



VALIDATION REPORT

Dwarikesh 8 MW Bagasse Based Power Generation Project, Bijnor, UP India

REPORT No. 2007-0900

REVISION No. 01



VALIDATION REPORT

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CERTIFICATION AS

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Date of first issue: 2007-03-14	Project No.: 45010096
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Client: EcoSecurities Group PLC.	Client ref.: Mr. Pedro Moura Costa

Project Name: Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India.
Country: India
Methodology: AMS-I.D. Version 10 dated 23 December 2006
Version: 10
GHG reducing Measure/Technology: Displacement of grid electricity with electricity using renewable source.
ER estimate: 152068 t CO₂ for 7 years, 21724 t CO₂/year.
Size
☐ Large Scale
☒ Small Scale
Validation Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues
Validation Status
☒ Corrective Actions Requested
☒ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that the "Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India" in India, as described in the PDD of version 02 dated 29 November 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology AMS-I.D. Version 10 dated 23 December 2006. DNV thus requests the registration of the project as a CDM project activity.

Report No.: 2007-0900	Date of this revision: 2008-01-09	Rev. No. 01
Report title: Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India.		
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Key words:
Validation.

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DSIL	Dwarikesh Sugar Industries Limited
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
UPPCL	Uttar Pradesh Power Corporation limited.
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
UPERC	Uttar Pradesh Electricity regulation Commission.



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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the "Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India". The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host Party is India and the Annex I Party is the United Kingdom of Great Britain and Northern Ireland. Both Parties fulfill the participation criteria and have approved the project and authorized the project participants. The letters of approval from the host Party and the Annex-I Party have been obtained for the project. The DNA of India confirmed that the project assists in achieving sustainable development.

The project correctly applies the approved simplified baseline and monitoring methodology AMS-I.D. Version 10 dated 23 December 2006 "Grid connected renewable electricity generation".

By generating electricity using the excess bagasse available and exporting to the northern regional grid of India, the project activity displaces carbon intensive electricity from the grid, thereby resulting in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 21 724 t CO₂e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the "Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India" in India, as described in the PDD of version 02 dated 29th November 2007, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AMS-I.D. Version 10 dated 23 December 2006. DNV thus requests the registration of the project as a CDM project activity.



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2 INTRODUCTION

EcoSecurities Group PLC has commissioned DNV Certification AS to perform a validation of the “Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India” 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 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, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

2.1 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).

2.2 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, the simplified modalities and procedures for small-scale CDM project activities and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology, AMS ID version 10. The validation team has, based on the recommendations in the Validation and Verification Manual 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.

3 METHODOLOGY

The validation consisted 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.

The following sections outline each step in more detail.



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3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ CDM PDD : “Dwarikesh 8 MW Bagasse-Based Power Generation Project, Bijnor, UP India” initial version 01 dated 26 December 2006 and version 02 dated 29th November 2007.
- /2/ CER and grid emission calculation worksheets
- /3/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /4/ AMS-I.D. Version 10 dated 23 December 2006
- /5/ Letter of approval from DNA of India- dated 10th August 2007.
- /6/ Letter of approval from the DNA of United Kingdom and Ireland dated 04 January 2008
- /7/ CDM consideration- certified true copy of the board of Directors meeting of 21 November 2003 – minutes
 Natu, S. C. 2006 ‘Bagasse Based Cogeneration, India Marching Ahead’ MITCON Consultancy Services Ltd., Pune, India
 Documents confirming non availability of grid for 41 hrs in 2003-04.
 Commissioning certificate of the unit- power bill for October 2004.
 Agreement for procurement of the turbine – dated December 2003
 MNES website on the sugar mills in state of Uttar Pradesh.
 Document to substantiate that the excess bagasse in the unit had opportunity cost.
 Air and water pollution consents of the plant.
 Letters sent to the interested stakeholders.
- /8/ Attachment C to Appendix B Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, “General guidance on leakage in biomass project activities”, version 02.

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

- Revision of the CER calculations considering the generation capacity as 7.5 MW as stated in power purchase agreement (PPA) as against 8 MW (turbine rating) considered earlier.

3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/7/	2006-10-20	Mr.Jagdish Banka	DSIL	Additionality, Baseline
/8/	2006-10-20	Ms Noora Singh	EcoSecurities	All aspects.



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		Limited	
/8/	2006-10-20	Local stakeholders	Own views on the project activity

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in a transparent manner the 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 two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the "Dwarikesh 8 MW Bagasse-Based Power Generation Project" is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- mistakes have been made with a direct influence on project results;
- CDM and/or methodology specific requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities				
Requirement	Reference	Conclusion		
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>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.</i>		

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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.</i>

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

Figure 1 Validation protocol tables



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3.4 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.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
CDM Validator/ Team leader	Venkata Raman	Kakaraparthi	DNV, India
GHG Auditor	Thusu	Amit	DNV, India
Sector Expert	Lehmann	Michael	DNV, Norway
Applicant Technical Reviewer	Chaudhary	Anu	DNV, India
Technical reviewer	Telnes	Einar	DNV, Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.

4 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 29th November 2007.

4.1 Participation Requirements

Dwarikesh Sugar Industrial Limited (DSIL) is the sole project participant from the host Party India. EcoSecurities Group PLC is the project participant from the Annex I Party United Kingdom of Great Britain and Northern Ireland. The host Party and Annex-I Party fulfil all the participation requirements, having ratified the Kyoto Protocol and having DNAs in place. The letters of approval from the host Party and Annex-1 Party have been received, authorizing the project participants to participate in the project /5/ and /6/. The DNA of India confirms that the project assists in achieving sustainable development in the host country.

It is verified that the project does not result in any diversion of official development aid.

4.2 Project Design

The project activity envisages utilization of excess bagasse generated at the Dwarikesh Sugar Industries Private Limited (DSIL) for increasing the electricity generation capacity (8 MW) at an existing facility of 9 MW (3 X 3MW). The electricity generated from the existing units will be used for in house consumption and the electricity generated from the project unit shall be exported to the grid. The installed turbine (evidenced from the purchase agreement) is rated for generation of 8 MW, however the power purchase agreement (PPA) signed with the



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Uttar Pradesh power corporation limited (UPPCL) states the capacity of the unit as 7.5 MW. The project activity uses the steam generated from using bagasse from the existing four boilers.

The project involves installation of an 8 MW extraction cum condensing turbine. The technology used (turbines and generation set) have been sourced from reputed manufacturers and hence the project design is deemed to represent good practice. DSIL has the experience in operating similar machines and hence additional training needs are not envisaged.

The project start date is stated to be 9 December 2003, which is the date when the agreement to procure the turbine was signed /7/. This is deemed the earliest of implementation, construction and real action. The project was commissioned in October 2004. The project activity assumes a renewable crediting period of seven years and the start of the first crediting period is 1 April 2008 or the date of registration, whichever is earlier.

4.3 Baseline Determination

The project applies one of the approved simplified baseline methodologies proposed for the small-scale project activity AMS-I.D (Version 10) titled “Grid connected renewable electricity generation.”

The selected baseline scenario is that an equivalent amount of electricity would, in the absence of the project activity, partly have been generated by the operation of grid-connected thermal power plants and by the addition of new generation sources. The project is within the eligibility requirements of the small scale baseline methodology since the total installed capacity is not expected to go beyond 15 MW_{elec} limit.

The application of AMS-I.D is also justified as the project generates electricity using bagasse (renewable biomass) and displaces grid electricity.

As the project activity feeds power to Uttar Pradesh Power Corporation Limited (UPPCL), which is a part of the northern region electricity grid, the baseline for this project activity is the function of the generation mix of this grid, taking into account new developments. The selection of the northern region grid as the grid system boundary for the project activity is in line with the recent EB guidance for large countries such as India.

The grid emission factor has been sourced from the official website of the central electricity authority. The central electricity authority calculates the grid emission factor of all the regional grids of India as per the methodology ACM0002 version 6 using the authenticated generation data for the use and guidance of the CDM projects. The grid emission factor as per the latest data published by CEA (version 02) for the northern regional grid to which the project activity is connected is 0.8 t CO₂/MWh. This value is being fixed ex-ante for the entire crediting period of seven years. The authenticity of the value has been verified from the CEA website.

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	<i>152068 tCO₂ for 7 years</i>	<i>The baseline emission factor for the project is determined ex-ante as a combined margin, consisting of the weighted average of the operating margin</i>



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		<i>(OM) and build margin (BM) emission factors.</i>
<i>Project emissions</i>	<i>0</i>	<i>Not considered as combustion of the bagasse is considered carbon neutral and the diesel consumption for the start up of the boilers exists in the baseline scenario also and does not increase.</i>
<i>Leakage</i>	<i>0</i>	<i>The project does not have any leakages due to transportation as the bagasse is generated in the factory premises only and there is no transfer of equipment. The excess biomass is analysed to be more than 25% in the region also after project implementation, thus no leakage is expected.</i>

4.4 Additionality

The additionality is demonstrated by applying the Attachment A to Appendix B to the simplified modalities and procedures for small scale CDM project activities through the existence of the investment, institutional, and prevailing practice barriers.

The project start date is defined as 9 December 2003, which is the date of the signed agreement between the project proponent and M/s Triveni Engineering Limited for the supply of the 8 MW turbine. DNV verified this document. It was also verified that CDM revenues were considered for the project activity by a note placed before the company's Board of Directors on 21 November 2003. The project was commissioned in 2004, Dwarikesh Sugar Industries formalized the CDM development with EcoSecurities in January 2006 and DNV was first contacted for the validation of the project in August 2006. At that time the project was applying ACM0006. (The PDD was published for stakeholder comments during 25 August 2006 to 23 September 2006 and no comments were received). However, none of the scenarios in ACM0006 matched the project scenario. Version 8 of AMS-I.D which came into effect in March 2006 was not applicable to the project as it required that the aggregate installed capacity after adding the new units is lower than 15 MW. Only in December 2006 with the adoption of version 10, AMS-I.D became applicable for the project as this version allowed that the capacity of the units added by the project is lower than 15 MW and the PDD, now applying AMS-I.D, was republished for stakeholder comments for the period 29 December 2006 to 27 January 2007.

Investment barrier: The project faced investment barriers due to the high cost of investment. It has been demonstrated through financial worksheets that the IRR of the project activity without considering CDM revenues is 10.54% compared to the benchmark of 15.39%. A benchmark of 15.39% has been sourced from Bloomberg, a reliable financial adviser that provides the country premium and risk free rate. It has been verified by DNV that the prime lending rate as per the Reserve Bank of India varies between 12.75% and 13.25% (<http://www.rbi.org.in/scripts/WSSView.aspx?Id=11130>). The country risk premium has been



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verified to be 3% through various independent websites (<http://www.sjsu.edu/faculty/watkins/countryrisk.htm> and <http://www.oecd.org/dataoecd/47/29/3782900.pdf>). Thus considering the lower prime lending rate and the country risk factor (12.75% +3% = 15.75%), the lending rate sourced from Bloomberg at 15.4% is deemed to be acceptable. The IRR improves to 16.59% on considering the CDM revenues. It has been verified from the project proponent's request letter to the UP Electricity Regulation Commission (UPERC) seeking time extension for the completion and commissioning of the project, that the project activity had problems in sourcing funds and also experienced delays in the delivery of the turbine.

The sensitivity analysis conducted considering the critical parameters like the tariff and the generation output, indicate that with a 5% increase in the tariff the IRR does not approach the benchmark, while with a 5% increase in the power generation, the IRR of the project touches the benchmark. It is. However, not likely that the power generation would be increased from 7.5 MW to the installed capacity of 8 MW, since as per the PPA signed with the power utility company, the utility company will purchase only 7.5 MW of power, and any increase in the power generation beyond 7.5 MW would not have any bearing on the emission reductions and will not get accounted. The IRR was calculated assuming a plant load factor of 95% whereas the actual (historic) plant load factor achieved was only 77%. Hence it is deemed unlikely for the power generation to increase by 5%. Also, with regards to the tariff price, the trend of decrease in the tariff in 2005 from the original PPA signed by the project proponent is an indication that 5% increase in the tariff is also unlikely.

Institutional Barrier: The unclear policy of the Uttar Pradesh Power Corporation Limited (UPPCL) on the non-conventional sources of energy and the tariffs are deemed as barriers faced by the project activity. The tariff fixed by the UPERC in 2000 was INR 2.25 (base year of 1999-2000) with an escalation of 5% every year. A validity of 5 years for the tariff structure and the apprehension of the tariff being lowered was an uncertainty barrier to the project. Subsequent to the project commissioning in 2004, the tariff was revised on 18 July 2005. The revised tariff eliminated the 5% escalation and fixed the tariff at a lower level than signed in the PPA. By the new tariff, the project receives INR 2.86 instead of INR 3.02 per KWh as envisaged at the time of project planning.

The frequent failures of the power grid and the subsequent losses suffered due to non-availability of grid to feed the power also represent a barrier to the project proponent. It has been evidenced through the log sheets that during the year 2003-04 there were a total of 41 hours of grid non-availability, leading to financial losses to the existing units of the project proponent and the same barrier of the grid not being available to receive the power generated and hence loss of power is applicable to the project also.

The institutional barrier was also evidenced from the fact that the UPPCL deducts the 2.5% rebate clause in the PPA for prompt payments from its side, even though the payments were delayed.

Prevailing practice barrier: It has been demonstrated through the article (Natu, S. C. 2006 'Bagasse Based Cogeneration, India Marching Ahead' MITCON Consultancy Services Ltd., Pune, India) that the total potential of power generation from co-generation units in sugar plants (totalling 575) in India is estimated at 3500 MW. Against this potential only 432 MW from 56 units is being generated, thereby establishing that power generation for export to the grid from sugar units is not a prevailing practice. It was also verified by information from the



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Ministry of non-conventional energy sources (MNES) that this is the case in the state of Uttar Pradesh, only 8 sugar mills (out of 41) have the capacity to export power to the grid. The data on the number of sugar mills in Uttar Pradesh having cogeneration units (11) was verified from the official website of the Indian sugar mills association.

It was also verified from the official records of the company that the bagasse that is generated has an opportunity cost and was being sold in the market through traders to the paper industry for use as raw material /7/. The excess bagasse after the project implementation is still being sold.

Based on the above, it is substantiated that the project faced barriers and it is deemed appropriate that the project is not a likely baseline scenario, and the emission reductions resulting from the project are additional.

4.5 Monitoring

The project correctly applies the AMS-I.D monitoring methodology. The electricity generated and exported to the UPPCL grid is metered.

The baseline emissions are being calculated as the product of the net electricity supplied to the grid and the grid emission factor of the northern regional grid fixed ex-ante. The following parameters are being monitored:

- a) Net electricity generation and export to the grid from the project unit – measured and also calculated as per AMS I D methodology
- b) Power generation from all the units (existing and project unit) - measured
- c) Actual electricity production of the existing units - measured
- d) Biomass (bagasse) availability in the region to establish leakage – through survey data.

All the data will be archived electronically (with documentary supporting backup) for a period of two years after the end of the crediting period. The company has well maintained management systems in place for the monitoring and archiving of data.

4.5.1 Parameters determined ex-ante

The grid emission factor of the northern regional electricity grid (0.8 t CO₂/MWh) to which the project unit is connected is fixed ex-ante for the entire crediting period of seven years. As stated above, this value has been calculated as the combined margin emission factor as of ACM0002 version 6 and is sourced from the official website of the central electricity authority (CEA).

4.5.2 Parameters monitored ex-post

All the other parameters mentioned in section 4.5 i.e. the following will be monitored ex-post.

- e) Net electricity generation and export to the grid from the project unit – measured and also calculated as per AMS I D methodology
- f) Power generation from all the units (existing and project unit) - measured
- g) Actual electricity production of the existing units - measured



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- h) Biomass (bagasse) availability in the region to establish leakage – through survey data. This is in line with Appendix C of the SSC methodologies, “General guidance on leakage in biomass project activities”. It is required that the project participant shall evaluate annually if there is a surplus of the biomass in the region of the project activity, which is not utilised. If it is demonstrated that the quantity of available biomass in the region, is at least 25% larger than the quantity of biomass that is utilised in the project activity, then this source of leakage can be neglected otherwise this leakage shall be estimated and deducted from the emission reductions /8/.

4.5.3 Management system and quality assurance

The project proponent has management systems in place for the proper monitoring and archiving of the records, required for the monitoring and calculation of the emission reductions ex-post. All the necessary systems and procedures are in place. The PDD also states the quality assurance for each of the monitored parameters.

4.6 Estimate of GHG Emissions

The project activity partly displaces fossil fuel based electricity generation in the northern regional grid. The GHG emissions are calculated as the product of the electricity generated and exported to the grid by the project activity and the grid emission factor. The grid emission factor of the northern regional grid at 0.8 t CO₂/MWh has been calculated as the combined margin in line with ACM0002 version 6 and is sourced from the CEA website and is fixed ex-ante for the entire crediting period.

Since the project activity utilises bagasse - a renewable biomass, the emissions are considered carbon neutral. The bagasse used in the existing boilers is sourced from the plant itself (generated in the plant) and not from outside the project boundary. In the baseline scenario, the bagasse generation was in excess and was being sold in the market as a feed stock in the paper industry. Subsequent to the project implementation also some quantity of excess bagasse is being sold. In total, excess bagasse is assessed to be ca 30% in the state of Uttar Pradesh, taking into account demand and supply in the region. As excess bagasse in the region is more than 25% after project implementation and there is no transfer of equipment, no leakage emissions are expected. Hence the baseline emissions are equal to the emission reductions.

As the project activity is the addition of renewable energy generation unit at an existing renewable energy generation facility, the net electricity production associated with the project is calculated as per the formulae given in the methodology.

$$E_{gy} = TE_y - WTE_y$$

Where

E_{gy} – electricity generation associated with the project and exported to the grid

TE_y – Total electricity generated in all the units (existing and project unit)

WTE_y – Estimated electricity that would have been generated by the existing units in the year.



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The parameter $WTE_y = \text{MAX}(WTE_{\text{actual}} \text{ or } WTE_{\text{estimated}})$

Where

WTE_{actual} – actual electricity generation in the existing units (before project)

$WTE_{\text{estimated}}$ – estimated electricity that would have been generated in the existing units based on the availability of bagasse.

In the project activity, as there is an excess of bagasse available even after the project implementation, the project plant does not affect the existing units by limiting bagasse available to the existing units. Therefore $WTE_{\text{actual},y}$ and $WTE_{\text{estimated},y}$ (at 22143 MWh) remains the same. The historical data have been verified and deemed appropriate.

The total emission reductions from the project are estimated to be on an average 21724 t CO₂e per year over the selected seven year crediting period.

4.7 Environmental Impacts

As the project activity involves the capacity addition to the existing power generation unit, no adverse environmental impacts are anticipated. An environmental impact assessment/study is not required for the project activity. The project proponent has the necessary permits for the operation of the units.

4.8 Comments by Local Stakeholders

Relevant stakeholders were identified by the project proponent and these include the elected representatives in the villages, villagers, official of the paper industry and the regulatory bodies. Letters were sent to all the identified stakeholders informing about the project activity and inviting comments. No comments were received. During the site visit, a few of the stakeholders were also interviewed to obtain views on the project activity.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD version 01 dated 26 December 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 29 December 2006 to 27 January 2007.

No comments were received.

Previously, the same project with a PDD applying ACM0006 was published for stakeholder comments during 25 August 2006 to 23 September 2006. No comments were received.



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APPENDIX A

CDM VALIDATION PROTOCOL



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

Requirement	Reference	Conclusion
About Parties		
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,
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
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-I OK
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	CAR-I OK
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 It was confirmed during the validation that the project received no public funding from any



VALIDATION REPORT

Requirement	Reference	Conclusion
		Annex-1 country.
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
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
About Additionality		
Reduction in GHG emissions shall be additional to any that would occur in the 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
About forecast emission reductions and environmental impacts		
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
About small-scale project activities (if applicable)		
The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK



VALIDATION REPORT

Requirement	Reference	Conclusion
The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK
About stakeholder involvement		
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
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
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
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
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
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the	CDM Modalities and Procedures §37f	OK



VALIDATION REPORT

Requirement	Reference	Conclusion
COP/MOP.		



VALIDATION REPORT

Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
Are the project’s spatial boundaries (geographical) clearly defined?	/1/	DR/I	The project is located in the sugar plant of Dwarikesh Sugar Industries limited (DSIL), in the Bijnor district of Uttar Pradesh state of India. Coordinates of the location have been provided in the PDD.		OK
Are the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	Yes, the project’s components and facilities have been clearly described and consist of the new steam turbine and alternator for the generation of the electricity and facilities for stepping up the voltage and transmission over a distance of 11 Km to the takeoff point. The capacity of the project unit considered is 8 MW. However it is noticed that the capacity is only 7.5 MW (as per the PPA and Specification sheet in the PPA). However the purchase agreement of the turbine states the turbine to be rates at 8 MW.		OK



VALIDATION REPORT

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Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
Which Parties and project participants are participating in the project?	/1/	DR	The project participants and Parties of the project activity are Dwarikesh Sugar Industries limited from the host Party India, and EcoSecurities Group PLC from Annex I Party United Kingdom of Great Britain and Northern Ireland.		OK
Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	The letter of approval from the host Party and Annex-1 Party are awaited.	CAR +	OK
Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	The DNA of India is National Clean Development mechanism authority, Ministry of Environment and Forests. The DNA of UK is Department for Environment, Food and Rural affairs, (DEFRA). The host Party India ratified the Kyoto Protocol on the 26th August 2002 and Annex I Party UK ratified the protocol on 31st May	CAR +	OK



VALIDATION REPORT

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			2002		
Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR	The project activity does not have any public funding from Annex-I Party.		OK
Technology to be employed <i>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.</i>					
Does the project design engineering reflect current good practices?	/1/	DR/I	The equipments used in the project have been sourced from reputed manufacturers and hence the project reflects current good practice.		OK
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	The project utilises equipment from reputed manufacturers and would result in a significantly better performance.		OK
Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project participant has prior experience of operating turbines and generating set and hence does not need additional training for operation and maintenance.		OK



VALIDATION REPORT

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Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
Has the host country confirmed that the project assists it in achieving sustainable development?	/1/	DR	The Letter of Approval for the project activity and the confirmation that the project assists in sustainable development is awaited.	CAR +	OK
Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project does not create any other environmental or social benefits other than GHG emission reductions.		OK
Small scale project activity <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>					
Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/	DR	The project activity qualifies as a small scale CDM project activity, as it fulfils the criteria of AMS-I.D “Grid connected renewable electricity generation” activity by the condition (5) – i.e. the project activity involves the addition of renewable energy generation units at an existing renewable power generation facility, capacity of the added unit is less than 15 MW and is physically distinct from the existing units.		OK



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Is the small scale project activity not a debundled component of a larger project activity?	/1/	DR	It is demonstrated that the project activity is not a debundled component of a larger project activity.		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
Does the project apply an approved methodology and the correct version thereof?	/1/	DR	The project activity applies the approved small scale methodology of AMS-I.D. The version applied is 10, which is the latest and correct version.		OK
Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	The project activity is an addition of renewable energy generation units at a renewable power generation facility in a sugar mill. The project fulfils the applicability condition (5) that the capacity of the installed generation is less than 15 MW and the unit is physically distinct from the		OK



VALIDATION REPORT

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			existing units.		
Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
What is the baseline scenario?	/1/	DR	The baseline scenario in the absence of the project activity is the continuation of the present situation i.e, electricity requirements for the sugar factory would have been met from the existing captive generation units and excess quantities exported to the grid. The excess biomass (bagasse) would have continued to be sold in the market as a raw material for paper manufacture, as it has an opportunity cost.		OK
What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	The project activity does not have any alternative scenario, and the selected baseline is the most likely one.		OK
Has the baseline scenario been determined according to the methodology?	/1/	DR	The baseline as per the applied methodology is the electricity generated in the project activity multiplied by an emission coefficient		OK



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			(kg CO2/.KWh) calculated in a conservative and transparent manner. The emission coefficient in the project activity is calculated by the combined margin method as specified in the ACM0002 methodology, as referenced in AMS-I.D. Since the project is connected to the Uttar Pradesh Power Corporation limited (UPPCL) grid which is connected to the northern regional grid of India, the grid emission factor of the northern regional grid has been considered.		
Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	The baseline has been determined using conservative assumptions. All the data for the estimation of the emission factor is sourced from the official website of the Central Electricity Authority (CEA).		OK
Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes		OK
Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Yes		OK



VALIDATION REPORT

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Have the major risks to the baseline been identified?	/1/	DR	There are no major risks to the baseline.		OK
Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
Is the project additionality assessed according to the methodology?	/1/	DR	<p>The additionality of the project is argued based on the barriers of investment/financial, institutional and prevailing practice barriers.</p> <p>It is stated in page 11, that CDM was considered in the board meeting of 21/11/2003, prior to the project implementation. The document is to be presented to the DOE for scrutiny.</p> <p>Investment/financial: the project has an high investment cost and the IRR of the project is only 5.44% against a benchmark of 16% (fixed by the Uttar Pradesh Electricity Regulatory Commission (UPERC), The IRR improves to 13% on considering the CDM revenues. The NPV of the project also turns positive on considering the CDM revenues.</p>	CL-1	OK



VALIDATION REPORT

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			<p>The project also had difficulties in obtaining finances thereby seeking time extensions from the UPPCL as was evidenced from the extension request letters.</p> <p>The IRR figures in the PDD and the worksheet do not tally and need correction. Evidence is also to be provided to the fact that the project had difficulties in obtaining finances.</p> <p>Institutional barrier: The Uttar Pradesh power corporation limited (UPPCL) buys the power in the state of Uttar Pradesh. It is stated that the project proponent also suffered financial losses previously, due to the frequent grid failures, when he is not able to export power to the grid. The grid failures are quite frequent (average of one per month in 2003-04 and average of 2 per month in 2004-05). The project proponent previously had financial losses of about INR 226584 in 2003-04 due to grid failure amounting to 41.96 hours of power supply losses.</p> <p>Another barrier is the revisions in the tariff. Evidence is to be provided to the above fact</p>		



VALIDATION REPORT

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			<p>of losses incurred in 2003-04.</p> <p>The fact that the utility company UPPCL is suffering financial losses and may not be in a position to pay the dues is also stated to be a barrier for the project.</p> <p>Evidence is to be provided to the fact that there have been delays in the payment/ or no payments by UPPCL.</p> <p>Bagasse has a market in the area as a raw material for paper manufacture and has an opportunity cost, which the project proponent is foregoing for the new project.</p> <p>Prevailing practice barrier: The total potential of power generation from co-generation units in sugar plants (575) in India is estimated at 3500 MW. Against the potential only 432 MW from 56 units is being generated, thereby establishing that power generation for export to the grid is not a prevailing practice. This is also the case in the state of Uttar Pradesh, where only 8 sugar mills (out of 41) have the capacity to export power to the grid.</p>		



VALIDATION REPORT

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Are all assumptions stated in a transparent and conservative manner?	/1/	DR/I	All the assumptions are stated in a transparent and conservative manner. Evidences requested above need to be furnished.		OK
Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Same as above		OK
If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/	DR	The evidence needs to be provided.	CL4	OK
Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	The project activity utilises bagasse from boilers to generate electricity, and thereby generates carbon neutral CO ₂ . Also since the bagasse is generated on the compound, there are no transportation emissions.		OK



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			Electricity requirement for the project activity is sourced from the self generation and hence accounted for. Only the net export to the grid is accounted for the emission reductions. Hence the project has no project emissions.		
Have conservative assumptions been used when calculating the project emissions?	/1/	DR	NA.		OK
Are uncertainties in the project emission estimates properly addressed?	/1/	DR	NA.		OK
Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR/I	The baseline emissions are calculated as the product of the net amount of electricity exported to the grid and the grid emission factor.	CAR 2	OK



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			<p>The Grid Emission Factor for the northern regional grid has been calculated and fixed ex-ante at 0.76435 tCO₂/MWh, following the ACM0002 version 06 methodology and vintage data of 03-04, 04-05 and 05-06. The simple OM has been used since the low-cost, must-run power sources constitute less than 50% in the northern regional grid. The OM value arrived at is 0.974 t CO₂/MWh. The BM has been calculated ex-ante based on the sample group of plants that comprise 20% of the system generation and that have been built most recently. The value arrived at is 0.5547 t CO₂/MWh. For the CM, the weights selected are 50%.</p> <p>However the use of emission factor published by the CEA has been preferred and hence the factor of 0.8 t CO₂/MWh has been used in the revised PDD.</p> <p>The electricity generated and exported to the grid is calculated as $EG_y = T_{e,y} - WTE_y$, where $T_{e,y}$ is the total electricity generated in all the 4 units (3 existing and 1 project unit) and WTE_y is the estimated electricity that would</p>		



VALIDATION REPORT

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			have been generated in the existing units in the absence of the project unit. $WTE_y = \text{MAX}(WTE_{\text{actual}} - WTE_{\text{estimated}})$. In the project activity, since there is a surplus of bagasse, electricity generation in the existing units is not affected. Evidence was provided that there are still sales of bagasse after the project implementation. The capacity of the project unit considered is 8 MW. However it is noticed that the capacity is only 7.5 MW (as per the PPA and Specification sheet in the PPA). Hence 7.5 MW is to be considered for all the calculations. As per the PPA, the project can export 10% excess of the 7.5 MW to the grid.		
Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	As stated above	CAR 2	OK
Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR/I	The only uncertainty in the baseline can be the availability of bagasse. It was verified that subsequent to the project implementation there are still sales of bagasse.		OK



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Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	There is not transportation of bagasse and no transfer of technology equipment. The bagasse is sourced from the excess bagasse generation in the project boundary. The excess bagasse in the baseline scenario was being sold in the market. In the project scenario also, excess bagasse is being sold in the market as it has an opportunity cost. It is assessed that the excess biomass in the region is ca 30% after project implementation. Hence, no leakage calculation is required.		OK
Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR I	The emission reductions have been estimated at 152068 t CO ₂ over the 7 year crediting period. This is to be revised considering the	CAR- 2	OK



VALIDATION REPORT

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			capacity of the unit at 7.5 MW		
Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?			<p>The monitoring plan is as per the methodology and is documented in a transparent manner.</p> <p>In line with the methodology the following parameters will be monitored.</p> <ul style="list-style-type: none">- Net electricity generated by the project plant-calculated as per AMS ID- Total electricity generated by all the 4 units- measured- Electricity generation from the 3 existing (non CDM) units-measured- Surplus of biomass in the region – assessed/ review of surveys <p>The data archiving is stated to be electronic. It is to be clarified if sufficient back-up documentation will be maintained for the</p>	CL-2	OK



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			electronic data archived.		
Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR	Yes		OK
Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
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	The project does not have any project emissions.		OK
Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes, the monitoring plan provides for the monitoring of all parameters required for the determination of baseline data. In line with the methodology the following		OK



VALIDATION REPORT

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			parameters will be monitored. <ul style="list-style-type: none">- Net electricity generated by the project plant.-calculated as per AMS I D.- Total electricity generated by all the 4 units.- measured- Electricity generation from the 3 existing (non CDM) units-measured- Surplus of biomass in the region		
Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes, the choice of CO ₂ as the baseline indicator is reasonable.		OK
Is the measurement <i>method</i> clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Measurement method of each parameter has been stated		OK
Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Yes, the electricity meters will be as per the specification and requirements of the Uttar Pradesh Power corporation limited (UPPCL), and as stated in the power purchase agreement (PPA).		OK
Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with	/1/	DR	The measurement accuracy is not mentioned in the PDD. However the PPA signed		OK



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erroneous measurements?			between the project proponent and the UPPCL does mention use of class 0.2 meters. All the procedures for dealing with erroneous measurements are specified in the PPA.		
Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	Yes, the metering is continuous and the reading will be noted daily and aggregated monthly.		OK
Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?	/1/	DR	Yes, this has been provided in the PDD and was witnessed at the site also.		OK
Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR/I	Yes, as per the PPA		OK
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	The project proponent has systems in place for day to day records handling etc.		OK
Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	As of Appendix C of the SSC methodologies, “General guidance on leakage in biomass project activities”, the		OK



VALIDATION REPORT

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			project participant shall evaluate annually if there is a surplus of the biomass in the region of the project activity, which is not utilised. If it is demonstrated that the quantity of available biomass in the region, is at least 25% larger than the quantity of biomass that is utilised in the project activity, then this source of leakage can be neglected. Otherwise this leakage shall be estimated and deducted from the emission reductions. Annual monitoring of excess biomass in the region is included in the monitoring plan.		
Are the choices of project leakage indicators reasonable and conservative?	/1/	DR	Yes. An annual review of literature available /Government Records or field survey shall be carried out to compile data on the yield, consumption and availability of surplus biomass in the region.		OK
Is the measurement <i>method</i> clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	Yes, annual review. This is in line with the SSC requirements.		OK
Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable</i>					



VALIDATION REPORT

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<i>performance over time.</i>					
Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	No, monitoring of sustainable development indicators is not required or warranted in India.		OK
Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	This is not required as per the legislation.		OK
Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	Same as above		OK
Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
Is the authority and responsibility of overall project management clearly described?	/1/	DR	It is stated that a CDM manager will be appointed, and the authorities and responsibilities of this person is clear.		OK
Are procedures identified for training of monitoring personnel?	/1/	DR	Training is not mentioned in the PDD and hence clarification is required.	CL-3	OK
Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Since the project activity utilises bagasse, the project will not have any unintended		OK



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Are procedures identified for review of reported results/data?		/1/	DR	emissions. This is not mentioned in the PDD and needs clarification.	CL-3	OK
Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?		/1/	DR	This is not mentioned in the PDD and needs clarification.	CL-3	OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>						
Are the project's starting date and operational lifetime clearly defined and evidenced?		/1/	DR	The project starting date is mentioned as 1/12/2003. The operational lifetime is stated to be 21 years and is reasonable.		OK
Is the start of the crediting period clearly defined and reasonable?		/1/	DR	The start of the crediting period is stated to be 10 March 2007, and needs to be changed to after the registration of the project.	CAR-3	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>						
Has an analysis of the environmental impacts of the project activity been sufficiently described?		/1/	DR	Since the project activity is only the addition of an additional generating unit, there will not be negative environmental impacts.		OK



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Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	There is not requirement for an EIA for projects of this kind.		OK
Will the project create any adverse environmental effects?	/1/	DR	The project activity is not likely to create any adverse environmental effects as it only generates electricity by the combustion of bagasse, which generates carbon neutral CO ₂ .		OK
Are transboundary environmental impacts considered in the analysis?	/1/	DR	The project does not have any transboundary effects.		OK
Have identified environmental impacts been addressed in the project design?	/1/	DR	No environmental impacts have been identified.		OK
Does the project comply with environmental legislation in the host country?	/1/	DR	Yes, the project complies with the legislations of India. The project has all environmental clearances in place.		OK
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
Have relevant stakeholders been consulted?	/1/	DR	Yes, all the relevant stakeholders including the Gram pradhan of the Rajpura village have been contacted.		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	All the stakeholders were contacted by sending mails containing all the details of the project activity and inviting comments and responses. The project activity was also advertised in the local newspaper.		OK
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 stakeholder consultation process is not required as per the laws and regulations in the host country for this project.		OK
Is a summary of the stakeholder comments received provided?	/1/	DR	No comments were received to the mails sent.		OK
Has due account been taken of any stakeholder comments received?	/1/	DR	No comments were received.		OK



VALIDATION REPORT

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR.1 The Letter of Approvals of the host country and Annex-1 country need to be provided.		Letters of approval will be made available once received from the DNAs	The Letters of Approval have been received. The CAR is closed.
CAR.2 The capacity of the project unit considered is 8 MW. However it is noticed that the capacity is only 7.5 MW (as per the PPA and Specification sheet in the PPA). Hence 7.5 MW is to be considered for all the calculations.	Baseline Emissions	Distinction between the installed capacity of 8 MW and actual electricity supplied to grid of 7.5 MW is made in section A.4.2. CER calculations have been updated according to 7.5 MW and changes updated in the PDD.	This has been included in the PDD and is acceptable. The generator is as evidenced from the purchase agreement rated for 8 MW and the PPA states it to be 7.5 MW. The CAR is closed.
CAR.3 The start of the crediting period is stated to be 10 March 2007, and needs to be changed to after the registration of the project.	Duration of crediting period	The start date of crediting period has been updated in the PDD as 01/09/07 anticipating registration around this date.	This is OK. 01 April 2008 is selected in the revised PDD. The CAR is closed.
CL 1. Evidence is also to be provided for the starting date (construction) and the commissioning date of the project. Evidence that CDM was considered prior to project implementation is to be provided. The IRR figures in the PDD and the worksheet do not tally and need correction. Evidence is also to	Additionality	Construction start date of the project activity is 09/12/03 based on turbine purchase order date (attached) and commissioning date of the project is 13/12/04 based on information from first bill to UPPCL (attached). CDM consideration evidence has been sent to DNV separately. IRR figures have been updated in the PDD and are consistent with the figures in the	The evidences have been scrutinized and are OK. The CL is closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>be provided to the fact that the project had difficulties in obtaining finances.</p> <p>Evidence is to be provided for the fact that the PP has lost financially due to grid failures in 2003-04 as stated in the barrier analysis.</p> <p>Evidence is to be provided to the fact that there have been delays in the payment/ or no payments by UPPCL.</p>		<p>worksheet. Letters to UPPCL asking for time extension have been provided which shows statements from the developer that they are having financing difficulties (attached again).</p> <p>Copies of log books are attached for April 03-March 04 showing grid failure details. A spreadsheet is attached summarizing this data and showing the translation to financial losses based on prevalent tariff at the time.</p> <p>Attached is a spreadsheet table showing the billing and payment dates and the assessed 2.5% rebate by UPPCL even after late payment going against the clause in the PPA (attached). Attached are scanned copies of invoices to and payments from UPPCL showing late payments and deductions.</p>	
<p>CL-2</p> <p>The data archiving is stated to be electronic. It is to be clarified if sufficient back up documentation will be maintained for the electronic data archived.</p>	Monitoring Methodology	QA/QC section of PDD (Section D.4) is updated based on information that sufficient backup data will be maintained for electronic data through the main server and also through manual data recordings in log books.	This is deemed acceptable and the CL is closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL-3 Procedures on training etc. (as in the project management planning are to be presented.	Project Management Planning	As mentioned in the PDD a detailed monitoring plan will be developed for the CDM project. This plan will detail the specific equipments used for monitoring each parameter, the calibration and maintenance schedule for each equipment, the data to be monitored along with frequency and will also outline the responsibilities for monitoring. Operations staff are well qualified and trained to operate the equipment due to past experience with the captive power plants. Therefore, no further training is required for operation. Staff will receive basic training on CDM and the importance of maintaining quality data and procedures for backup and corrective actions.	The monitoring plan is stated to be under preparation. The monitoring section in the PDD outlines the salient features and is OK. The monitoring plan is to be evidenced during the verification. The CL is closed.

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 5		
Technical Reviewer for (group of) methodologies:			
ACM002, AMS-IA-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

Amit Thusu

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-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



CERTIFICATE OF COMPETENCE

Anu Chaudhary

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	Yes	<i>JI Validator:</i>	Yes
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
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	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Einar Ternes

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
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	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS- III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Ternes
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