VALIDATION REPORT

DALMIA SUGARS LIMITED
NIGOHI PROJECT IN INDIA

REPORT NO. 2006-9108

REVISION NO. 01

DET NORSKE VERITAS

VALIDATION REPORT

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Approved by: Einar Telnes Director	Organisational unit: DNV Certification, International Climate Change Services
Client: Dalmia Cement (Bharat) Ltd	Client ref.: Mr. Pankaj Rastogi

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Summary:
Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "*Dalmia Sugars Limited Nigohi Project*" in *India* on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the project, as described in the project design document of version 03 of 5 January 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006, version 04. Hence DNV requests the registration of the "*Dalmia Sugars Limited Nigohi Project*" as a CDM project activity.

Report No.: 2006-9108	Subject Group: Energy	
Report title: Dalmia Sugars Limited Nigohi Project in India		
Work carried out by: Amit Thusu, Praveen Nagaraje Urs, Michael Lehmann		
Work verified by: C Kumaraswamy		
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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CEA	Central Electricity Authority
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MNES	Ministry of Non-Conventional Energy Resources
MVVNL	Madhyanchal Vidyut Vitram Nigam Limited
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
OM	Operating Margin
ODA	Official Development Assistance
PPA	Power Purchase Agreement
PDD	Project Design Document
TPH	Tonnes per hour
UPPCB	Uttar Pradesh Pollution Control Board
UPPCL	Uttar Pradesh Power Corporation Limited
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Dalmia Cement (Bharat) Ltd (formerly Dalmia Sugars Limited, a subsidiary of Dalmia Cement (Bharat) Limited) has commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the "Dalmia Sugars Limited Nigohi Project" (hereafter called "the project") in India. This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Mr. Amit Thusu	DNV New Delhi, India	Project Manager and GHG Auditor
Mr Praveen Nagaraje Urs	DNV Bangalore, India	GHG auditor
Mr Michael Lehmann	DNV Oslo, Norway	Sector Expert
Mr. C. Kumaraswamy	DNV Bangalore, India	Technical Reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved consolidated baseline and monitoring methodology ACM0006 version 4 /7/. The validation team has, based on the recommendations in the Validation and Verification Manual /9/ employed a risk-based approach, 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 project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Description of Proposed CDM Project

The "Dalmia Sugars Nigohi Project" proposed by Dalmia Cement (Bharat) Ltd involves the installation of a new power plant, adjacent to a new sugar factory being established in Uttar Pradesh, India. The project activity is located in the Areli village, Tilhar tehsil, Shahjahanpur district, Uttar Pradesh, in India. The power plant will combust mainly bagasse, a renewable biomass material, and the electricity generated will be supplied to the grid.

The project consists of a 140 TPH boiler and a 27 MW turbine generator of double extraction cum condensing type. All the bagasse (biomass residue) generated in the sugar plant will be

utilised along with other biomass such as rice husk. The technology used in the project activity is indigenous.

The main objective of the project is to reduce anthropogenic GHG emissions by displacing fossil fuel based power generation in the northern regional grid. The project thereby helps in reducing the power deficit in the state of Uttar Pradesh, and contributes towards sustainable development.

Total estimated GHG emissions due to the project activity are expected to be on an average 73 914 tonnes of CO2 per year during ten years of chosen crediting period.

2 METHODOLOGY

The validation of the project started in August 2006. The validation consists of the following three phases:

i) a desk review of the project design document

ii) follow-up interviews with project stakeholders

iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /9/. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "*Dalmia Sugars Limited Nigohi Project*" is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (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 certified.

The term Clarification may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*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 (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD /1/ submitted by Dalmia Cement (Bharat) Ltd and additional background documents related to the project design and baseline /2/, /3/ were reviewed as a part of validation

2.2 Follow-up Interviews

On 9 September 2006, DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Dalmia Cement (Bharat) Ltd and Agrinergy Ltd. were interviewed /11//12//13/. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Dalmia Cement (Bharat) Ltd and Agrinergy Ltd.	➢ Approval of Host country (India) and U.K. ➢ Determination of project additionality and ascertaining that CDM was considered during the project conceptualisation. ➢ Clarifications on establishment of baseline, monitoring plan and emission reduction calculations. ➢ Resources, training needs and procedures for operation and maintenance. ➢ Monitoring methodology. ➢ Environmental consents

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The corrective action requests (CAR) and requests for clarifications (CL) raised by DNV, were presented to the project participant in DNV's draft validation report and were resolved during communication between the client and DNV. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A (Table 3). Since modification to the project design were necessary to resolve DNV's concerns, the client decided to revise the PDD and resubmitted the PDD (version 03) of 5 January 2007. After reviewing the revised PDD, DNV issued this final validation report and opinion.

2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

3.1 Participation Requirements

The project is proposed by Dalmia Cement (Bharat) Ltd of India and the Agrienergy Ltd of the U.K. India is the Host Party and United Kingdom is the Annex I Party involved in the project. The project has received the approval of the host country India on 3 January 2007 /4/. Approval from the Department for Environment, Food and Rural Affairs, the DNA of UK, has been received on 18 January 2007. The Host Party, India, and the Annex I country, United Kingdom, both meet requirements to participate in the CDM /5/.

3.2 Project Design

The "Dalmia Sugars Nigohi Project" proposed by Dalmia Cement (Bharat) Ltd involves the installation of a new power plant, adjacent to a new sugar factory being established in Uttar Pradesh, India. The power plant will combust mainly bagasse, a renewable biomass material, and the electricity generated will be supplied to the grid.

The project has a rated generation capacity of 27 MW and aims to export power to the Uttar Pradesh state electricity grid which forms a part of the northern regional grid of India. The project is connected to the grid through the 220 KV Shahjahanpur substation which is situated around 18 km from the project site.

The technology used is available in India and no transfer of technology is envisaged. The project consists of a 27 MW generation set coupled to a high pressure configuration boiler having a steam generation capacity of 140 tones per hour at of 86 kg/cm^2 pressure and 515^{0}C temperature. The co-generation project meets the steam and power requirements of the sugar mill and exports surplus power to the connected grid. The project results in reduction of GHG emissions by capacity addition to the grid with clean power.

The start date of the project activity is 14 December 2005 and the expected operational lifetime of the project activity is 20 years which is deemed reasonable. The project developer has chosen a fixed crediting period of 10 years starting from 15 March 2007 or the date of registration (which ever is later).

Emission reductions are generated by displacing fossil-fuel based grid-electricity. Over a 10 years crediting period, starting on 15 March 2007 or the date of registration (which ever is later), the project's expected annual emission reductions will be on an average 73 914 tonnes of CO2 equivalents (tCO2e).

No public funding is involved in the project, and the validation did not reveal any information that indicates the project to be seen as a diversion of ODA funding.

3.3 Baseline Determination

The project applies the approved consolidated baseline methodology ACM0006 – *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /7/. The project fulfils the conditions under which ACM0006, version 4 is applicable. The project is in accordance with scenario 3 (in relation to rice husk use) and 4 (in relation to bagasse use) of ACM0006, i.e. the project activity involves the installation of a new power plant, supplying

power and steam to the adjacent new sugar plant with excess power to the grid using both bagasse supplied by the new sugar plant and rice husk purchased from outside as a fuel, at a site where no power was generated prior to the implementation of the project activity. In the absence of the project activity, a new biomass power plant (in the following referred to as "reference plant"), supplying power and steam to the adjacent new sugar plant, would be installed instead of the project activity at the same site and with the same thermal firing capacity but with a lower electric efficiency as the project plant (e.g. by using a low-pressure bagasse fired boiler instead of a high-pressure boiler) and rice husk would be left to decay in aerobic conditions (naturally). The alternatives considered for the determination of baseline scenario include alternatives for power, biomass and heat. The chosen baseline is a combination of the following baseline scenarios given in ACM0006:

For power generation:	The proposed project activity (installation of a power plant), fired with the same type of biomass residue but with a lower energy efficiency of electrical generation (e.g. an efficiency that is common practice in the relevant industry sector) (P2) (only for scenario 4) and the generation of power in existing and/or new grid-connected power plants (P4) (for both scenario 3 and 4);
For heat generation:	The proposed project activity (installation of a cogeneration power plant), fired with the same type of biomass residues but with a different thermal energy efficiency (e.g. an efficiency that is common practice in the relevant industry sector) (H2) (only for scenario 4);
For biomass use:	The biomass residues are used for heat and/or electricity generation at the project site (B4) (for both scenario 3 and 4)and the biomass residues are dumped or left to decay under mainly aerobic conditions. This applies, for example to dumping and decay of biomass residues on fields (B1) (only for scenario 3).

The selected baseline scenario is the construction of a conventional "business as usual" power plant utilising bagasse which will co-generate heat and electricity to meet the sugar mill's energy demand without surplus electricity generation and the rice husk would be left to decay naturally. The "reference plant" would have utilised the same amount of bagasse and would have generated the same amount of heat as the project power plant. However, the "reference plant" would have only generated electricity for internal use. As a simplification, it is thus assumed that the electricity that is supplied to the grid by the project power plant is in addition to the amount of electricity generated by the "reference plant".

In accordance with ACM0006, an electricity baseline emission factor is calculated in accordance with ACM0002 as a combined margin emission coefficient, consisting of the combination of a simple adjusted operating margin (OM) emission coefficient and a build margin (BM) emission coefficient (see section 3.6). Both, the OM and BM emission coefficient will be fixed for the entire crediting period and is determined ex-ante. The electricity system selected to determine the combined margin emission coefficient is the northern regional grid in India. The weighted average of the "operating margin" and the "build margin" emission coefficient for northern regional grid of India has been estimated to be 0.914 kg tCO_2/MWh. The "operating margin" emission factor has been estimated based on the "simple OM" approach as the low cost / must run plants constitute less than 50% of the generation of southern regional grid. For OM calculation the vintage data for the years 2002~2003, 2003~2004 and 2004~2005 has been used and operating margin emission factor is evaluated to be 1.133 t CO_2/ MWh, based on the

generation weighted average. For the build margin, the 20% most recently installed plants have been accounted for, in terms of electricity generation. The build margin emission factor has been evaluated to be 0.695 t CO_2/MWh. The completeness of the set of power plants as well as the correctness of the reported fuel consumption and electricity generation data has been verified. All data has been sourced from data published by the central electricity authority (CEA).
In order to determine baseline emissions, the net quantity of increased electricity generation as a result of the project activity (incremental to baseline generation i.e. EG_y for scenario 4 of ACM0006) and the baseline grid emission factor of 0.914 tCO_2/MWh (for northern regional grid), determined ex-ante, has been applied.

3.4 Additionality

Additionality has been addressed through the use of "The tool for the demonstration and assessment of additionality", Version 02, dated 28 Nov 2005 /8/:

Step 0: Not applicable as the project's crediting period will not start prior to the registration of the project activity.

Step 1: Two alternatives emerge after eliminating all other identified alternatives (as considered for determining the baseline):

[1] Installation of a lower efficiency plant

[2] Proposed project not undertaken as a CDM project.

The alternatives identified are in compliance with all prevailing laws and there is no legal compulsion or mandatory requirement for the implementation of the project.

Step 2: This step has not been considered.

Step 3: The project demonstrates additionality through the existence of institutional and policy related barriers. DNV was able to verify that the project had to overcome the following barriers:

- Tariff uncertainty due to a short term PPA (4 years) as verified from the PPA provided to DNV /6/. Under the terms of the power purchase agreement (PPA) granted to the project activity there remains uncertainty in the tariff, the tariff may be reviewed post 2009 as there is no specified rate beyond the 2009-10 season. This provides considerable uncertainty to the project developer as to the future rates in force.
- Comparatively lower power sale tariff in the state of Uttar Pradesh as compared to many other states in India (e.g., Tamil Nadu, Maharashtra, etc.) as verified from the data sources provided in the PDD.
- Power generation is linked to the availability of bagasse and the fact that bagasse being an end product of the sugar factory is interdependent on the supply from the factory. The annual average operating days for sugar industries in central Uttar Pradesh is 129 days in a year as verified from the *Indian Sugar, August 2006.* This indicates that there is insufficient bagasse availability from the sugar plants in the region, otherwise these sugar plants would have run for more days. Other than bagasse, rice husk would be the most obvious choice. Rice husk will lead to high operation costs than using bagasse as transportation costs will be extra in case of rice husk In India, for bagasse and rice husk, the average biomass price is INR 1000/ ton and INR 1800/ ton, respectively and average calorific value is 2200 Kcal/Kg and 3500 Kcal/Kg, respectively. This leads to lower fuel cost for bagasse (454 Rs/Kcal)

than that for rice husk (514 Rs/Kcal)]. Thus bagasse would be the first priority to be used as a fuel for economic attractiveness.

- There is more than 10% downtime due to instability in the grid and consequent tripping of the grid. DNV was able to verify the frequent tripping nature of the grid from the downtime analysis data of Sidhauli substation as provided in Annex 5 of the PDD.
- Installation and operation risks exist as the project installs a high pressure single boiler of 86 Kg/Cm^2. Also, as the project proponents have no experience in the installation and operation so additional expenditure on training personnel to operate such high pressure co-generation plant would be required.

Step 4: Common practice: DNV confirms that high energy efficiency cogeneration projects are not a common practice in India. In Uttar Pradesh, there are 111 sugar factories, 16 of which export electricity to the grid (out of 16, 12 have capacities less than 12 MW and four are in process of pursuing CDM). Moreover, there are 517 sugar mills in India, 24 of which have bagasse cogeneration capacities greater than 15 MW and that represents only 4.65% of penetration of the potential in terms of the number of sugar mills employing such systems. Thus from the proposed project activity with a capacity of 27 MW, it is clear that the project is not a common practice in Uttar Pradesh.

Step 5: The approval and registration of the project as a CDM activity will cover for uncertainties, most notably the PPA risk and fuel supply risk, in addition to encourage the adoption of cleaner technologies. In conclusion, it is deemed likely that the project activity would not have been implemented in the absence of the CDM.

3.5 Monitoring Plan

The project applies approved consolidated monitoring methodology ACM0006, version 4 – *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /7/. The project also applies ACM0002 (“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”) for calculation of northern grid emission factor.

The proposed monitoring methodology adopted is applicable and justified as the project activity is a green field co-generation project using bagasse (biomass residue) as a main fuel and is grid connected. The monitoring plan adequately addresses all the necessary parameters required for the estimation of emission reductions and all such critical data are either measured or calculated and archived for a period of two years after the crediting period. Emission factor for the northern grid is calculated ex-ante using the combined margin approach as referred in ACM0002

The monitoring plan indicates the electricity generated will be continuously monitored and measured through DCS system and hourly readings are manually recorded in logbooks for both total generations and auxiliary consumption. These records are then collated at the end of every shift and at the end of the day and verified and countersigned. Based on these verified reports monthly emission reduction reports are generated.

No fossil fuels will be used in the project activity. Quantity of biomass (bagasse) supplied from adjacent sugar plant will be measured through a belt weigher and the quantity of biomass (rice husk) brought into the plant will be measured by duly calibrated weighbridges and crosschecked with transporters receipts. The thermal efficiency of boiler will be monitored by an independent

third party. The reconciliation of energy used and biomass consumed will be carried out through material and energy balance at the end of each year.

The monitoring plan provides for monitoring leakages caused by transportation of biomass. The parameters associated with leakage determination have been verified with data from the transporters.

Calibration and maintenance of process instrumentation including electricity meters are also in line with the approved monitoring methodology and are governed by established procedures of organisation.

Detailed responsibilities and authorities for project management, monitoring procedures, calibration procedures and QA/QC procedures have been presented and were verified during follow up interviews. The monitoring practices are considered appropriate.

3.6 Calculation of GHG Emissions

The calculation of the GHG emissions has been done as per ACM0006. All the aspects related to the direct and indirect GHG emissions have been addressed and the calculations are presented in a transparent manner.

In order to determine baseline emissions, the net quantity of increased electricity generation as a result of the project activity (incremental to baseline generation i.e. EG_y both for scenario 3 and 4 of ACM0006) and the baseline grid emission factor of 0.914 tCO_2/MWh (for northern region grid), determined ex-ante, has been applied. The baseline grid emission factor of 0.914 tCO_2//MWh will remain fixed for the entire crediting period of the project. The baseline emissions arising from the natural decay of biomass are not claimed and therefore contributes to conservative emission reductions estimates.

As indicated in section 3.3 only one alternative, the installation of a low pressure boiler and power plant, has been identified.. As per the methodology, the baseline scenario has been established considering each type of biomass residue separately, i.e bagasse and rice husk separately, as is the case with the project activity. Moreover, ACM0006, version 04 directs to use the baseline scenario that results in the lowest baseline emissions, if more that one scenario applies on the project activity. It has been determined and verified that the baseline emissions are the most conservative in scenario 4 compared to scenario 3. Similarly, while the project emissions are same in both the scenarios 3 & 4, the leakage emission estimations are higher in the case of scenario 3 than scenario 4. Thus the combined scenario (3 & 4) used by the project activity follows the scenario 4 for baseline estimations and scenario 3 for leakage estimations, thereby leading to the most conservative emission reduction estimation.

As confirmed earlier, fossil fuels will not be used and there is no transportation of bagasse either (as the bagasse is supplied by the adjacent sugar mill or transported by conveyors to the site). The project emissions are hence only due to rice husk transportation. This leakage has been estimated at 10 393 tCO_2/ year (for calculation purposes only) based on the assumption that only 30 % of biomass gives rise to leakage which is considered reasonable by DNV in absence of detailed data on biomass surplus in the region. However, Dalmia Cement (Bharat) Ltd will be monitoring and addressing the leakage, as per the guidance in ACM0006, ex-post during the first verification of the project through drawing on studies or conducting its own survey.

The project is expected to result in reduction of 73 914 of t CO_2 per year during the chosen fixed ten years crediting period. DNV has verified all the factors and calculations and confirm the reasonableness of the forecasted emission reductions.

3.7 Environmental Impacts

The environmental regulations do not warrant an environment impact assessment (EIA) as the project does not fall under the purview of the Environmental Impact Assessment (EIA) notification of the Ministry of Environment and Forest, Government of India.
No adverse environmental impacts are foreseen. The summary of findings has been addressed in the project design document.

The applicable and valid permits and consents as dictated by the Indian environmental regulations are verified to be in place /10/.

3.8 Comments by Local Stakeholders

While a formal stakeholder process is not required for this type of project under Indian environmental regulations, Dalmia Cement (Bharat) Ltd has identified the elected body of representatives administering the local area, Ministry of Environment & Forest (MoEF), Government of India, UPPCB and UPPCL as the key stakeholders. The project participant invited comments for local stakeholder consultation process through publications in local newspapers and through invitation letters. Meetings and direct consultation with the stakeholders did not reveal any negative comments and the same stands verified by DNV.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD (version 02) of 31 July 2006 was made publicly available on DNV's climate change website
(http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId=657)
and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 4 August 2006 to 02 September 2006. No comments were received.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Dalmia Sugars Limited Nigohi Project" in India. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The host country is India and Annex I country is U.K. Both India and U.K. fulfil the participation criteria, approved the project and authorized the project participants. The DNA of India confirms that the project assists in achieving sustainable development.

The project correctly applies ACM0006 (version 04) "Consolidated baseline (and monitoring) methodology for grid-connected electricity generation from biomass residues."

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The installation and the implementation of a new high efficiency biomass fired power plant, supplying power and steam to the adjacent new sugar plant with excess power to the grid (using both bagasse supplied by the new sugar plant and rice husk from outside sources), displaces fossil fuel based grid power. Hence the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is 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 total emission reductions from the project are estimated to be on the average 73 914 tCO_2e per year over the selected 10 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the state amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the "Dalmia Sugars Limited Nigohi Project" in India, as described in the PDD, version 03 of 05 January 2007, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0006 (version 04). DNV thus requests the registration of the "Dalmia Sugars Limited Nigohi Project" as a CDM project activity.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Dalmia Cement (Bharat) Ltd : CDM PDD for the *"Dalmia Sugars Limited Nigohi Project"* in India. Version 01 (of 12 April 2006), 02 (of 31 July 2006) and 03 (of 15 January 2007).

/2/ Dalmia Cement (Bharat) Ltd : *Spreadsheets documenting the OM and BM emission coefficient calculations (Northern Grid 2, Dalmia, DNV.xls).*

/3/ Dalmia Cement (Bharat) Ltd.: *Spreadsheets documenting the emission reduction calculations (Project information - Jawa and Nigohi DNV v3.xls)*

/4/ Ministry of Environment and Forests (DNA of India): *Letter of Host Country Approval* F.No. 4/16/2006-CCC dated 3 January 2007.

/5/ The Department for Environment, Food and Rural Affairs (DNV of U.K.): *Letter of Annex I country Approval: DNA Ref: AL/30/2007issued on 18 January 2007.*

/6/ Dalmia Cement (Bharat) Ltd.: *Documents having copy of Power Purchase Agreement (PPA) dated 17th December 2005.*

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/7/ CDM Executive Board: ACM0006 - Consolidated baseline (and monitoring) methodology for grid-connected electricity generation from biomass residues (Version 04 / EB27).

/8/ CDM Executive Board: *Tool for the demonstration and assessment of additionality.* Version 02 of 28 November 2005.

/9/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. http://www.vvmanual.info

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/10/ "*No Objection Certificate*" from environmental angle from Uttar Pradesh Pollution Control Board (UPPCB) No. F52448/C-5/NoC-95/2005/5 dated 18-11-2005.

/11/ Mr. Pankaj Rastogi, (Dalmia Cement (Bharat) Ltd)

/12/ Mr. Robert Taylor (Agrinergy Ltd.).

/13/ Mr. Santosh Singh (Agrinergy Ltd.).

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	~~**CAR 1**~~ **OK**	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	~~**CAR 1**~~ **OK**	A letter of Approval from the Indian DNA and UK DNA is awaited.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK	No public funding involved in the project
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	India: The National Clean Development Mechanism (CDM) Authority

Requirement	Reference	Conclusion	Cross Reference / Comment
			Ministry of Environment and Forests. UK: Department for Environment, Food and Rural Affairs
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	India has ratified the Kyoto protocol on 26 August 2002 UK has ratified the Kyoto protocol on 31 May 2002
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	The assigned amounts of the United Kingdom have been calculated. The United Kingdoms assigned amount is 92% of the emissions in 1990.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	OK	UK has in place a national registry and annually reports its GHG inventory to the UNFCCC.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and	CDM Modalities and Procedures §40	OK	Parties, stakeholders and NGOs were invited to provide comments through the CDM website during a

Requirement	Reference	Conclusion	Cross Reference / Comment
comments have been made publicly available			30 days period from 04 August 2006 to 02 September 2006. No comments were received
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	PDD is accordance with the latest version 03 of the CDM-PDD.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR, I	Yes. The project is located in Areli village, Tehsil Tilhar, Shahjahanpur district, Uttar Pradesh, India		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR, I	The project boundary includes the equipment installed for the operation of the new power plant, the main elements of which are the boiler, turbine generator, condenser, water treatment plant, effluent treatment plant, electrostatic precipitator, step up plant/transformers, transmission lines and the northern regional grid.		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR/I	Yes. The project activity is to install a power plant with high pressure/temperature boiler configuration using bagasse as a main fuel. The project comprises of boiler having outlet		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			parameters as 86kg/cm^2 and 515° C with 27MW capacity turbine generator set of double extraction cum condensing type turbine. Hence the project design engineering reflects current good practices		
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	Yes, the project turbines are supplied by Shin Nippon of Japan and the generators from China. Thus the project reflects a technology transfer to the host country.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The project is unlikely to be substituted by other more efficient technologies, at least within the crediting period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	Yes. Since, the project proponents have no previous experience in installation, maintenance and operation of high pressure boilers as power generation is not their core activity. The training requirements have been addressed in the PDD.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Same as in A.2.4.		OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR/I	The project is a voluntary initiative. There are no mandatory or regulatory requirements related to power capacity building in sugar production sectors in India. The project has obtained "No Objection Certificate" from Uttar Pradesh Pollution Control Board (UPPCB) No. F52448/C-		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			5/NoC-95/2005/5 dated 18-11-2005.		
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR/I	Clarification of the status of approval by the DNA of India and letter of participation is required.	~~CAR 1~~	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR/I	Clarification of the status of approval by the DNA of India and letter of participation is required.	~~CAR 1~~	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Yes, the project will create other benefits such as creating new employment opportunities and contributing to reduced energy requirements to the country.		OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	Yes, the project applies the approved consolidated baseline methodology ACM0006 for "grid connected electricity generation form biomass residues" and ACM0002 for "grid connected electricity generation form renewable source"		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The baseline methodology ACM0006 and ACM0002 is applicable to biomass residues-fired power generation project activities supplying electricity to grid where:		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			• Power generated in existing or new grid connected power plants. • The power/heat generation in an existing power plant, fired with the same type of biomass as in the project activity, with lower efficiency or efficiency that is common practice in the relevant industry sector. • The generation of heat in boilers using the same type of biomass residues. • The biomass is used for heat and/or electricity generation at the project site. • The power generation capacity of the biomass power plant is of more than 15 MW. • The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available. • The biomass is dumped or left to decay or burned in and uncontrolled manner without utilising it for energy purpose. The project activity meets all of the above criteria. Therefore, the methodology is applicable the project activity.		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	Yes, the discussion and application of the chosen baseline is transparent. The scenario 03 and 04 of ACM0006 is the most plausible baseline scenario chosen among alternatives: • Power generated in existing or new grid connected power plants.(P4) • The power/heat generation in an existing power plant, fired with the same type of biomass as in the project activity, with lower efficiency or efficiency that is common practice in the relevant industry sector. (P2 and H2) • The generation of heat in boilers using the same type of biomass residues.(H4) • The biomass is used for heat and/or electricity generation at the project site.(B4) • The biomass is dumped or left to decay mainly in aerobic conditions without utilising it for energy purpose (B1) For baseline calculations of the emission factor of the northern region grid, the		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			following as below has been considered: • For calculation of OM factor, simple OM has been chosen as in northern region generation mix, low-cost/must run resources constitute less than 50% of total grid generation in average of the five most recent years. Simple OM factor is calculated using a 3-year generation weighted average (from years 2002-2005), based on the most recent statistics available • BM factor is calculated ex ante based on the most recent information available on plants already built for samples group. Based on the guidelines for selection of sample group, it consists of the power plants capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. • The combined margin is the average of operating margin and the built margin and is fixed for the entire crediting period and to be determined ex-ante. The baseline considers emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment, regulatory and common prevailing practices.		
B.2.2. Has the baseline been determined using	/1/	DR	Same as in E.3.3	~~CAR 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
conservative assumptions where possible?					
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Same as B.2.1		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes, the baseline takes into account most recent information available on plants already built for sample group of northern grid region for calculating build margin and 3 years average based on the most recent statistics available for operating margin calculation.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Same as in E.3.3	~~**CAR 2**~~	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	In the absence of the project activity, the existing energy load would have been taken-up by grid mix with thermal power plants and emission of CO_2 would have been occurred due to combustion of conventional fuels like coal.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR/I	Yes, it has been demonstrated through the use of the latest additionality tool that the project itself is not a likely baseline scenario. **STEP 0**: As the starting date of the crediting period is after the expected date of registration of the project, this step is not applicable. **STEP 1a:** Two alternatives emerge after eliminating other identified alternatives: [1] Installation of a lower efficiency plant [2] Proposed project not undertaken as a CDM project. This is explained by the fact that the project	~~**CL 3**~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			employs high pressure boilers which are not common practise in the sector and typically in the case of new plants lower pressure systems coupled with pressure reducing stations would be chosen. Other option discussed is on investment in steam and electricity generation capacity. As these are likely fossil fuel based systems and being a sugar company Dalmia Cement (Bharat) Ltd have not considered investing in a power company. **STEP 1b:** Both the above listed alternatives comply with all existing statutory rules and regulations. **STEP 2:** Not selected. **STEP 3:** It has been demonstrated through the barrier analysis that until 2004 no similar projects were implemented in UP due to the institutional framework. However the Electricity Act 2003 has changed the scenario but still some of the more free market elements envisaged in the legislation have not been implemented or they are not applicable to this project activity. And the risks still remain even after the enforcement of Electricity Act 2003. The uncertainty in the tariff structure and the tariff review post 2009 has also been placed as barrier to the project consideration. The MNES advised tariff and escalation which mounts to INR 3.60/kWh have been compared with the current tariff of INR 2.86/kWh envisaging the non-viability of the		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			project without the additional CDM revenue. Installation and operation risks exist as the project installs a high pressure single boiler of 86 Kg/Cm2. Also, as the project proponents have no experience in the installation and operation so additional expenditure on training personnel to operate such high pressure co-generation plant would be required. The other barrier of availability of bagasse (particularly for new sugar plant) has been laid with the fact that the bagasse is an end product of sugar factory and is interdependent on the supply from the factory. Installation and operation risks exist as the project installs a high pressure single boiler of 86 kg/cm2. Also, as the project proponents have no experience in the installation and operation so additional expenditure on training personnel to operate such high pressure co-generation plant would be required. However, a copy of the PPA shall be provided for verification. The quantitative evidence for low availability of bagasse, which can be a risk to the project, may be provided. The tariff order reference is not clear and the source of information on 5% downtime		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			due to tripping of the grid needs to be provided. **STEP 4** : Common practice analysis: It is argued that high energy efficiency cogeneration projects are not a common practice in India. In Uttar Pradesh, there are 111 sugar factories, 16 of which export electricity to the grid (out of 16, 12 have capacities less than 12 MW and four are in process of pursuing CDM). Moreover, there are 517 sugar mills in India, 24 of which have bagasse cogeneration capacities greater than 15 MW and that represents only 4.65 % penetration. With the project capacity of 27 MW, it is clear that the project is not a common practice in Uttar Pradesh and the same stands verified by DNV. **STEP 5:** The prospects of obtaining CDM registration and of allotment of CERs provide relief from the economic and sectoral scenario described.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	No major risks are foreseen.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes		OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR/I	The starting date of the project is 14 December 2005 and an operational life time		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			of 20 years is forecast, which is reasonable and is verified by DNV.		
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	Yes. A fixed crediting period of ten years starting from 05 March 2007 or the date of registration (which ever is later) has been opted for.		OK
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/	DR	The monitoring methodology is as per the approved methodology ACM0006 version 04 and ACM0002 version 06		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	This monitoring methodology is applicable to project activities displacing electricity to the grid that use the consolidated baseline methodology for grid connected electricity generation from biomass residue. This applicability requirement is met. Monitoring indicators like biomass quantity, net calorific value of biomass, project emission due to transport of biomass, leakage from rice husk usage are		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			considered.		
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	The monitoring methodology indicates the electricity generated will be continuously monitored and measured through DCS system and hourly readings are manually recorded in logbooks for both total generations and auxiliary consumption. These records are then collated at the end of every shift and at the end of the day and verified and countersigned. Based on these verified reports monthly emission reduction reports are generated. Monitoring methodology ACM0006 (version 04), requires the monitoring plan to address the following as below, however PDD does not clearly address/ justify it and requires a clarification: Page 48 of ACM006 indicates: Project participants should establish a system to monitor the amount of all types of biomass combusted. The quantity of biomass combusted (for both bagasse and rice husk) in the project plant has to be measured and not calculated and a system should be existing for it. If the amount of biomass combusted is estimated from the amount of biomass delivered to the project site, a procedure should be established to undertake the energy balance for the verification period, considering the stocks of biomass at the beginning and end of each verification period. Where possible, project participants should cross-check these	~~CL 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			estimations with fuel purchase receipts.		
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Same as D.1.2		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	All relevant data necessary for the estimation or measuring the GHG emissions onsite and offsite of the project boundary have been included in the monitoring plan.		OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	Yes.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Yes. It will be possible to monitor the specified project GHG indicators.		OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Clarification is required on the following: ▪ The periodicity of the reporting of calorific value needs to be mentioned. Responsibility of carrying out the energy balance needs to be clarified. QA & QC procedure for carrying out the energy balance and the quantity of biomass needs to be elaborated. Calibration procedure for sucrose and moisture determination apparatus needs to be specified. Archiving and preservation of records as specified by the methodology needs to be put in place ▪ Moreover, fly ash transportation is not	~~CL 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			included in the project boundary on justification that ash content of bagasse is of the order of 3-4% whilst Indian coal typically has an ash content of greater than 35%. Clarification is required on the source of data used.		
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes		OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	It is required to be demonstrated that the use of rice husk as a fuel does not result in increased fossil fuel consumption elsewhere. Leakage due to diversion of rice husk from other industries, using it for power or steam generation, to the project activity(Ly) has been assumed zero with out any reasons which is not conservative and has to be included in the project emissions. So, the project may need to apply leakage penalty as per ACM0006 for scenario 3. Thus, it remains to be demonstrated that the emission reductions estimated due to this project activity are conservatively estimated at 99 457 TCO2 / year.	~~CAR 3~~	OK
D.3.2. Are the choices of leakage indicators reasonable?	/1/	DR	As in D.3.1	~~CAR 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.3.3. Will it be possible to monitor / measure the specified leakage indicators?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
D.3.4. Will the indicators give opportunity for real measurements of leakage effects?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes, data regarding net energy efficiency of electricity generation within the selected electricity system boundary are obtained through publications made by Grid, CEA and IPCC standard factors are used for emission factors accounting in the calculations.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	Yes		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1/	DR	IPCC, CEA data are used		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The DNA of India and ACM0006 does not require the collection and archiving of sustainable development indicators		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/	DR	NA		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/	DR	NA		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR/I	The sustainable development monitoring will be confirmed with the DNA approval letter.	~~**CAR 1**~~	OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	Same as in A.2.4.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR/I	Emergency situation that can result into unintended emissions are only related to fire. Emergency procedures for this contingency has been addressed in the PDD. The procedures for training, calibration of monitoring equipments, maintenance of these equipments, record handling, internal audit, performance review, implementing corrective actions management are		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			described in the PDD.		
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	All the monitoring equipments are calibrated yearly once		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Same as in D.6.4.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	Yes. The shift in-charge and the plant manger are responsible for the project management.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Same as in D.6.4.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	Same as in D.6.4.		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Same as in D.6.4.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Project GHG Emissions *The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	Same as in D.2.4.	~~CL 1~~	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes.		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	IPCC default values are used for calculating CO_2 emission factor for fuel		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	Uncertainties related to transport distance is considered as low		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes, mainly CO_2		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed and estimated ex-ante.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	As in D.3.1	~~CAR 3~~	OK
E.3. Baseline Emissions *The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR	CO_2 is considered as the only GHG emission for the biomass combustion which is the project activity.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	Same as in D.2.4.	~~CL 1~~	OK
E.3.3. Are the GHG calculations documented in a	/1/	DR	CEA values of emission factors for all the	~~CAR 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
complete and transparent manner?			regional grids of India are available (Ref.: http://www.cea.nic.in/). However, the values of emission factors of the Northern region grid calculated in the PDD by Dalmia Cement (Bharat) Ltd are on the higher side than the CEA values. So, clarification is requested for not using conservative CEA values for the emission factors of the Northern Region Grid. In addition to the above, calculations of emission reduction will be complete, correct and transparent if the following (below) are demonstrated with evidence and source of data: a) In the calculations, IPCC values have been used for the calorific values and the calorific value used for coal in the calculations is 19.9 TJ/KT. However CEA/ India's National Communication data provides calorific value for the different fossil fuels. These values should be used in the calculations since these values are applicable to the Indian scenario and these are also conservative values. Similarly, the CEA/ India's National Communication data values for the Gas and diesel should be used and not the IPCC value. b) In some cases, for the unit wise power		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			generation calculations for the BM, the installed capacity data used in the calculation is differing from CEA data. One particular case is for Panipat thermal power plant where the installed capacity is 1360 but 860 are used in the calculations. DNV suggests project proponents to through the different figures used in the BM calculations confirm parity with CEA data. c) The data for calculation of the emission factors (as per combined margin of ACM0002) of the Northern Regional Grid provided in the PDD and Excel sheets submitted are not matching with that of the official sources. E.g., o Generation data (in GWh) for Nuclear is indicated as 36,105 for year 2004-5 (Annex 3 of PDD/ Page 24) is not matching with the CEA data (should have been 7337.97 GWh). o Generation data (in GWh) for Hydro is indicated as 7,338 for year 2004-5 (Annex 3 of PDD/ Page 24) is not matching with the CEA data (should have been 36,104.88 GWh). In addition to the above, the emission reduction calculations need more		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			clarifications on the assumptions used as: ▪ Bagasse = 29.5% of cane. ▪ Assumptions that bagasse has 50% moisture content.		
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	Same as in E.3.4.	~~CAR 2~~	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	Same as in E.3.4.	~~CAR 2~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Same as in E.3.4.	~~CAR 2~~	OK
E.4. Emission Reductions *Validation of ex-ante estimated emission reductions*.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	As in D.3.1	~~CAR 2~~	OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/		Yes.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	EIA is not required.		OK
F.1.3. Will the project create any adverse	/1/	DR	As in F.1.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
environmental effects?					
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	As in F.1.1		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	As in F.1.1		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	As in A.3.1.		OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR/I	Yes, the relevant stakeholders had been consulted which include: ▪ Local stakeholders ▪ MoEF, UPPCB, ▪ Madhyanchal Vidyut Vitram Nigam Limited (PPA)		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR/I	Invitation to local stakeholders had been given through notice in local newspapers in local language and stands verified by DNV including the evidences of communication/ information to: ▪ UPPCB, ▪ Madhyanchal Vidyut Vitram Nigam Limited (PPA)		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried	/1/	DR/I	Since, the project activity is not required to have EIA, the stake holder's consultation process is not required as per host country		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
out in accordance with such regulations/laws?			legislations / laws.		
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR/I	No adverse comments have been received from local stakeholders.		OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	As in G.1.4		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1: Clarification of the status of approval by the DNA of India and UK and letter of participation is required to be provided to DNV.	A.3.2, A.3.3, D.5.4	The approval from DNA of India (F.No. 4/16/2006-CCC dated 3 January 2007) and approval from the DNA of U.K. (DNA Ref: AL/30/2007issued on 18 January 2007) has been obtained and submitted to DNV.	OK. This has been provided. The CAR is therefore closed.
CAR 2: CEA values of emission factors for all the regional grids of India are available (Ref.: http://www.cea.nic.in/). However, the values of emission factors of the Northern region grid calculated in the PDD by Dalmia Cement (Bharat) Ltd are on the higher side than the CEA values. So, clarification is requested for not using conservative CEA values for the emission factors of the northern regional grid. In addition to the above, calculations of emission reduction will be complete, correct and transparent if the following (below) are demonstrated with evidence and source of data: d) In the calculations, IPCC values have been used for the calorific values and the calorific value used for coal in the calculations is 19.9 TJ/KT. However CEA/ India's National Communication data provides calorific value for the	**B**.2.2, B.2.5, E.3.3-6	The CEA has issued CEFs for Indian grids but we had earlier provided comments to the CEA mainly along the lines of increasing the transparency of data. The main reason we do not follow CEA data is this lack of transparency and some concerns over the supporting data. The main discrepancies we have found are listed below but we believe there is inconsistency between this and other data on the CEA website (i.e. generation data), more generally it is very difficult to follow their workings and assumptions. The CEA calculation refers to a GCV and emission factor for coal taken from India's national communication (page 10 of their notes) and sets these at 3755 kCal/kg and 92.6 gCO2/MJ respectively. India's national	OK. DNV is able to conclude that the response provided by Dalmia Cement (Bharat) Ltd should be acceptable due to the following: ▪ There is no detailed calculation or data, for calculation of emission factor of northern regional grid, available on CEA website as on date (though it is a final report published on November 2006). As such it cannot be validated. ▪ Accepted that NCV data used by Dalmia Cement (Bharat) Ltd, based on NATCOM data, is as well a reliable and an official Indian source of data. As such till the time, CEA comes with the detailed calculation excel sheets, for calculation of emission factor of northern region grid, Dalmia Cement

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
different fossil fuels. These values should be used in the calculations since these values are applicable to the Indian scenario and these are also conservative values. Similarly, the CEA/ India's National Communication data values for the gas and diesel should be used and not the IPCC value. e) In some cases, for the unit wise power generation calculations for the BM, the installed capacity data used in the calculation is differing from CEA data. One particular case is for Panipat thermal power plant where the installed capacity is 1360 but 860 is used in the calculations. DNV suggests project proponents to through the different figures used in the BM calculations confirm parity with CEA data. f) The data for calculation of the emission factors (as per combined margin of ACM0002) of the northern regional grid provided in the PDD and Excel sheets submitted are not matching with that of the official sources. E.g., o Generation data (in GWh) for nuclear is indicated as 36,105 for year 2004-5 (Annex 3 of PDD/ page 24) is not matching with the CEA data (should have been 7337.97 GWh).		communication, on page 37, outlines a NCV and CEF for non coking coal of 19.63 +/- 0.4 TJ/kt and 26.13 tCO2/TJ (this should probably be 26.13 tC/TJ) respectively. These national communication numbers convert to 4688 kCal/kg and 95.81 gCO2/MJ (assuming the national communication figure is tC/TJ and not tCO2/TJ). These differences have come to light as we have tried to replicate the CEA numbers, however we have not been able to achieve this given the lack of data on the site or references to exact sources in their supporting notes. In summary we do not believe that the CEFs issued by the CEA constitute a source that may be validated. As a developer of CDM projects it is not possible with the data on the CEA site to follow the calculations and hence say with certainty that the final figures are correct. The data we have used is listed from similar sources but with exact references (NCV/EF) and in terms of generation and fuel consumption data we have used published CEA data. Therefore we believe that until the CEA provides a ready set of verifiable data with clear and concise references project developers will have to calculate the	(Bharat) Ltd can use their independent calculation based on ACM0002 for calculations of the carbon emission factors of the grid. OK. The PDD uses the official and conservative value of the NCV for calculations of emission factors of the northern region grid. Moreover, all the data used are sourced including the inter-regional data and the installed capacities for calculation of the built margin. OK. The evidence (Handbook of Sugar cane Engineering by Hugot) provided to DNV indicates that bagasse is equal to 30% of cane on average. OK. The evidence (morning / comparative data sheet for Ramgarh China Mills) provided to DNV indicates moisture content to be in the range of 48-50% on average. The aforementioned clarifications and evidences sufficiently address DNV's request for corrective action. CAR is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
o Generation data (in GWh) for hydro is indicated as 7,338 for year 2004-5 (Annex 3 of PDD/ Page 24) is not matching with the CEA data (should have been 36,104.88 GWh). In addition to the above, the emission reduction calculations need more clarifications on the assumptions used as: ▪ Bagasse = 29.5% of cane. ▪ Assumptions that bagasse has 50% moisture content.		CEFs independently. a) The alternative to individual plant specific NCVs is some aggregate figure and we now replaced this with India's National Communication data which details the issue of coal NCVs. This report uses IPCC data throughout except in the case of coal, we therefore follow this figure which provides an NCV of 19.23 TJ/kt and is conservative as well. b) The installed capacities have been completely checked and BM accordingly corrected. The new data set has been attached. Thus the corrected emission factor stands at 0.914 TCO_2 / MWh. c) The values for Nuclear and Hydro are interchanged in the PDD by mistake. Generation data for Hydro will be 36,105GWh and for Nuclear it will be 7,338Gwh. The correct link is the following: http://www.cea.nic.in/god/opm/Monthly_Generation_Report/18col_05_03.pdf ▪ The bagasse equals 29.5% of cane is generally what is experienced but	

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		this is also supported by Handbook of Sugar cane Engineering by Hugot which states that bagasse is 24 to 30% by weight of cane(page 915). ▪ Evidence of 50% moisture is provided from the factory reports of Ramgarh.	
CAR 3: It is required to be demonstrated that the use of rice husk as a fuel does not result in increased fossil fuel consumption elsewhere. Leakage due to diversion of rice husk from other industries, using it for power or steam generation, to the project activity(L_y) has been assumed zero with out any reasons which is not conservative and has to be included in the project emissions. So, the project may need to apply leakage penalty as per ACM0006 for scenario 3. Thus, it remains to be demonstrated that the emission reductions estimated due to this project activity are conservatively estimated at 99 457 TCO2 / year.	D.3.1-4, E.2.1-6, E.4.1.	To date there is no updated and official report on biomass availability in India. We have had discussions with the Ministry of Non-conventional energy resources (MNES) who are releasing a report on biomass supply across India. This report is in the final stages of preparation but it has not yet been published. On the basis of our informal discussions with them and the expectation that the report will be published shortly by the Bangalore IISc (we are in discussions with them to obtain access to this information). The website address of IISc is http://cgpl.iisc.ernet.in/CGPLMainPage.htm and the study is also detailed on the MNES website, http://mnes.nic.in/annualreport/2004_2005_English/ch7_pg1.htm Further to this we are sending you an	OK. DNV confirms that the web links provided clearly demonstrate that the Government of India (in association with Indian Institute of Science, Bangalore and MNES) is in a process of making nation wide biomass atlas and the project is likely to be completed by March 2007.This will provide information on generation of different types of biomass materials in different parts of the country (India), indicating the pattern of use in the local economy, helping in estimating the surplus biomass materials available for energy applications. Dalmia Cement (Bharat) Ltd, is awaiting this report to be published (as the official data for surplus biomass is not available, so as to estimate leakage (required as per scenario 3 of ACM0006, version 4). DNV confirms that till the time the official data on biomass availability is

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		extract of a report by TERI (2 pages as attachment) addressing the issue of biomass availability in India. This report makes it clear that there is surplus biomass (including rice husk) available in India, which can be tapped just for power generation. With the figures in the report, it is clear that there is surplus of biomass available in India, which would go unutilised if it is not used. Therefore we have assumed that 30 % of biomass gives rise to leakage only for calculation purposes and we apply an annual leakage penalty of 10 393 tCO_2. However, Dalmia Cement (Bharat) Ltd will be monitoring and addressing the leakage, as per the guidance inACM0006, ex-post and incorporate this in the calculation (if any) of the emission reductions during the annual verification of the project through drawing on studies or conducting its own survey. The revised PDD reflects this stance. On account of application of leakage penalty of 10 393 TCO_2/ year and correction of emission factor of northern region grid to 0.914 TCO_2 / MWh, the emission reductions are now correctly estimated at 73 914 TCO_2/ year and incorporated in the PDD. The revised excel spread sheets are provided to DNV.	available, Dalmia can assume leakage (based on assumption that 30 % of biomass i.e. rice husk purchased gives rise to leakage) only for calculation purposes and they shall monitor and address the leakage ex-post each year (if any) and discount it from the emission reduction. However, the leakage as determined ex-post shall be checked by the DoE doing the first verification for this project. The revised PDD addresses the same. DNV is able to confirm that the emission reductions are correctly and conservatively estimated at 73 914 TCO_2/ year and the revised PDD reflects it correctly. CAR is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 1: Clarification is required on the following: ▪ The periodicity of the reporting of calorific value needs to be mentioned. Responsibility of carrying out the energy balance needs to be clarified. QA & QC procedure for carrying out the energy balance and the quantity of biomass needs to be elaborated. Calibration procedure for sucrose and moisture determination apparatus needs to be specified. Archiving and preservation of records as specified by the methodology needs to be put in place ▪ Moreover, fly ash transportation is not included in the project boundary on justification that ash content of bagasse is of the order of 3-4% whilst Indian coal typically has an ash content of greater than 35%. Clarification is required on the source of data used.	D.2.4, E.1.1, E.3.2.	▪ In line with the methodology the calorific value will be calculated yearly but the underlying data will be collected daily for bagasse. For other biomass the net calorific value will be determined annually and will be taken from local or national studies if on-site monitoring is not available. The energy balance will be performed as part of the annual appraisal of the project prior to verification and will be undertaken by Agrinergy. The quantity of biomass will be taken from the reports generated for the state sugar directorate – RT8C report – which is a statutory requirement for sugar plants. The bagasse sucrose and moisture content are measured through the use of a polarimeter and a weigher. To measure sucrose content a sample of bagasse is taken, diluted with water, filtered and then the optical rotation of the solution is measured against a standard. The device (a prism) is calibrated against standard optical rotations. The moisture is measured by weighing the sample before and after drying. The archiving and preservation of records will be in	OK. The periodicity of reporting calorific values, responsibility of carrying out energy balance, and calibration procedure for sugar and moisture determination are now addressed. The provided clarifications sufficiently address DNV's request for clarification and clarifies the same. The fly ash has been included in the project boundary and included in the PDD. The provided clarifications sufficiently address DNV's request for clarification and clarifies the same. CL is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		paper and electronic form and these will be held for a minimum of two years after the crediting period. ▪ Fly ash has now been included in the project boundary and its transportation has been discussed. The main point to note is that in the baseline scenario a far greater quantity of fly ash would be generated. The source for ash content of Indian coal is taken from the following website - http://www.coal.nic.in/ (follow the link – Coal related data ->Coal Grades	
CL 2: Monitoring methodology ACM0006 (version 04), requires the monitoring plan to address the following as below, however PDD does not clearly address/ justify it and requires a clarification: Page 48 of ACM006 indicates: Project participants should establish a system to monitor the amount of all types of biomass combusted. The quantity of biomass combusted (for both bagasse and rice husk) in the project plant has to be measured and not calculated and a system should be existing for it. If the amount of biomass combusted is estimated from the amount of biomass delivered to the project site, a procedure should be established to	D.1.3	▪ A belt weigher will be installed to measure the quantity of bagasse. Recordings from this meter will be taken daily as now mentioned in the PDD. The belt weigher measures the bagasse generated. The bagasse going into the boiler can be calculated from the quantity of bagasse in the storage yard and the quantity which is taken from the stock to the boilers. The rice husk in the storage yard is measured from the receipts of rice husk received from outside sources and existing stock of rice husk at the start of the year.	OK. The provided clarifications sufficiently address DNV's request for corrective action and clarifies the establishment of a system to monitor the amount of all types of biomass combusted by using belt weigher, biomass purchase receipts and biomass stock measurements. CL is closed

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
undertake the energy balance for the verification period, considering the stocks of biomass at the beginning and end of each verification period. Where possible, project participants should cross-check these estimations with fuel purchase receipts.			
CL 3: The following clarifications are sought with respect to additionality and application of the additionality tools (Tool for the demonstration and assessment of Additionality, version 2) as they appear in the PDD: ▪ It is argued that the project has risks due to uncertainty in the tariff as PPA has not specified the tariff beyond year 2009-10. However, a copy of the PPA shall be provided for verification. ▪ The other barrier of availability of bagasse has been laid with the fact that the bagasse is an end product of sugar factory and is interdependent on the supply from the factory. The quantitative evidence for low availability of bagasse, which can be a risk to the project, may be provided. ▪ The source of information on 5% downtime due to tripping of the grid may be provided.	B.2.7.	▪ The PPA will be provided to DNV. Furthermore the tariff in Uttar Pradesh (UP) is lower than that of other states –e.g., Tamil Nadu (TN) has a tariff of Rs 3.15/kWh(Source: Tamil Nadu Electricity Regulatory Commission, Page 29, http://tnerc.tn.nic.in/orders/nces%20order%20-approved%20order%20host%20copy.pdf) for bagasse cogeneration and Maharashtra (MH) has a tariff of Rs 3.24/kWh(Source: Maharashtra Electricity Regulatory Commission, Page 2, http://mercindia.org.in/pdf/Biomass%20Order-8.8.05.zip) with escalation of compounded 2%. ▪ The risk due to bagasse availability will be on the PLF of the power plant. The less days the sugar factory runs, the less is the bagasse generated and hence the shorter the period of power generation. The risk on bagasse is most readily	OK. DNV is able to verify that the project has more risks that plants of similar capacities and conditions due to the following: ▪ Tariff uncertainty due to short term PPA (4 years) as verified from the PPA provided to DNV. ▪ Comparatively lower power sale tariff in U.P. than many states in India as verified from the web-links provided. ▪ The annual average operating days for sugar industries in central U.P. is 129 days as verified from Annex 5 in the PDD. This indicates that there is no sufficient bagasse availability in the region. ▪ The sources such as that relating to the 10% downtime due to tripping have been verified by DNV from the downtime analysis data of Sidhauli substation as provided in Annex 5 of the PDD.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		demonstrated through the running days of the sugar plant, we have assumed running days of 160 days for the sugar plant but the average days of operation across central UP over the last 5 years has been 129 days (Source: Indian Sugar, Vol LVI, No five, August 2006 also attached to PDD in Annex 5). ▪ The tripping data has been taken from a survey in 2005 of the SIdhauli substation which highlights a tripping rate of 18%, we have therefore used a conservative factor of 10% and not 5% in the PDD (evidence attached to PDD in Annex 5).	DNV is able to conclude that the project demonstrates additionality and the project itself is not a likely baseline scenario. CL is closed

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APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Kumaraswamy Chandrashekara

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	Yes	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 4 & 5		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0021*	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	*AM0023*	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	*AM0024*	Yes
ACM0004	Yes	*AM0027*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0028, AM0034*	Yes
ACM0007	Yes	*AM0030*	Yes
ACM0008	Yes	*AM0031*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0032*	Yes
AM0006, AM0016, AMS-III.D	Yes	*AM0035*	Yes
AM0009, AM0037	Yes	*AM0038*	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	*AM0041*	Yes
AM0014	Yes	*AM0034*	Yes
AM0017	Yes	*AMS-II.A-F*	Yes
AM0018	Yes	*AMS-III.A*	Yes
AM0020	Yes	*AMS-III.E, AMS-III.F*	Yes

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	Yes
CDM Verifier:	Yes	***JI Verifier:***	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1,2,3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0021*	Yes
ACM0002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	*AM0023*	Yes
ACM0003, ACM0005, AM0033, AM0040	Yes	*AM0024*	Yes
ACM0004	Yes	*AM0027*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0028, AM0034*	Yes
ACM0007	Yes	*AM0030*	Yes
ACM0008	Yes	*AM0031*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0032*	Yes
AM0006, AM0016, AMS-III.D	Yes	*AM0035*	Yes
AM0009, AM0037	Yes	*AM0038*	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	*AM0041*	Yes
AM0014	Yes	*AM0034*	Yes
AM0017	Yes	*AMS-II.A-F*	Yes
AM0018	Yes	*AMS-III.A*	Yes
AM0020	Yes	*AMS-III.E, AMS-III.F*	Yes

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Praveen Nagaraje Urs

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	--	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

Amit Thusu

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	--	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director