VALIDATION REPORT

BHL PALIA KALAN PROJECT IN INDIA

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DET NORSKE VERITAS

VALIDATION REPORT

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Client: Bajaj Hindusthan Limited	Client ref.: Dr. A.V. Singh

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Summary:

Det Norske Veritas Certification AS (DNV) has performed a validation of the "*BHL Palia Kalan 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 documents, 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 3 of 16 January 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006 version 4. Hence, DNV requests the registration of the "*BHL Palia Kalan Project*" as a CDM project activity.

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Report title: BHL Palia Kalan Project in India		
Work carried out by: Ma-Paa-Puratchikkanal, Amit Thusu, Michael Lehmann		
Work verified by: C Kumaraswamy		
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Abbreviations

BHL	Bajaj Hindusthan Limited
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
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
MNES	Ministry of Non-conventional Energy Sources
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
PLF	Plant Load Factor
PPA	Power Purchase Agreement
TCD	Tonnes of Canes Per Day
TPH	Tonnes Per hour
UP	Uttar Pradesh
UPPCB	Uttar Pradesh Pollution Control Board
UPPCL	Uttar Pradesh Power Corporation Limited
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Bajaj Hindustan Limited has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the "*BHL Palia Kalan Project*" in India (hereafter called "the project"). 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 Ma-Paa-Puratchikkanal	DNV, Bangalore	Team Leader, GHG auditor
Mr. Amit Thusu	DNV New Delhi, India	GHG auditor
Mr Michael Lehmann	DNV Oslo, Norway	Sector expert, CDM Validator
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 baseline and monitoring methodology ACM0006, version 4 /6/. The validation team has, based on the recommendations in the Validation and Verification Manual /5/ 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 "*BHL Palia Kalan Project*" proposed by Bajaj Hindustan Limited involves the installation of a new power plant adjacent to an existing power plant, at the premises of their sugar factory in Palia Kalan village, Lakhimpur Tehsil, Lakhimpur Kheri District, Uttar Pradesh, India.
Currently there are five boilers on site: Two are manufactured by Walchand Nagar Industries (capacity 70 TPH and operating at 45 kg/cm^2 and 450ºC), one by Thermax (80 TPH, operating at 45 kg/cm^2 and 450ºC) and two by Texmaco (25 TPH and 21 kg/cm^2; 50 TPH and 45 kg/cm^2). There are seven turbines generators of back-pressure type manufactured by Triveni of which five are 3 MW, one 2.5 MW and one 0.8 MW. In the baseline scenario, the existing set up of the

power plant meets the needs of the sugar factory and there is no grid connection on site either for the import or export of electricity.
The project activity involves the installation of a new 12 MW turbine of condensing cum extraction type adding to the on-site power generation.

The project will only use bagasse, a renewable biomass material, for generation of power and steam during the normal operations including the start ups, and no other fuel has been envisaged. Surplus electricity generated will be exported to the northern regional grid.

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 25 605 tonnes of CO_2 per year during ten years of chosen crediting period starting from 25 August 2007.

2 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design documents
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 /5/. 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 "*BHL Palia Kalan 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) are 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 Bajaj Hindustan Limited and additional background documents related to the project design and baseline /4/, /8/ and /9/ were reviewed as a part of validation.

2.2 Follow-up Interviews

On October 26, 2006, DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Bajaj Hindustan Limited and Agrinergy Ltd. were interviewed /12/ /13//14/. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
1. Bajaj Hindusthan Limited, India. 2. Agrinergy Limited	➢ Approval of Host country (India) and the United Kingdom ➢ Project's additionality and details of the barrier analysis. ➢ Verification of applicability of baseline and monitoring methodology. ➢ Data provided for calculation of emission factor of the grid. ➢ Procedures for training, calibration of monitoring equipments, maintenance of equipment, record handling, internal audit, performance review, implementing corrective actions, etc. ➢ Power purchase agreement (PPA). ➢ No Objection Certificate from UPPCB and legal & environmental compliance. ➢ Stakeholders consultation process and comments.

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 and requests for clarification raised by DNV presented to the project participants in DNV's draft validation report of 29 November 2006 (rev. 0) were resolved during communications between the BHL 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.

Since modifications to the project design were necessary to resolve DNV's concerns, the BHL decided to revise the PDD and resubmitted the PDD (version 3) on 16 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

The findings of the validation are stated in the following sections. 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.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation dated 16 January 2007.

3.1 Participation Requirements

The project activity is being proposed by Bajaj Hindusthan Limited of India and Agrienergy Ltd, of the United Kingdom. The host Party, India meets all the participation requirements and the DNA of India has approved the project with a letter of approval dated 27 December 2006 /2/. The DNA of India has provided confirmation that the project assists in achieving sustainable development. Approval from the Department for Environment, Food and Rural Affairs, the DNA of United Kingdom, has been received on 16 January 2007 /3/. The United Kingdom also meets all the participation requirements for the CDM.

3.2 Project Design

The "*BHL Palia Kalan Project*" proposed by BHL involves the installation of a new power plant with a 12 MW additional capacity, adjacent to an existing power plant. In the baseline scenario the existing power plant would continue to operate and provide electricity and steam to the adjacent sugar plant. As the existing power plant satisfied the demand of the sugar plant in terms of steam and electricity, the project activity only installs a new turbine generator with the main aim 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 132 kV sub-station, which is located approximately 5 km from the project site.

The technology used is available in India and no transfer of technology is envisaged. In the baseline scenario, the existing set up of the power plant meets the needs of the sugar factory and there is no grid connection at the site either for the import or export of electricity. The power capacity expansion project involves the installation of a 12 MW condensing cum extraction type turbine.

The expected operational lifetime of the project activity is 20 years and a fixed ten year crediting period has been chosen, with the start date of the first crediting period to be from 25 August 2007 or the date of registration. The start date of the project activity is 15 January 2006, the date on which construction started.

All biomass to be used by the new turbines will be sourced from the adjacent sugar factory

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, version 4 – *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /6/. The life time of the existing set-up is 15 years, which is 5 years more than the crediting period. The bagasse balance study for existing 11000 TCD capacity has revealed sufficient availability of raw material for the project activity with no increase in the processing capacity of the raw material /9/. Thus, the project fulfils the conditions under which ACM0006 is applicable. The project is in accordance with scenario 12 of ACM0006, i.e. the project activity is a power capacity expansion project and consists of the installation of a new 12 MW turbine for power generation which will be operated next to an existing power generation capacity. 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 generation of power in existing and/or new grid-connected power plants (P4);
For heat generation:	The generation of heat in boilers using the same type of biomass residues (H4);
For biomass use:	The biomass is used for heat and/or electricity generation at the project site (B4).

The selected baseline scenario is that the existing power plant would continue to operate and provide electricity and steam to the adjacent sugar plant. The biomass would continue to be combusted in the boilers at the site to generate this electricity and steam. The power plant in the baseline scenario would have utilised the same amount of bagasse and would have generated less amount of heat as compared to the project power plant. However, the power plant in the baseline scenario would have only generated electricity for internal use. In the baseline scenario the steam generated by boilers was routed through a pressure reducing station (PRDS) to utilize the steam at a lower pressure. Now with the project activity being set-up the availability of steam to run the new turbine is sufficient enough as the routing of steam through PRDS is being eliminated. As a simplification, it is thus assumed that the electricity that is supplied to the grid by the project power plant is additional to the amount of electricity generated by the power plant in the baseline scenario.

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 coefficients will be fixed for the entire crediting period and are 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 the OM calculation the vintage data for the years 2002~2003, 2003~2004 and 2004~2005 has been used and the operating margin emission factor is evaluated to be 1.13 tCO_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 tCO_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).

3.4 Additionality

Additionality has been addressed through the use of "The tool for the demonstration and assessment of additionality", Version 03, EB29 /8/:

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

[1] The continuation of the current situation as per selected baseline scenario 12.

[2] Other credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs and on services (e.g. electricity, heat or cement) with comparable quality, properties and application areas.

[3] The 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: Investment analysis:

Sub-step 2a: Determine appropriate analysis method

The project would obtain revenue from sale of power to the grid and also from sale of CERs. So, bench mark analysis have been chosen to demonstrate the additionality of the project activity

Sub-step 2a: Bench mark analysis

BHL have demonstrated the additionality by their expected IRR not reaching as against the WACC, which as been computed to be 19.2%. The WACC have been computed using the Capital Asset pricing Model (CAPM).

$$ROE = r_{rf} + \beta(r_m - r_{rf})$$

Where:

ROE is the return on equity

r_{rf} is the risk free interest rate

_ is the volatility of the individual stock relative to the market

r_m is the market return

Sub-step 2c: Calculation and comparison of financial indicators

The project IRR as been computed to be 17.51% without CDM revenue, which is well below the bench mark WACC of 19.2%.

DNV is able to confirm that the sensex data /13/ as been used by BHL from the data of Reserve of Bank of India and the data on 'β' as been arrived based on the Bloomberg information on financials.

Sub-step 2d: Sensitivity analysis

A sensitivity analysis has also been carried out by the proponents for a 1.5% increase and decrease in tariff after 5 years as per the uncertainty of the PPA and still confirms that the IRR is less than the benchmark (19.2%) for all conditions. In DNV's opinion the assessment of the IRR's, by the project proponent is justified based on the following facts:

- DNV was able to confirm the investment analysis /12/and the IRR's determined in this through the detailed spreadsheet calculations forwarded by the project proponent. The cash flow analysis has been presented for a period of 10 years.

- The analysis presented also considers all the applicable benefits for the co-generation projects
- DNV confirms that the all documents pertaining to the presented analysis have been verified, such as,
    - Turbine purchase orders
    - Equipment purchase costs
    - Civil works purchase orders
    - Erection costs
    - Power purchase agreements

In DNV's opinion, it is thus sufficiently demonstrated that the proposed project activity is not economically or financially attractive.

Step 3: Barrier analysis:

The policies and the institutional framework (electricity off-take agreement) related barriers of the government have been put-forth by the project proponents as a significant barrier in establishment of the project activity. To substantiate this, BHL has pointed out that no similar projects were established prior to 2004, and even after enacting of the electricity act in 2003 there is doubt on the implementation of various elements envisaged in the legislation.

BHL has also presented as a barrier the tariff rate settings, which are currently agreed upon until 2009. As the PPA and the tariff is to be revised after 2009, this will contribute to uncertainties on the long-term financial returns. The barriers are also demonstrated on the MNES set tariff price of INR 2.25 in 1994-95 with an escalation of 5%, which equates to INR 3.60/kWh for the current year. The UPPCL set tariff for the project for the first year is however INR 2.86/kWh, significantly below this tariff. This tariff has been demonstrated to be low compared to the neighbouring states Tamil Nadu and Maharasthra, where the tariff is Rs. 3.24/kWh and Rs. 3.14/kWh, respectively. DNV was able to confirm this tariff structure from verifying tariff orders of Maharasthra and Tamil Nadu.

Apart from the regulatory risk presented above, the project also demonstrates the counterparty risk involved in the project activity, i.e., selling the power to the state electricity board, which has been the major impediment to the private sector investment in the power sector. In this case, the actual counterparty is not the UPPCL, but a local distribution company established by UPPCL. This sale of power to this local distribution company, presently without any balance sheets, has been determined to be a risk as the UPPCL doesn't provide any guarantee on behalf of this local distribution company.

Another barrier addressed is the availability of bagasse itself, as the project is dependent on the functioning of the sugar plant. As the establishment of a large capacity power plant in a relatively new factory is demonstrated to be a real risk related to the throughput of cane, the first few years of the establishment of the sugar factory requires extension work to develop the cane area. Investments required in bagasse collection from external sources and increasing prices have also been argued as deterrents to the project activity. Any reduction in supply of bagasse is expected to affect the plant load factor and hence CER revenues are required to minimize these risks.

It has been demonstrated that at current prices the carbon credit revenue stream will provide INR 0.45/kWh. This equates to 16% of the total price paid for electricity generation and will thus aid the project in overcoming the barriers.

Step 4: Common practice:

DNV can confirm that high energy efficiency cogeneration projects are not a common practice in India. In Uttar Pradesh, there are 111 sugar factories, 16 of these export electricity to the grid. Out of these again, 12 are small and less than 15MW and the remaining 4 are proposed as CDM projects. This shows that the similar kind of projects is not a common practice in the state of Uttar Pradesh. Thus, investment in co-generation power projects cannot be said to represent common practice in the region.

3.5 Monitoring Plan

The project applies the approved consolidated monitoring methodology ACM0006, version 4 – *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /7/. The project also applies ACM0002 /10/ ("Consolidated baseline methodology for grid-connected electricity generation from renewable sources") for calculation of the northern grid emission factor.

The monitoring methodology indicates the electricity generated will be continuously monitored and measured through a Distributed Controlled System DCS system and hourly readings are manually recorded in logbooks for both the total generation and auxiliary consumption. These records are then collated at the end of every shift and at the end of the day, verified and countersigned. Based on these verified reports, monthly emission reduction reports are generated. 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) will be monitored. However, the fixed baseline grid emission factor of 0.914 tCO_2/MWh for the entire crediting period will be applied. EG_y corresponds to the lower value between (a) net quantity of increased electricity generation as a result of the project activity (incremental to the baseline generation) during the year and (b) the difference between the net quantity of electricity generated in all power units at the project site and net quantity of electricity generated during the most recent three years in all power plants at the project site, generated from firing the same types(s) of biomass as used in the project plant. The EGy is computed to be as 28823 MWh/year. All the monitoring parameters would be applied as required in the monitoring methodology.

No fossil fuels will be used in the project activity. 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 for scenario 12 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

tCO2/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 are deemed to be conservative. Moreover, DNV is able to verify that the efficiency of heat generation, i.e., the heat generated per quantity of biomass fired is more efficiently used in the project activity than in the baseline scenario. As the heat generated in the project activity is sufficient to meet the factory needs and no additional biomass is required to be burnt to generate extra heat, the emission reductions due to displacement of heat is considered as zero ($ER_{heat,y}$ =0).
The project emissions are zero as fossil fuel is not being used; there is no biomass transportation involved (as the bagasse is supplied by the adjacent sugar mill); there is no electrical consumption for preparation of biomass and emissions due to fly ash transportation are considered negligible and therefore not accounted. In the opinion of DNV, this is deemed reasonable.

Scenario 12 of ACM0006 does not call for determination of leakages.

DNV is able to verify that the expected average annual emission reductions has been determined conservatively and transparently at 25 605 tonnes of CO_2 equivalents (tCO_2e).

3.7 Environmental Impacts

The proposed project activity contributes to generation of renewable power and is expected to benefit the economic development of a backward region. Thus, the project activity is expected to have only beneficial impacts and no adverse impacts are foreseen. There is no legislative mandate for carrying out an environmental impact assessment study, as biomass power projects are exempted from such requirement. The project has obtained certificate the 'no objection certificate' /11/ from Uttar Pradesh Pollution Control Board. The project activity is in compliance with all current and applicable legislations.

3.8 Comments by Local Stakeholders

The Governmental organisations which are the stakeholders in the project activity have accorded their permission for establishment and operation of the project facility. A local stakeholders meeting was conducted with the local population and the UPPCB by invitation through publications in local newspapers. The project did not receive any adverse comments; however, concern was expressed on the availability of the power to the region. 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 of *1 September 2006* was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from *23 September 2006* to 22 October 2006.

No comments were received.

5 VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the "BHL Palia Kalan 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 project participants are Bajaj Hindusthan Limited of India and Agrinergy Limited of United Kingdom. Both India and the United Kingdom fulfil the participation criteria and 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 methodology for grid-connected electricity generation from biomass residues".

The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The new biomass based power plant displaces fossil fuel based grid power. The selected baseline scenario is reasonable and an analysis of the barriers facing the project demonstrates that project is not a likely baseline scenario.

The validation did not reveal any information indicating that the project can be seen as a diversion of ODA funding towards India.

The project results in the reduction of GHG emissions those are real, measurable and give long-term benefits and that are additional to what would have occurred in the absence of the project.

The total emission reductions from the project are estimated to be on the average 25,605 tCO_2e per year during the fixed ten year crediting period. The emission reduction forecast has been checked and is deemed likely that the state amount is achieved given that the underlying assumptions do not change.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed.

In summary, it is DNV's opinion that the "BHL Palia Kalan Project" in India, as described in the PDD of 16 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 4. DNV thus requests the registration of the BHL Palia Kalan Project in India as a CDM project activity.

REFERENCES

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

/1/ Bajaj Hindustan Limited, Agrinergy Ltd.: CDM PDD for the *"BHL Palia Kalan Project"* in India. Version 1 dated 1 September 2006 and final version 3 dated 16 January 2007).

/2/ Ministry of Environment and Forests (DNA of India): *Letter of Host Country Approval* dated 27 December 2006.

/3/ The Department for Environment, Food and Rural Affairs (DNV of U.K.): *Letter of Annex I country Approval: DNA dated 16 January 2007.*

/4/ Bajaj Hindusthan Limited.: *Power Purchase Agreements (PPA).*

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

/5/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/6/ CDM Executive Board: ACM0006, version 4 - Consolidated baseline (and monitoring) methodology for grid-connected electricity generation from biomass residues.

/7/ CDM Executive Board: *Tool for the demonstration and assessment of additionality.* Version 03 of EB29.

/8/ BHL, Agrinergy Ltd.: *Spreadsheets documenting the OM and BM emission coefficient calculations (Northern Grid.xls).*

/9/ BHL, Agrinergy Ltd.: *Spreadsheets documenting the emission reductions, assumptions and bagasse balance demonstration (Palia Calculations.xls).*

/10/ CDM Executive Board: ACM0006, version – 6 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources

/11/ UPPCB: No objection certificate dated 20 February 2006.

/12/ BHL, Purchase order copies for turbine, erection, cement, switchyard works and civil works.

/13/ Sensex data : http://www.rbi.org.in/home.aspx

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

/14/ Dr. A.V. Singh (BHL)

/15/ Mr. Robert Taylor (Agrinergy Ltd.).

/16/ 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	.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	The letter of approval from the DNA of India shall be submitted.
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 is involved in the project.
8. Parties participating in the CDM shall designate a national	CDM Modalities and	OK	The Indian DNA for CDM is the

Requirement	Reference	Conclusion	Cross Reference / Comment
authority for the CDM	Procedures §29		National Clean Development Mechanism Authority under the Ministry of Environment & 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 ratified the 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

Requirement	Reference	Conclusion	Cross Reference / Comment
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 comments have been made publicly available	CDM Modalities and Procedures §40	OK	The PDD was published on 23 September 2006 on http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId=785 inviting the public to comment till 22 October 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	The project is proposed to be located in village Palia Kalan of Lakhimpur Kheri District in Uttar Pradesh, India. A turbine to generate energy; step-up transformers, transmission lines and the connected northern grid define the project boundary.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR, I	The power capacity expansion project involves installation of a Triveni manufactured 12 MW condensing cum extraction type turbine. The system boundary is defined by the power plant, transformers to step up the generated voltage from 11 kV to the grid voltage of 132 kV, 5 km long power transmission line to the nearest sub-station, bagasse transfer system from the crusher to the storage yard and boiler, electrostatic precipitator, and waste water treatment plant. It is indicated that five diesel generators on site with ratings 750 kVA, two 400 kVA, 250 kVA and 100 kVA are kept as emergency units and operated during off-season or during non-availability of	~~CL 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			electricity. The project emissions for such set-ups are not defined.		
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	The project proposes installation of a 12 MW capacity condensing cum extraction type turbine. A scrubber to control the emission of particulate matter from the boiler exhaust and a water treatment plant are installed to minimise the pollution and adverse environmental impacts. Thus, the project design engineering reflects good practices.		OK
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	Conventional cogeneration facilities in India have been using back-pressure system, and are limited to generating adequate captive power. Generating excess power and feeding it to the grid is by itself deemed to be an improvement on the existing technology.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	Since the project is opting for currently recommended best engineering practices, it is unlikely to be substituted by other better technologies in the project period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as	/1/	DR, I	The promoters have no previous experience in installation, maintenance and operation of	~~CAR 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
presumed during the project period?			power generating turbines which are connected to the grid; trained personnel are needed to operate and maintain the facility. Details of plans to impart such skills to its personnel shall be provided.		
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR, I	Provision for providing the requisite skills for operation and maintenance of the plant and training shall be addressed in the PDD.	~~CAR 2~~	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	The project is in line with relevant legislation and plans of the host country India. Consent to establish the facility issued by the state pollution control board and approval of plans from boiler, electrical inspectorate, and factory inspectorate should be submitted for verification.	~~CL 2~~	OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Approval of the project and endorsement of its contribution to sustainable development from the DNA of India shall be submitted for verification.	~~CAR 1~~	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	As in A.3.2	~~CAR 1~~	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Creation of fresh employment opportunities and assured returns to cane growers, are expected to happen as a result of project implementation, resulting in attendant social benefits.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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, I	The project applies the approved consolidated baseline methodology ACM0006: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 4.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The project activity is a grid connected, biomass fired, cogeneration plant. The project activity is based on the operation of power generation unit in the sugar mill generating bagasse as a biomass residue. No other type of biomass residue is used. Implementation of the project activity does not result in increase of the processing capacity of sugar cane, which is the raw input. Bagasse generated is used for the project activity as it is generated and may be stored only at the end of the crushing season for few months to aid start-up operations of the next season. The project scenario of the proposed activity and its baseline scenario identified are in line with		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			the approved methodology ACM0006 and is therefore applicable.		
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 application of the chosen methodology, the discussion and determination are done in a transparent manner.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	All plausible scenarios have been analysed and the most realistic and credible alternatives have been considered.		OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes. Power baseline scenarios P4, heat baseline scenarios H4 and biomass baseline scenario B4 have been established.		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	The baseline scenario has taken into account the national policies and is in line with the power policy 2003 of UP state government.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Elimination of H5 as heat baseline scenario has not been substantiated.	~~CL 3~~	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	In the final analysis, it becomes apparent that the only credible alternatives would be continuation of the current situation as the existing power plant satisfied the demand of the sugar plant in terms of steam and		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			electricity and the project activity only installs a turbine generator.		
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 1a:** The alternatives that have emerged after eliminating other identified alternatives: [1] The continuation of the current situation as per selected baseline scenario 12. [2] Other credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs and on services (e.g. electricity, heat or cement) with comparable quality, properties and application areas. [3] The proposed project not undertaken as a CDM project. This is explained by the fact that the project 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 BHL, have not considered investing in a power company **STEP 1b:** The above listed alternatives comply with all existing statutory rules and	~~CL 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			regulations. **STEP 2:** It has been demonstrated that the project IRR is less than the chosen WACC bench mark. The bench mark as been arrived at 19.2% using CAPM model The project IRR as been computed to be 17.51% without CDM revenue, which is well below the bench mark WACC of 19.2%. A senisitivity analysis also have been performed based the 1.5% increase/decrease on the tariff after 5 years as this is the crucial uncertain parameter. It as been demonstrated that the project is still below the bench mark WACC of 19.2%. **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		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			2.86/kWh envisaging the non-viability of the project without the additional CDM revenue. The risk of the sale of power is also been explained with the fact the counterparty to the project will not be UPPCL but a local distribution company which as been established by UPPCL. 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. However, A copy of the PPA shall be provided for verification. The tariff order reference is not clear and the source of information on 5% downtime due to tripping of the grid needs to be provided. **STEP 4**: Common practice analysis: IIt is stated that n Uttar Pradesh, there are 111 sugar factories, 16 of these export electricity to the grid. Out of these again, 12 are small and less than 15MW and the remaining 4 are proposed as CDM projects Data source for the above claim shall be provided. It is mentioned that in UP there are 111		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			sugar factories, 16 of which export electricity to the grid, two of these export around 1 MW and are therefore excluded from the analysis. Data source for the above claim shall be provided.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	The baseline is based on the current and historical data and no major risk is anticipated for the baseline in the PDD.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Sources are not clearly referenced. More explicit and clear reference needs to be provided. • In Annex 3 on baseline information: The data of units operating in the northern region doesn't match. The hydro and nuclear generation data from CEA generation report, http://www.cea.nic.in/newweb/opt2_mon_gena.htm information provided has a mismatch. • The generation data for nuclear and hydro is incorrect. • In Annex 3, the units of gas consumption and NCV factor of gas is not correct. • The NCV value of gas needs to be explained. • In Annex 3, the source of information needs to be provided for net imports and average emission rates for other regional grids. • Web-references need to be more	~~CL 5~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			explicit. • In B.5. step 3 of barrier analysis, the web-site of http://www.uperc.org is not clear on the tariff order argument. • The source for the price rise of bagasse during 2004-05 needs to be provided. • The BHL presentation to investors, January 2005 need to be provided for verification of the CDM revenue consideration statement in the PDD.		
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	The starting date of the project is 15 January 2006 and an operational life time of 20 years is forecast, which is reasonable.		OK
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	A fixed crediting period of ten years starting from 25 August 2007 has been opted for. The starting date of the crediting period shall be revised to date after the date of registration of the project activity.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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 project applies the approved baseline methodology ACM0006 "Consolidated monitoring methodology for grid-connected electricity generation from biomass residues" version 4.		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes. The project monitoring is in line with the monitoring methodology of ACM0006.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Electricity generated is continuously monitored and measured; hourly readings are manually recorded, verified and countersigned. Bagasse received from the adjacent unit is arrived at by calculating, based on input and output data at the crusher. Calorific value is calculated by measuring sucrose and moisture content. However, the periodicity of the reporting of calorific value needs to be mentioned. Responsibility and frequency of reporting	~~CAR 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			crusher input and output data needs to be specified. 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.		
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	Bagasse generated in the existing plant is transported to the boiler by a conveyor system. No other fuel is used. The carbon emission factor of the grid is calculated on an *ex ante* basis, in line with ACM0002. As in D.1.3	~~CAR 3~~	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	The choice of indicators is sufficient to monitor the CO_2, the relevant GHG.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Yes it is possible to monitor and measure the data.		OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Yes.		OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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	In case of the baseline scenario identified for the project activity, leakages need not be considered. As the biomass is fed from the sugar factory located at the plant site, no transportation and leakage associated with transport is considered. The project doesn't plan to co-fire any fossil fuels in the boiler and therefore emissions from these sources are also not included. It is also addressed that the project doesn't claim for baseline emissions from decay of biomass and hence doesn't account for methane emissions from combustion of biomass.		OK
D.3.2. Are the choices of leakage indicators reasonable?	/1/	DR	As in D.3.1		OK
D.3.3. Will it be possible to monitor / measure the specified leakage indicators?	/1/	DR	As in D.3.1		OK
D.3.4. Will the indicators give opportunity for real measurements of leakage effects?	/1/	DR	As in D.3.1		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	/1/	DR	Facilities for collection and recording of all	~~CAR 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?			relevant data have been provided. Quantum of electricity generated is recorded in electronic form and archived as per methodology. However, medium of recording of other data and archiving of the records in conformity with the methodology needs to be put in place.		
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Choice of baseline indicators is in accordance with the requirements of the applicable methodology and is reasonable.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	Yes, it is possible to measure, record and monitor the baseline indicators.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?			The indicators chosen conform to the requirements of the methodology and real measurement of baseline emissions is possible		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 does not warrant monitoring of sustainable development indicators.		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	/1/	DR	The authority and responsibility of the	~~CAR 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
management clearly described?			project management has not been addressed		
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	The monitoring plan describes the authority and responsibility for monitoring of key indicators.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	As in A.2.5	~~CAR 2~~	
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergency situations are likely to occur.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Yes, calibration of energy meters and weighing equipment has been referenced. However, calibration procedure for calorific value and moisture determining apparatus needs to be identified.	~~CAR 3~~	OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	As in D.6.5	~~CAR 3~~	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Yes, the methodology presented gives an account of the procedures for monitoring, measurement, recording and reporting.		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. Records to be maintained, responsibility for recording, verifying and counter signing are indicated.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Annual cross verification of biomass consumed is planned to be carried out by conducting an energy balance analysis. Responsibility for carrying out such analysis needs to be specified.	~~CAR 3~~	OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	Reported results are reviewed by the immediate superior at the end of every shift		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	A procedure for carrying out an internal audit of the project activity to demonstrate compliance with requirements, initiating corrective and preventive actions, and measures to evaluate their implementation and effectiveness needs to be developed.	~~CAR 5~~	
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	As in D.6.11	~~CAR 5~~	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	As in D.6.11	~~CAR 5~~	OK
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	There are no project emissions because it is contended that no supplementary fuel will be used. There are no transportations emissions as well.		OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	Yes.		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	No such serious uncertainties are foreseen.		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes, only CO_2 is considered.		OK
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.		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	The reference chosen for baseline emissions are representative and adequate.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	The project boundaries are clearly defined. The northern grid has been chosen as the system grid which is in line with the recommendations in this regard.		OK
E.3.3. Are the GHG calculations documented in a	/1/	DR	Yes, the calculations have been presented		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
complete and transparent manner?			in a transparent manner.		
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	Calorific values based on IPCC default values have been used. Calorific values of various grades of Indian coal are available and ought to be used. Also, CEF for coal is reckoned as 25.8 corresponding to coking coal; this value has been used for all varieties of coal which needs to be justified. The source of data for emission factors of the grids from which power imports occur is not referenced.	~~CL 6~~	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	No uncertainties are foreseen		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	No project emissions are expected to occur.		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	Power generated from a renewable biomass residue is being fed to a carbon intensive grid. Thus, the project activity will certainly result in fewer GHG emissions than the baseline scenario. The forecasted amount of GHG emission reductions from the project is estimated to be 256 051 tonnes CO_2 equivalents (tCO_2e) during the ten year crediting period.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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/		No negative environmental impacts are envisaged. Air and water discharges due to the project activity are expected to meet the stipulations set by the state pollution control board. Disposal of fly ash generated is not clearly addressed.	~~CL 7~~	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	Indian legislation does not warrant an EIA to be carried out for the project activity		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Operation of boilers and turbine generators constitutes the major activity. Major environmental impacts include, particulate matter emissions to air, noise pollution due to operation of turbine, and thermal pollution due to heated water. All are easily controllable and no residual adverse impacts are foreseen.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	As in F.1.1	~~CL 7~~	OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	As in F.1.1	~~CL 7~~	OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Consent for establishment obtained from pollution control board should be submitted for verification.	~~CL 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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	Members of the community and the state pollution control board (SPCB) have been consulted on 10 August 2006 during a meeting held for this purpose. Copy of notice / information has been placed in newspapers in Hindi and English informing the public about the intent to establish the project and inviting their comments. Authorities of the state pollution control board, Electrical Inspectorate and Boiler Inspectorate have been apprised and their consent sought.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Newspaper notifications are considered standard media to inform the public. Copies of such notifications may be submitted for verification.	~~CL8~~	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 out in accordance with such regulations/laws?	/1/	DR	A public hearing and stakeholder consultation process, though not mandatory, has been carried out.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Summary of comments received during the meeting with the leaders of the local community shall be submitted for verification.	~~CL 8~~	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	As in G.1.4	~~CL 8~~	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: Approval of the project and endorsement of its contribution to sustainable development from the DNA of India shall be submitted for verification.	A.3.2	HCA has been obtained and a copy provided to DNV.	Accepted. The Host Country Approval dated 27 December 2006 has been verified. The Annex 1 country (United Kingdom) approval dated 16 January 2007 has been verified. CAR1 is closed.
CAR 2: The promoters have no previous experience in installation, maintenance and operation of power generating turbines which are connected to the grid; trained personnel are needed to operate and maintain the facility. Details of plans to impart such skills to its personnel shall be provided.	A.2.4, 2.5, D.6.3	BHL has been operating power plants in 5 units in the past, but only now it will be exporting electricity to the grid. The details about training have been mentioned in the Annex 4 of the PDD.	Accepted. The revised PDD has been checked and verified. CAR 2 is closed.
CAR 3: The periodicity of the reporting of calorific value needs to be mentioned. Responsibility and frequency of reporting crusher input and output data needs to be specified. 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.	D.1.3, 2.1,4.1,	In line with the methodology the calorific value will be calculated yearly but the underlying data will be collected daily. 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 sugar commissioner of the state – RT8C report – which is a statutory requirement for sugar plants. The bagasse sucrose and moisture	Accepted. 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.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		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 paper and electronic form and these will be held for a minimum of two years after the crediting period. This has been detailed in Annex 4.	CAR 3 is closed.
CAR 4: The authority and responsibility of the project management has not been addressed.	D.6.1	Dr. A.V. Singh will be the responsible person from BHL and he will coordinate with respective Managers at the plant level	Accepted. The revised PDD has been verified. CAR 4 is closed.
CAR 5: A procedure for carrying out an internal audit of the project activity to demonstrate compliance with requirements, initiating corrective and preventive actions, and measures to evaluate their implementation and effectiveness needs to be developed.	D.6.11, 12.13	The factory has procedures for compliances with the environmental and safety issues which is headed by Dr. A.V.Singh (EHS-BHL). In respect to calculations of CERs, Agrinergy will undertake monthly calculations and make sure that procedures are followed as outlined in the methodology. A review of the data will be undertaken prior to monitoring reports and verification. In case of any deviation	Accepted. The internal audit procedures have been addressed in the revised PDD. CAR 5 is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		Agrinergy will propose corrective actions. This will be detailed in the Annex 4 of the PDD.	
CAR 6: The baseline calculations are now finalized by CEA on their web-site, and as the CEF values presented by the project are very much higher than what is put by CEA, this needs be justified, in particular since CEA data are referred to in the project analysis.	B.6.3/Annex 3	About the calculations of EF by CEA it seems that these are slowly becoming the benchmark for India with the Secretariat viewing these as the only credible number. We however feel these underestimate the baseline and hence emission reductions of Indian projects. 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. The national 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). This results in an underestimation in the calculation of the Indian regional CEFs and is therefore of concern for Indian projects and is adding to the confusion relating to the Indian CEF. We do understand that there is some	Accepted. DNV is able to conclude that the response provided by BHL should be acceptable due to the following: ▪ There is no detailed calculation or data, for calculation of emission factor of northern region 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 BHL, 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, BHL can use their independent calculation based on ACM0002 for calculations of the carbon emission factors of the grid. DNV is able to confirm that the CEF calculations provided by BHL have been verified and found to be correct. The sources of data used in the calculations have also been checked

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		scepticism on the Indian CEFs but we would add that the NDRC in China has worked on central CEFs most of which are greater than 1 tCO2/MWh. Further, they have revised their calculation by the inclusion of 10 more plants which were not included before due to lack of station data. The current inclusion does not affect OM/BM but this new calculation does not specify the type of the plants. We feel that the CEA's CEF therefore needs to be considered as a draft at the moment and before the figures are endorsed a more transparent presentation of the calculations should be provided.	and found to be correct. Thus DNV is able to conclude that the explanation provided the BHL is acceptable.
CL 1: It is indicated that five diesel generators on site, of ratings 750 kVA, two 400 kVA, 250 kVA and 100 kVA are kept as emergency units and operated during off-season or during non-availability of electricity. The project emissions for such set-ups are not defined.	A.1.2	They are part of the baseline and will be operated only during emergencies. The plant is not operated during off-season.	Accepted. The emergencies operation requirements would be installed even in the absence of the new power plant. CL1 is closed.
CL 2: Consent to establish the facility issued by the State Pollution Control Board and approval of plans from boiler, electrical inspectorate, and factory inspectorate should be submitted for	A.3.1	These documents were verified by Mr Amit Thusu(DNV), during our desk validation in Delhi.	Accepted. The documents have been verified by DNV. CL 2 is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
verification.			
CL 3: Elimination of H5 as heat baseline scenario has not been substantiated.	B.2.5, F.1.6	H5 has not been considered as the factory has not reached the end of its lifetime, which is normally 20-25 years.	Accepted. CL 3 is closed.
CL 4: A copy of the PPA shall be provided for verification. The tariff order reference is not clear and the source of information on 5% downtime due to tripping of the grid needs to be provided Data sources for the claims under step 4 shall be provided.	B.2.7	All the PPAs were provided to Mr Kumarswamy in Delhi meeting. In case you need the hard copies again, we can again provide them. Evidence on downtime and tripping will be provided later.	Accepted. The PPAs have been verified and the evidence of downtime as provided by the BHL has been verified and accepted. The source such as that relating to the 10% downtime due to tripping has been verified by DNV from the downtime analysis data of Sidhauli substation as provided in Annex 5 of the PDD. CL4 is closed.
CL 5: Sources are not clearly referenced. More explicit and clear reference needs to be provided. • In the Annex 3 on Baseline information:The data of units operating in the northern region doesn't match. The hydro and nuclear generation data from CEA generation report, http://www.cea.nic.in/newweb/opt2_mon_gena.htm information provided has a mis-match. • The generation data for nuclear and hydro is incorrect.	B.2.9	Annex 3 has been revised and the revised version as been added in the PDD. In Annex 3, the data on hydro and nuclear has been interchanged by mistake. It should be read as Hydro-41,713GWh and Nuclear- This has been corrected in the PDD.	Accepted. All the clarifications have been sought out in the revised PDD and accepted. The receipt of bagasse price has been verified and accepted. 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

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
• In Annex 3, the units of Gas consumption and NCV factor of gas is not correct. • The NCV value of Gas needs to be explained. • In Annex 3, the source of information needs to be provided for Net Imports and Average emission rates for other regional grids. • Web-references need to be more explicit. • In B.5. Step 3 of barrier analysis, the web-site of http://www.uperc.org is not clear on the tariff order argument. • The source for the price rise of bagasse during 2004-05 needs to be provided. • The BHL presentation to investors, Jan 2005 need to be provided for verification of the CDM revenue consideration statement in the PDD.		The units of Gas consumption is corrected now and it is mmscm- million metric standard cubic meter The source has been provided in the PDD. On tarrif, please go to www.uperc.org and follow the link-regulation-on the left side links. On this page the tarrif report is given towards the end of the page. The report will be provided to DNV as a hard copy. The source for bagasse price rice will be provided later. A copy has been provided to Mr Kumarswamy at Delhi meeting. Please follow the link- pg73-76 http://www.bajajhindusthan.com/new.htm	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. DNV is able to conclude that the project demonstrates additionality and the project itself is not a likely baseline scenario. CL5 is closed.
CL 6: Calorific values based on IPCC default values have been used. Calorific values of various grades of Indian coal are available and ought to be used. Also, CEF for coal is reckoned as 25.8 corresponding to coking coal; this value has been used for all varieties	E.3.4	NCV from Indian national communication has been used and the value was arrived as a result of analysis of major Indian coal fields. The CEF value is conservative as it is the lowest value for coal in IPCC data.	Accepted. The NCV of Indian national communication has been verified and accepted. CL 6 is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
of coal which needs to be justified. The source of data for emission factors of the grids from which power imports occur is not referenced		For emission factor of grids, it has been calculated as per combined margin technique in ACM0002. It has been made clear in the PDD.	
CL 7: Disposal of fly ash generated is not clearly addressed.	F.1.1	The power plant will give rise to ash that will be disposed of in line with the consent from the Pollution Control Board. It is likely that the ash will either be used to fill in low lying areas on land owned by the factory or used by local brick manufacturers. This has now been made clear in the PDD.	Accepted. The method for fly ash disposal is as per the consent terms of PCB. CL 7 is closed,
CL 8: The following shall be provided: • Notifications used for inviting comments • Summary of comments received.	G.1.2, 1.4	A copy of notice and stakeholder comments will be sent to DNV.	Accepted. The newspaper advertisement in 'Times of India' and a local Hindi 'Amarujala' dated 7 August 2006 by BHL inviting comments has been verified. CL8 is closed.
CL 9: The P4 alternative identified for the projects have not been demonstrated in the analysis (investment/barrier etc.,)	B.2.7	In the absence of the project activity (i.e. the baseline) the power that would have been supplied by the project activity would be supplied by existing grid capacity and future planned generation.	Accepted. As the planned future generation capacity additions would have supplied the power to the grid. CL9 is closed.
CL 10: Why the net generation is not considered in the baseline instead the baseline has considered Gross generation?	B.6.3/Annex 3	We have considered Gross generation because CEA website does not provide data on auxiliary consumption of individual plants. Therefore it is difficult	Accepted. As the Gross generation values give a conservative figure than the net generation values. CL10 is closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		to calculate the Net Generation. Moreover, taking gross generation is a more conservative approach.	

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APPENDIX B

CERTIFICATES OF COMPETENCE

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

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

Amit Thusu

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

Ma-Paa-Puratchikkanal

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

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

Høvik, 1 March 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director