD Section F and relevant local legislation)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
6.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD	DR	No description of investigation. Only summary of impacts. Not transparent.	site visit	Ok, Closed Out
6.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD	DR	To be confirmed during site visit.	site visit	Ok, Closed Out
6.3 Will the project create any adverse environmental effects?	PDD	DR	Adverse effects (noise, vibrations, etc.) are not discussed.	NIR 6.3	Ok, Closed Out
6.4 Are transboundary environmental impacts considered in the analysis?	PDD	DR	Transboundary impacts are not discussed	NIR 6.4	Ok, Close

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			explicit. Only benefits are listed		d Out
6.5 Have identified environmental impacts been addressed in the project design?	PDD	DR	No negative environmental impacts identified	ok	Ok
6.6 Does the project comply with environmental legislation in the host country?	PDD	DR	To be confirmed during site visit	site visit	Ok, Closed Out

Table 7 Comments by local stakeholders (Ref PDD Section G)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
7.1 Have relevant stakeholders been consulted?	PDD	DR	The documentation of the stakeholder consultation is not transparent and not very detailed. The choice of the relevant stakeholder is not as required.	CAR 7.1 site visit	Ok, Closed Out
7.2 Have appropriate media been used to invite comments by local stakeholders?	PDD	DR	Not clear. The documentation of the stakeholder consultation is not transparent and not very detailed	NIR 7.2 site visit	Ok, Closed Out
7.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD	DR	No information about requirement of consultation process by law. No info about the consultation process	NIR 7.3 site visit	Ok, Closed Out
7.4 Is a summary of the stakeholder comments received provided?	PDD	DR	No summary	NIR 7.4 site visit	Ok, Closed Out
7.5 Has due account been taken of any stakeholder comments received?	PDD	DR	No documentation, only global announcement that all comments were considered while preparing the PDD	NIR 7.5 site visit	Ok, Closed Out

Table 8 Other requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
8.1 Project Design Document					
8.1.1 Editorial issues: does the project correctly apply the PDD template and has the document been completed without modifying/adding headings or logo, format or font.	PDD	DR	No. Several format changes Chapters double Page 1 – 70, wrong font in header for “CDM – Executive Board” and “page x” • Page 1, miss “small-scale” in headline A. • Page 1, “project activity” is underlined in headline C. • Page 1, miss “reductions” in headline E. • Page 1, stakeholders is underlined in headline G. • Page 1, “project activity” is underlined in headline annex 1 • Page 1, enclosures are added • Page 15, section B.3., different fonts in footnote • Page 16, section B.3., different fonts in footnote • Page 25, 26, section D.3., D.4., D.5., D.6. wrong format (landscape) • Page 25, section D.3., format of headline (not framed) • Page 30, section E.1.2.5., format of headline (not framed, not bold)	CAR 8.1.1	Ok, Closed Out

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			• Page 33, section E.1.2.5. is double (where is it right?) • Page 37, section Annex 1, format of headline • Page 38, section Annex 2, format of headline • Page 39 – 70, added enclosures • Page 42, enclosure IV after II, where is III, wrong headlines		
8.1.2 Substantive issues: does the PDD address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified	PDD	DR	No, at several points there are NIRs (see above) Missing chapters	NIR 8.1.2	Ok, Closed Out
8.1.3 other editorial issues	PDD, enclosure 1	DR	Several abbreviations are missing in the list	NIR 8.1.3	Ok, Closed Out
8.1.4 location of the project	PDD	DR	The description of the location is not detailed enough, no address, no geographical coordinates	NIR 8.1.4	Ok, Closed Out
8.2 Technology to be employed					
8.2.1 Does the project design engineering reflect current good practices?	PDD	DR	Not transparent. Technology is of late ninety's. No description of possible alternatives or technological barriers due to existing equipment from 1965. It is not clear if the CDM criteria for energy efficiency CDM projects are fulfilled for all 18 measures from 2000 to 2003 (p 6 to 10)	NIR 8.2.1 Site visit	Ok, Closed Out
8.2.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any	PDD	DR	Not clear yet. 8.2.2.1: It is not clear if the technology is common,	NIR 8.2.2.1 to 8.2.2.3	Ok, Close

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
commonly used technologies in the host country?			there is no discussion of alternatives. 8.2.2.2: No details about equipment provided (see also 3.2 above). 8.2.2.3: It is not transparent how the energy saving as evidence for *"a significant better performance"* is calculated and if this calculations are correct.	Site visit	d Out
8.2.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD	DR	Not clear. No description of possible alternatives	NIR 8.2.3	
8.2.4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD	DR	Not clear. No technical details available to assess the necessity of training or the complexity of the technical solutions. The relevance of Kyoto protocol and the requirements for CDM projects should be aware	NIR 8.2.4	Ok, Closed Out
8.2.5 Additional technical aspects	PDD	DR	It is not clear how the project of 18 individual measures interacts with the whole plant. Are there adverse effects on the whole plant?	NIR 8.2.5	Ok, Closed Out
8.3 Duration of the Project/ Crediting Period					
8.3.1 Are the project's starting date and operational lifetime clearly defined and reasonable?	PDD	DR	No, it is shown, that first actions were taken in 2000/2001 And project start is in 2000 But tables on page 11, 33 and 34 show period 2001 to 2011 There are different information about lifetime, see also 8.2.5	CAR 8.3.1	Ok, Closed Out
8.3.2 Is the assumed crediting time	PDD	DR	Yes (10 y)	ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?					
8.3.3 Does the project's operational lifetime exceed the crediting period	PDD	DR	Yes (15 to 10 y) according to E 1.2 On page 24 last paragraph 20-25 years are discussed as life span of the project, both are longer than 10 y	CAR 8.3.3	Ok, Closed Out

Table 9 Additional requirements for SSC projects

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
SSC projects use the SSC PDD and simplied baseline and monitoring methodologies as detailed in Appendix B (to the Modalities and Procedures for Small scale CDM projects, Annex II to Decision 21/CP.8) Indicative simplied baseline and monitoring methodologies for selected small scale CDM project activity categories					
9.1 Does the project qualify as a small scale CDM project activity as defined in paragraph 6 II of decision 17/CP.7 on the modalities and procedures for the CDM?	§ 6 ii of decision 17/CP.7 and PDD	DR	Project shall be < 15 GWh The project is saving 5.79 GWhe per annum electricity by different measures. This is well below than 60 GWhe limits for AMS.IID methodology now.	ok	Ok
9.2 The small scale project activity is not a debundled component of a larger project activity?	Appendix C of SSC modalities	DR	No other project within 1 km of project boundary, to be confirmed during site visit, see also 1.9 above	Site visit The project is not a debundled component of a larger project activity.	There is no similar type of project within 1km boundary. Ok, Closed Out
9.3 Does proposed project activity	SSC	DR	Yes, Appenix B category	ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
confirm to one of the project categories defined for small scale CDM project activities?	modalities		II.D. The project is an energy efficiency improvement in cement mill by putting different measures which affect the specific energy consumption (SEC) up to clinkerisation. The saving in SEC per tonne of clinker results into emission reduction. The project is applicable under AMS.II.D. methodology.		

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FINDINGS OVERVIEW

FINDINGS FROM VALIDATION OF ENERGY EFFICIENCY MEASURES AT CEMENT PRODUCTION PLANT IN CENTRAL INDIA

Project No CDM.Val0045

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Please note that this is an open list and more findings may be added as validation progresses.

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
1	CAR	No letter of approval from Indian DNA available	1.2
Date: [Comments] The copy of DNA letter for the same has been made available with the DOE			
Date:2007-01-18 [Sanjeev Kumar] The copy of DNA letter is still not received. 2007-03-30: The copy of letter of approval has been obtained. The CAR 1 can be closed out. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
2	CAR	Some changes to the PDD template were identified and guidance was not exactly followed	1.6 & 8.1.1
Date: [Comments] The changes has been accommodated and modified PDD has been sent along with this response sheet			
Date:2007-01-18 [Sanjeev Kumar] Some changes are still not made 2007-03-30 The revised PDD template is OK. The CAR can be closed out.			

[Acceptance and close out] Ok, closed out

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
3	CAR	It is not possible to verify the information. Direct links and documents are missing.	1.10

Date:
[Comments] The hard copy of the content are made available with DOE

Date: 2007-01-18 [Sanjeev Kumar]
Hard copy of grid related data based on regional grid has still not received however the minutes of board meeting has been submitted to the validator to verify the CDM consideration during project conception stage.

2007-03-30: The weblink
http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm
contains all the information about regional grid emission factor and is a reliable source. The CAR can be closed out.

[Acceptance and close out] Ok, closed out

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
4	CAR	It is not clear if methodology Type II D of Appendix B is correctly used Step 1: energy baseline: Energy baseline model is not transparent. Open questions: Are the calculations for energy savings reliable? Is the model conservative? Are losses taken into account?	2.3.0 to 2.3.2

Date:
[Comments] The project components reduce electricity consumption across individual project boundary. The electricity consumptions are carried out based on series of power consumption readings (kWh/hour) and corresponding production data duly authenticated by the plant authority. The specific baseline energy consumption of the project boundary has been calculated based on the above. The reflection of this energy consumption is noticed in overall specific energy consumption. This figure is communicated to cement manufacturing association in India, published in internal reports and above all energy expenditures and production figures are financially audited values.

The energy consumption norm in Indian cement sector (and for that purpose, the world over also) is represented by kWh/t of clinker (or cement) production. The baseline calculation is followed by the same norm so that the changes in consumption can be easily identified.

As per the definition of baseline, it is the emission that would have occurred in absence of the project activity. The existing systems in absence of the project activity would be consuming the same level of energy to process output (to be remembered that the plants are old and production has been stabilised so that scale factor do not arise) that is considered as baseline as per cement industry practice in India.

The present energy consumptions are based on readings that can be verified at any point for any duration of time in front of verifiers in actual plant running conditions. This evidently covers any losses (if at all) and therefore the emission reduction estimation is flawless. This when compared with the baseline energy consumption provides the savings in energy consumption and

conservative.
Date: 2007-01-18 [Sanjeev Kumar] The above explanation is satisfactory and makes clear the baseline selection. The losses if any can be checked during verification. The CAR 04 can be closed out. [Acceptance and close out] Ok, closed out.

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
5	CAR	Step 2a: carbon intensity of Grid, Choice of grid: Please provide objective evidence for site visit	2.3.3 to 2.3.4
Date: [Comments]The same has been discussed with DOE during site visit			
Date: 2007-01-18 [Sanjeev Kumar] The project developer revised the same in PDD. The revised PDD has been received and reviewed for the change made. 2007-03-30: The weblink http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm contains all the information about regional grid emission factor and is a reliable source. The factor has been again revised in the PDD. The CAR can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
6	CAR	Calculations in enclosure IV are not traceable (pdf), no digital spreadsheets available for checking, it is to time consuming to rewrite the spreadsheets. Please indicate how losses are taken into account	2.3.6
Date: [Comments] The excel sheet is attached herewith.			
Date: 2007-01-18 [Sanjeev Kumar] The excel sheet have been obtained and verified. The CAR 6 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
7	CAR	The project makes use of IPCC 1996 emission factors for Sub-Bitumen coal, for natural gas (dry) and diesel. It is not shown if the EFs are representative for the burned fuels.	2.3.7
Date: [Comments] Indian coal based power plants use mainly sub bituminous coal for power generation. This can be referred with http://www.osc.edu/research/pcrm/emissions/coal.html for details. Hence, the IPCC emission factor corresponding to sub bituminous coal (26.2 tC/TJ or 96.1 t CO2/TJ) could be used for baseline calculation. The emission factor for natural gas is taken as 56.1 tCO2/TJ as the most conservative value based on 15.3tC/TJ.			
Date: 2007-01-18 [Sanjeev Kumar] The representative values are justified. 2007-03-30: The grid emission factor has been taken from CEA site. This is reliable one. The CAR 07 can be closed out.			

[Acceptance and close out] Ok, closed out.

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
8	CAR	Please provide objective evidence that the most recent 20% of existing plants on the grid are used.	2.3.8
Date: [Comments] The same are not under the control of project participants and therefore followed as per the registered project's baseline. However, The baseline details are provided with the DOE			
Date: 2007-01-18 [Sanjeev Kumar] The details have been received. 2007-03-30: The grid emission factor has been taken from CEA site. This is reliable one. The CAR 08 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
9	NIR	Is second hand equipment used in the project (18 measures)?	2.5 and 4.4
Date: [Comments]The purchase orders including payment details from new equipment are provided with DOE			
Date: 2007-01-18 [Sanjeev Kumar] The same has been verified during site visit. The copy of the same has been obtained. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
10	CAR	Determination of emission reductions is not in accordance with the methodology because the baseline is not in line with the methodology	2.6
Date: [Comments] The baseline is the existing energy use (kW/hr. x Hours of operation) however, the same figure is followed with a bit modification. i.e. this energy consumption figure is further divided by the annual production. i.e. the basic structure of the methodology is followed.			
Date: 2007-01-18 [Sanjeev Kumar] The baseline emission is based on the energy consumption across the project boundary presently and prior to the project activity. The baseline is conservative and any variation in the final emission reduction can be taken care of during verification. The CAR 10 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
11	CAR	The discussion on additionality is not supported with documented evidence and literature is not available. Direct Links to official documents are missing. There is no information about • investment sum and ratio of project income (less costs through	3.2.1 to 3.2.10

		energy saving over crediting period) to investment income • capacity expansion plan in relation to this CDM project • the experience in other cement plants (cluster) which use similar technology • Financing • similar projects implementation without financial assistance • the state of the art of the technology or other more recent technologies • the criteria for the choice of the equipment • life cycle of the replaced equipment	

Date:

- [Comments] investment sum and ratio of project income (less costs through energy saving over crediting period) to investment income

The entire investment along with the purchase orders are provided with the DOE. However, the investment-benefit analysis has not been mentioned in the PDD as the project proponent has followed the barrier analysis. However, an excel sheet of the same is attached herewith for your reference.

- capacity expansion plan in relation to this CDM project

There were no specific expansion plans related to these modifications. They were aimed at improving environment only. It can be well understood that the financial benefit from these projects are insignificant compared to cement prices or market fluctuations and have no business implications or in decision making.

- the experience in other cement plants (cluster) which use similar technology

The interview can be arranged if asked for. But no such documents are accessible directly. But No other cement plant in the cluster has come up with similar energy efficiency projects that are available on the unfccc website till date.

- Financing

Internal accrual

- similar projects implementation without financial assistance

no such information the project proponent has

- the state of the art of the technology or other more recent technologies

the technologies are state of the art. Other recent technologies are not in the knowledge of project proponents. In fact BCL –Chittorgarh is a leading cement manufacturer in the cluster.

- the criteria for the choice of the equipment

Energy efficiency improvement

- life cycle of the replaced equipment

Minimum is 15 years. However, depending on site conditions, few can be replaced (incurring additional investments)

Date: 2007-01-18 [Sanjeev Kumar]

The above information is self explanatory. The project had been facing technology & prevailing practice barriers and not investment barrier. Investment was not the decision making criteria but risk of failure was. The CDM revenue would certainly assisted in mitigating risk and overcoming these barriers. There was uncertainty about project's outcome. Please clarify more

- life cycle of the replaced equipment
  - The question asked was about the lifecycle of the instruments which were used before the project activity.
  - Discuss about the instrument used earlier and their life cycle in detail.

What was the condition of the instruments used before in 2000, were they in the last stage of their operational

[Comments] The VFDs are the additional equipment that is integrated with existing equipment. The physical modifications, like Down-comer ducts are new fabrication of the existing line where

the existing material had lifetime more than decades but had to be made scrap due to project activity so they are not a result of natural replacement, nor they have any book value except being as scrap. Foe energy efficiency fans and drives, the existing equipment had residual life but the change has been initiated by the drive for energy efficiency. The old fans are kept as stand by so that they can be of use in case of emergencies and also to mention, they do not run into further leakages.
Date: 2007-03-30 [Sanjeev Kumar] This has been verified with the evidence provided that the system replaced has not been scraped or sold out and put as standby. The retrofit/modifications were made due to CDM initiative. The CAR 11 can be closed out. [Acceptance and close out] Ok, closed out

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
12	CAR	Is similar technology used at other plants in the cluster without financial assistance through certified emission reductions?	3.4
Date: [Comments] Till date no such projects are available on the unfccc website for international stakeholder's comments			
Date:2007-01-18 [Sanjeev Kumar] No evidence has been found which shows the project activity is a common practice in the region. The CAR 12 can be closed out. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
13	CAR	The selection of plants is not transparent and direct links to objective evidence is not available.	4.2
Date: [Comments]The same has been updated and modified PDD is attached			
Date: 2007-01-18 [Sanjeev Kumar] The updated and modified PDD has been obtained. The CAR 13 can be closed out. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
14	NIR	Some details of the monitoring methodology are missing, for example pre-project stage historical data: fixed value without decrease of efficiency over time? It is general explained that meters will be state of the art and calibrated. Support by objective evidence is missing. It is not transparent and explained which meters will be used for the metering of each measure (18 measures between 2000 and 2003 are listed).	4.3.1 to 4.3.3
Date: [Comments]A) Generally the efficiency of electrical devices' deterioration rate is very slow and difficult to apprehend. If any figure needs to be taken, that is always questionable. Guidance is sought from the DOE to take a suitable factor for efficiency reduction, if any, B) The earlier meters are getting replaced with new meters/ are getting calibrated.			

The calibration certificates would be produced during verification visit. C) The same has been included in the modified PDD itself.
Date: 2007-01-18 [Sanjeev Kumar] The baseline has been calculated on specific energy consumption within project boundary. Any deterioration in efficiency would result in higher energy consumption and less emission reduction. This can be taken care of during verification. In case of any error in meters, the same will be deducted from verified emission reduction. The NIR 14 can be closed out. [Acceptance and close out] Ok, closed out.

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
15	CAR	No procedures for QA/QC available	4.5
Date: [Comments] One separate document has been provided to the validator for the same.			
Date: 2007-01-18 [Sanjeev Kumar] GHG performance procedure has been obtained. The CAR 15 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
16	NIR	No explanation how to ensure that the project results in sustainable development and no negative environmental impacts take place.	5.1 to 5.1.4
Date: [Comments] The project is a small scale energy efficiency improvement project. There are no negative impacts of such projects in any angle expect possibly the use of discarded equipment in case of energy efficient fans and motors. However, they, basically ferrous in constitution, are having use of recycling. For the sustainable development issues, the benefit from the project activity cannot be contributed to any specific activities barring the positive environmental impact and reduced electricity (primary resource for growth in a country like India) consumption resulting into sustainable cement production. However, the philanthropic activities taken care of by the BCL- management show the responsibility of the corporate to social concern also. The documentary evidence of the same has been forwarded to DOE also.			
Date: 2007-01-18 [Sanjeev Kumar] There is no negative environmental impact expected from the project activity. The PP is socially responsible corporate and contributing to the development in the reason. The evidences have been obtained. The NIR 16 can be closed out. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
17	NIR	No verbal description of management system and responsibilities	5.2.1 - 5.2.2
Date: [Comments] added in the monitoring plan of modified PDD			
Date: 2007-01-18 [Sanjeev Kumar] The same is added in the PDD and verified. The NIR 17 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
18	NIR	Procedures for training, emergency preparedness, calibration, maintenance of monitoring equipment, monitoring, measurement, reporting, records handling, adjustments, uncertainties, review, internal audits and corrective actions are not available	5.2.3-5.2.13
Date: [Comments]Made available with the validators			
Date: 2007-01-18 [Sanjeev Kumar] One separate document for GHG performance procedure which meets all the requirements has been obtained. The NIR 18 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
19	NIR	Adverse effects like noise or vibrations are not discussed	6.3
Date: [Comments] Not significant, site visit by the DOE ensures the same			
Date: 2007-01-18 [Sanjeev Kumar] The noise or vibrations are controlled and within plant premises. The NIR 19 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
20	NIR	Transboundary impacts are not discussed explicit. Only benefits are listed	6.4
Date: [Comments] Not significant, site visit by the DOE ensures the same			
Date: 2007-01-18 [Sanjeev Kumar] There was no second hand equipment being used at the site. This has been verified with purchase order of newly equipments. The NIR 20 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
21	CAR	The documentation of the stakeholder consultation is not transparent and not as detailed as required	7.1
Date: [Comments] Site visit by the DOE ensures the same, the documents are provided with the DOE			
Date: 2007-01-18 [Sanjeev Kumar] The stakeholders' comments have been obtained. There is no adverse comment identified. This has been verified during site visit. The NIR 21 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
22	NIR	It is not clear which appropriate media have been used to invite comments by local stakeholders	7.2
Date:			

[Comments] Site visit by the DOE ensures the same, the documents are provided with the DOE
Date: 2007-01-18 [Sanjeev Kumar] The communication letters with stakeholders were obtained to verify the transparency in the process. The NIR 22 can be closed out. [Acceptance and close out] Ok, closed out.

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
23	NIR	There is no information available about the requirement of stakeholder consultation process by law	7.3
Date: [Comments] Site visit by the DOE ensures the same,			
Date: 2007-01-18 [Sanjeev Kumar] The local stakeholder consultation process is conducted by pollution control board prior to give the consent to establish or operate a project. However, the same has also been conducted by the project developer however this was not mandatory by law for them. The NIR 23 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
24	NIR	A summary of the stakeholder comments received is not provided	7.4
Date: [Comments]provided with Modified PDD			
Date: 2007-01-18 [Sanjeev Kumar] The summary has been provided in the modified PDD obtained. There is no adverse comment identified. The NIR 24 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
25	NIR	No support with objective evidence that all stakeholder comments have been taken into account	7.5
Date: [Comments] Site visit by the DOE ensures the same, the documents are provided with the DOE			
Date: 2007-01-18 [Sanjeev Kumar] The evidences have been obtained. There is no adverse comment identified. The NIR 25 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
26	CAR	Editorial: Several changes and modifications to PDD template were found. See list in the validation protocol under 8.1.1	8.1.1
Date: [Comments] Revised PDD is enclosed			
Date: 2007-01-18 [Sanjeev Kumar] The changes have been incorporated in revised PDD. The CAR 26 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
27	NIR	Not all specific requirements are addressed and justified in the PDD	8.1.2
Date: [Comments] All the requirements are addressed in revised PDD.			
Date: 2007-01-18 [Sanjeev Kumar] The revised PDD meets all the requirements of PDD. The NIR 27 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
28	NIR	Several abbreviations are missing in the list	8.1.3
Date: [Comments] Revised PDD is enclosed			
Date: 2007-01-18 [Sanjeev Kumar] The abbreviations are still missing in the revised PDD. 2007-03-30: The revised PDD provides the required information. [Acceptance and close out] Ok, closed out			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
29	NIR	The address and the geographical coordinates are not given in the PDD	8.1.4
Date: [Comments] Revised PDD is enclosed			
Date: 2007-01-18 [Sanjeev Kumar] The same has been given in revised PDD. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
30	NIR	It is not clear if the Project design engineering reflect current good practice. The technology of the described 18 measures is of late ninety's. No description of possible alternatives or technological barriers due to existing equipment from 1965	8.2.1
Date: [Comments] The alternative was the continuation with Pre project scenario that was most likely and not faced any barrier. The revised PDD has more information.			
Date: 2007-01-18 [Sanjeev Kumar] The project activity is the implementation of recent available technologies with older mill. There had been barrier due to prevailing practice. The most likely alternative was verified as the continuation of previous scenario. The Minutes of meetings held before the project implementation has been received and reviewed for CDM consideration prior to project implementation to go ahead with the project activity. The NIR 30 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref

31	NIR	It is not clear if the technology of 18 measures is common in Madhya Pradesh and it is not transparent how the energy saving as evidence for *"a significant better performance"* is calculated.	8.2.2.1 to 8.2.2.3
Date: [Comments] The annual technology conferences in the cluster including publications of the technologies (not all) provide objective evidence			
Date:2007-01-18 [Sanjeev Kumar] There were plants in year 2000 in the cluster. The initiative for energy efficiency improvements was not observed common at that time as discussed with other plants. The energy efficiency improvements were evident with the plant data during site visit and can be said overall better performance of the system. The NIR 31 can be closed out. [Acceptance and close out]Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
32	NIR	Technological alternatives are not described. It is not clear if the project technology is likely to be substituted by other or more efficient technologies within the project period	8.2.3
Date: [Comments] The project proponent had taken initiative for state of the art retrofit measures for energy efficiency improvement in cement mill. The technology in the time of decision making was new to Indian cement sector and success of retrofit measure could not be guaranteed. The only alternative to the project proponent was continuing the existing technology or investing in new kiln. The capacity addition was definitely a good business proposition but without contributing to energy efficiency. Theoretically speaking, in future the project activity might be replaced with more energy efficient technology within the crediting period. In that case the CDM project activity would cease its being. However, being an implemented project where six years have already been passed, it is practically unlikely that any change would occur in the next four years of operation.			
Date: 2006-04-04 [Sanjeev Kumar] The technology being used in the plant is the recent available one and this is not likely to be substituted in next four years of crediting period. The NIR 32 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
33	NIR	It is not clear if the technology leads to the requirement of additional training. Trainings for the employees on the project technology were not explained	8.2.4
Date: [Comments]Training Plan is attached			
Date: 2007-01-18 [Sanjeev Kumar] The training procedure has been included in GHG performance procedure. The NIR 33 can be closed out. [Acceptance and close out] Ok. Closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
34	NIR	It is not clear how the project of 18 specific measures interacts with the	8.2.5

		whole plant. Are there adverse effects on the whole plant?	
Date: [Comments]No. The Site visit by the DOE ensures the same			
Date: 2006-04-04 [Sanjeev Kumar] Any adverse effect of project activity on whole process is rare and if any can be taken care during verification. The NIR 34 can be closed out. [Acceptance and close out] Ok, closed out.			

Date: 2005-12-08 Raised by: Dr. Jochen Gross

No.	Type	Issue	Ref
35	CAR	There are different information about crediting period and operational lifetime.	8.3.1 and 8.3.3
Date: [Comments] Site visit by the DOE ensures the same, clarifications provided			
Date:2007-01-18 [Sanjeev Kumar] Please incorporate the same in the PDD. 2007-03-30: The project life time is likely to be more than 15 years and the PP claimed fixed ten year crediting period. The information is ok in revised PDD. The CAR 35 can be closed out. [Acceptance and close out]Ok, closed out			

Comment 1	03-12-05 7:54am
Name: Perumal kalyani arumugam	**City: chennai**
Organisation: Individual	**Country: India**

I would like to know whether project has seriously considered the incentive from the CDM in decision to go ahead with the project. Does any documentary evidence is available for that?

The investment barrier is debatable.

Investment = 80 million
The annual energy saving is 13.18 Gwh.
Based on the electricity tariff of min 3.5/kwh
The total monetary saving would be 46.13 million/yr
The simple pay back would be = 1.7 months
Any energy efficiency project has a pay back of less than two years is a viable project under any energy efficiency initiatives. I would also like to know how this CDM revenue will help in the viability of the project and how does it helps to overcome the stated barrier.

Being a second major constituent of the production cost the energy efficiency initiative in cement sector is need of the hour with respect to the prevailed and prevailing market condition/situation. To the best of my knowledge any EE project with more than 3 years payback only will have a financial barrier.

Barrier analysis should be used whether there are significant non-quantifiable barriers that prevent the happening of projects or similar activities.

Rather a descriptive investment analysis approach should have been adopted to see whether the projects are financially viable on their own. The reason is that the relevant barriers that are identified are all quantifiable.Hence it should be easy to see using an investment analysis whether these are significant.

The barrier analysis is should be made much more robust.

Observations (01):
The calibration of instruments is to be ensured during verification and the error, if any should be adjusted with actual value.