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# VALIDATION OPINION FOR CREDITING PERIOD RENEWAL

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## 4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd

CDM REGISTRATION NUMBER: 0298

REPORT No. 2008-10565

REVISION No. 02

DET NORSKE VERITAS




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Date of first issue: 2008-06-15	Project No.: 46089056
Approved by: Michael Lehmann	Organisational unit: Climate Change Services
Client: Malavalli Power Plant Pvt Ltd	Client ref.: K Krishan

**Project Name:** 4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd

**UNFCCC Ref No:** 0298

**Country:** India

**Methodology:** AMS-I.D

**Version:** 11

**Size**

Large Scale

Small Scale

In summary, it is DNV's opinion that the project meets the requirements for the renewal of the crediting period stated in the Procedures for renewal of a crediting period of a registered CDM project (version 02, Annex 60 of EB 33 report). Hence, DNV requests the renewal of the crediting period of project activity 0298 entitled "4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd" in Karnataka by Malavalli Power Plant Pvt Ltd.

Report No.: 2008-1056	Date of this revision: 2009-01-26	Rev. No. 02
Report title: <i>4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd in Karnataka, by MPPL</i>		
Work carried out by: Chandrashekara Kumaraswamy, Michael Lehmann		
Work verified by: Venkata Raman Kakaraparthi		

Key words:

Climate Change

Kyoto Protocol

Validation

Clean Development Mechanism

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## 1 Introduction

Det Norske Veritas Certification AS (DNV) has performed a validation of the revised CDM-SSC-PDD (version 2 dated 24 April 2008) for the CDM project activity 0298 entitled “4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd” in Karnataka by Malavalli Power Plant Pvt Ltd (MPPL, hereafter called “the project”), following a request by MPPL for the renewal of the crediting period for this project. The first renewable crediting period for this project ends on 31 July 2008.

The scope of this validation is as per the Procedures for Renewal of a Crediting Period of a Registered CDM Project (version 02, Annex 60 of EB 33 report). The findings and conclusions on the project’s compliance with para 2 and para 6 of above mentioned procedure is recorded in this document. However, this document must be seen in conjunction with the validation report and protocol for the project submitted at the time of requesting registration of the project (DNV Report No: 2005-9065, rev. 02).

## 2 Validation process

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 opinion

The following sections outline each step in more detail.

### 2.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ Revised PDD for the project activity “4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd” in Karnataka by Malavalli Power Plant Pvt Ltd” version 02 dated 24 April 2008. UNFCCC reference number -0298.
- /2/ Official website of the CEA for the grid emission factor.
- /3/ Survey of biomass raw materials by Span Educational and Charitable Trust
- /4/ Page No 5 in Table 3.2 Annual Report 2006-2007, Ministry of New and Renewable Energy
- /5/ Pg No 3, Power Scenario at a glance,- 2007  
<http://cea.nic.in/planning/POWER%20SCENARIO%20AT%20A%20GLANCE/POWER%20SCENARIO%20AT%20A%20GLANCE%20FOR%20THE%20MONTH%20OF%20JUNE,2007.pdf>
- /6/ Power Scenario at a Glance-2006,Central Electricity Authority, [www.cea.nic.in](http://www.cea.nic.in)
- /7/ Table 2.6 , page 22, Integrated Energy Policy Report of the Expert Committee – Government of India Planning Commission New Delhi (August 2006).  
[http://planningcommission.nic.in/reports/genrep/rep\\_intengy.pdf](http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf)
- /8/ <http://planningcommission.nic.in/plans/planrel/11thf.htm>

The PDD was revised towards the end of the first renewable crediting period of 7 years (31<sup>st</sup> July 2008) in April 2008. The PDD has been revised to include the latest grid emission factor for the




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southern regional grid of India, using the operating and build margins values, that have been calculated as per the ACM0006 version 06 methodology and published by the Central Electricity Authority (CEA) for CDM projects in India.

## 2.2 Follow-up Interviews with Project Stakeholders

Date	Name	Organization	Topic
/3/ 23 April 2007	MPPL – Mr K. Krishan – Managing Director	MPPL	- Project baseline - Grid emission factor for the southern regional grid.
	Mr Sekhar – Project Manager	MPPL	
	Mr. Narsingh – CDM Coordinator	MPPL	

## 2.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to DNV's positive validation opinion for the renewable of the crediting period.

## 2.5 Validation Team

Role/Qualification	Last Name	First Name	Country
CDM Validator	Chandrashekara	Kumaraswamy	India
Sector expert	Lehmann	Michael	Norway
Technical Reviewer	Kakaraparthi	Venkata Raman	India

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

## 2.6 Internal Quality Control

The validation opinion underwent a technical review before requesting renewal of the crediting period for 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

### 3.1 Application of latest approved version of a baseline and monitoring methodology

The project was originally registered based on version 09 of AMS-I.D. The revised CDM-SSC-PDD (version 3 dated 22 May 2007) applies version 11 of AMS-I.D. This was the version of the methodology in effect when the revised CDM-SSC-PDD was submitted for the renewal of the crediting period for this project.



### 3.2 The validity of the original baseline scenario or its update

As the project activity is feeding power to Karnataka state electricity grid which is a part of southern region electricity board, the baseline for this project activity is the function of the generation mix of southern region grid. Using the methodology available for small-scale project activities as applicable for category I.D, the simple weighted average of current generation mix (in kgCO<sub>2</sub>equ/kWh) of southern grid of India was used for the calculation of baseline for the first crediting period. The generation data for the year 2001 (the year in which the present project started its generation) was considered as the basis for designing the baseline and had been estimated to be 0.7659 kg CO<sub>2</sub>e / kWh. This was based on data sourced from the Central Electricity Authority and appropriate IPCC default values.

The baseline emission factor for the next renewable crediting period from 1 August 2008 to 31 July 2015 is established *ex-ante* as per the approved methodology ACM0002 (version 06) and based on the operating and build margin figures for the southern regional grid published by the Central Electricity Authority (CEA) of India. The central electricity authority, Ministry of Power, Government of India has published the database of carbon dioxide emission factors from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This database provides information about the OM and BM factors of all the regional electricity grids in India. DNV confirms that the database is an official publication of the Government of India for the purpose of CDM projects and that the OM in the CEA database is calculated *ex-ante* using the simple OM approach and the BM is calculated based on 20% most recent capacity additions in the grid based on net generation as described in ACM0002, version 06. The average of the OM for the three years 2004-05, 2005-06 and 2006-07 has been determined and verified to be 1.0004 tCO<sub>2</sub>e/MWh and the BM to be 0.705 tCO<sub>2</sub>e/MWh. The weighted average of the “operating margin” and the “build margin” emission coefficient for southern regional grid of India has thus been determined to be 0.780 tCO<sub>2</sub>e/MWh (fixed *ex-ante*), using a OM:BM weight of 25:75 as recommended for projects applying for a renewal of the crediting period in the “Tool for calculation of the emission factor for an electricity system”.

### 3.3 An impact of new relevant national and/or sectoral policies and circumstances on the baseline scenario:

Although the Ministry of New and Renewable Energy tries to favor the development of renewable energy sources, the share of electricity from biomass electric projects in India’s total installed capacity is negligibly low. According to the latest statistics published by the Ministry of New and Renewable Energy (MNRE)/4/, the total installed capacity of biomass projects is only 1101.83 MW, where as the India’s total installed capacity is around 134,716 MW/5/ which accounts for less than 1%.

The Ministry of Power (MoP), Government of India has set an agenda of providing power for all by the year 2012. To meet the present national deficit of 16.3 %/6/ and to achieve the above target, about 100,000 MW of new capacity needs to be added by the end of 2012 to the existing installed capacity of 1,243,025 MW/6/. In line with the Five Year Plan system being followed by the Planning Commission of India, the MoP decided to add about 46,000 MW during the period 2002-2007 and about 61,000 MW during the period 2008-2012. Emphasis has been laid on setting up large coal based pithead stations to avoid high costs associated with transporting high ash bearing Indian coal and over-straining the already stretched rail network.




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The Integrated Energy Policy Report 7/ additionally shows that electricity requirements in the future can be met by various fuels, including coal, nuclear power, hydropower, gas, oil and renewable such as biomass, wind energy, solar energy, etc. A possible fuel mix scenario has been developed. The report forecasts significant increases in India's coal fired generation and a very low proportion of renewable resource based power generation in the next 25 years (less than 6% for the whole period from 2006 to 2031).

The 11th Plan /8/ refers to the forecasts of the Integrated Energy Policy. It recognizes that from a long term perspective and keeping in mind the need to maximally develop domestic supply options as well as the need to diversify energy sources, renewables remain important to India's energy sector. It would not be out of place to mention that solar power could be an important player in India attaining energy independence in the long run. With a concerted push and a 40 fold increase in their contribution to the primary energy, renewables may account for only 5 -6% of India's energy mix by 2031-32.

These policies clearly indicate that the Government is leaning towards fossil fuel generation to meet the deficit in power requirement, which confirms the validity of the baseline scenario and indicates that the trend is rather towards a more GHG intensive baseline.

The most relevant sectoral policies implemented since start of the project activity (from 2001 onwards), are summarized in the table below. As discussed above, none of these policies affect the baseline.

Year	Policy name	URL
2002	10 <sup>th</sup> plan	<a href="http://www.powermin.nic.in">www.powermin.nic.in</a>
2006	Integrated Energy	<a href="http://www.planningcommission.nic.in/reports/genrep/rep_intengy.pdf">www.planningcommission.nic.in/reports/genrep/rep_intengy.pdf</a>
2007	11 <sup>th</sup> Five Year Plan	<a href="http://planningcommission.nic.in/plans/planrel/11thf.htm">http://planningcommission.nic.in/plans/planrel/11thf.htm</a>

It can also be concluded that there are no new policies or regulations, which would mandate the implementation of the project activity. DNV also confirms that the major assumptions presented in the additionality section are still valid and not affected by any changes in national sectoral policies or circumstances

### 3.4 Monitoring

The project applies the approved monitoring methodology AMS-I.D version 11. The selected monitoring methodology is applicable to the project activity as it involves grid-connected renewable power generation using biomass.

The monitoring plan adequately addresses all necessary information for monitoring and reporting of emission reductions due to the project activity.

The monitoring plan provides for monitoring of the amount of power generated from the biomass based power plant which is dispatched to the Karnataka state grid.

It has been demonstrated that the biomass is available in surplus and hence the biomass used in the project is not diverted from any other project activity. For leakage estimation and to establish that the biomass material used in the project period is from sustainable source, the monitoring plan provides for monitoring of biomass material used in the project plant by type and amount. Biomass assessment in the region will be carried out annually based on the latest available literature / data from the government sources. In absence of official data, a biomass assessment study will be carried out by third party assessors who have prior experience in such work. At the



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time of re-validation, MPPL has submitted to DNV a survey of biomass raw materials by Span Educational and Charitable Trust, which demonstrates that there is abundant biomass material in around the location of the project activity.

For transport related leakage estimation the distance from which the biomass can be sourced is used along with transporters' data related to type of fuel used, the average distance over which the biomass material is transported and average truck load of biomass material is also measured in the project plant.

The organisation has established a management structure for the CDM project with clear roles and responsibilities, calibration of measuring instruments and authority for necessary corrective actions

### **3.4.1 Estimation of the GHG emissions**

The project is expected to result in an average of 20 000 t CO<sub>2</sub>/year during the 2<sup>nd</sup> renewable crediting period starting from 1 August 2008 to 31 July 2015.

### **3.5 The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the respective crediting period:**

Since the projects capacity is less than 15 MW, the project is eligible as type I small-scale CDM project activity and can apply a simplified baseline methodology. The project applies the baseline methodology stipulated for category I.D of the "simplified modalities and procedure for small scale CDM project activity" (AMS-I.D, version 11). The simplified baseline methodology AMS-I.D is applicable for grid connected renewable electricity generation projects and includes biomass power based projects. The application of AMS-I.D is justified as the project generates electricity using biomass and it displaces the grid electricity.

The project will partly displace fossil fuel-based electricity generation. While the project emissions are zero, baseline emissions are equal to the emission reductions due to the project activity and have been estimated to be 20 000 tCO<sub>2</sub> per year, based on an ex-ante fixed baseline emission factor of 0.780t CO<sub>2</sub>/MWh.

## **4 Validation Opinion**

It is DNV's opinion that the project meets the requirements for the renewal of the crediting period stated in the Procedures for renewal of a crediting period of a registered CDM project (version 02, Annex 60 of EB 33 report). Hence, DNV requests the renewal of the crediting period of project activity 0298 entitled "4.5 MW Biomass (low density crop residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd" in Karnataka by MPPL.

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## **APPENDIX B**

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### **CERTIFICATES OF COMPETENCE**



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## CERTIFICATE OF COMPETENCE

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### *Raman Venkata Kakaraparthi*

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

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

Høvik, 30 October 2007

*Michael Lehmann*

Michael Lehmann

*Technical Director, International Climate Change Services*



## CERTIFICATE OF COMPETENCE

### *Michael Lehmann*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ-I-1)

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	Yes
<b>CDM Verifier:</b>	Yes	<b>JI Verifier:</b>	Yes
<b>Industry Sector Expert for Sectoral Scope(s):</b>	Sectoral scope 1, 2, 3		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

**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

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	--
<b>CDM Verifier:</b>	Yes	<b>JI Verifier:</b>	--
<b>Industry Sector Expert for Sectoral Scope(s):</b>	Sectoral scope 4 & 5		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS- III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

**Einar Telnes**  
*Director, International Climate Change Services*

**Michael Lehmann**  
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