



VERIFICATION / CERTIFICATION REPORT

BAGEPALLI CDM BIOGAS PROGRAMME IN INDIA

VERIFICATION PERIOD:
01 SEPTEMBER 2006- 31 AUGUST 2007

REPORT No. 2007-1121

REVISION No. 01

DET NORSKE VERITAS



VERIFICATION / CERTIFICATION REPORT

Date of first issue: 2007-12-05	Project No.: 46071121
Approved by: Michael Lehmann	Organisational unit: DNV Certification, International Climate Change Services
Client: Velcan Energy India Pvt Ltd.	Client ref.: Dr Sudha Padhmanabha

DET NORSKE VERITAS
CERTIFICATION AS

Climate Change Services

Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

<p>Summary:</p> <p>Det Norske Veritas Certification AS has performed a verification of the emission reductions reported for the “Bagepalli CDM Biogas Programme” in India (UNFCCC reference number: 0121) for the period 01 September 2006 to 31 August 2007.</p> <p>In our opinion, the GHG emissions reductions reported for the project in the monitoring report version 01 of 05 October 2007 are fairly stated.</p> <p>The GHG emission reductions were calculated correctly on the basis of AMS–I.C version 05 and the monitoring plan and formulae provided in the validated and registered PDD.</p> <p>Hence, Det Norske Veritas Certification AS is able to certify that the emission reductions from the “Bagepalli CDM Biogas Programme” for the period 01 September 2006 to 31 August 2007 amount to 11 761 tCO₂ equivalent.</p>

Report No.: 2007- 1121	Subject Group: Environment	
Report title: Bagepalli CDM Biogas Programme in India.		
Work carried out by: Mathsy K, Michael Lehmann, Kakaraparthi Raman.		
Work verified by: Chandrashekara Kumaraswamy		
Date of this revision: 2007-12-05	Rev. No.: 01	Number of pages: 08

Indexing terms

Key words Climate Change Kyoto Protocol Verification Clean Development Mechanism	Service Area Verification
	Market Sector Renewable energy Industry

- No distribution without permission from the client or responsible organisational unit
- free distribution within DNV after 3 years
- Strictly confidential
- Unrestricted distribution

© 2002 Det Norske Veritas AS

All rights reserved. This publication or parts thereof may not be reproduced or transmitted in any form or by any means, including photocopying or recording, without the prior written consent of Det Norske Veritas AS.



<i>Table of Content</i>		<i>Page</i>
1	INTRODUCTION	1
1.1	Objective	1
1.2	Scope	1
1.3	GHG Project Description	1
2	METHODOLOGY	2
2.1	Review of Documentation	3
2.2	Site Visits	3
2.3	Assessment	4
2.4	Reporting of Findings	4
3	VERIFICATION FINDINGS	5
3.1	Remaining Issues, CARs, FARs from Previous Validation or Verification	5
3.2	Project Implementation	5
3.3	Completeness of Monitoring	5
3.4	Accuracy of Emission Reduction Calculations	6
3.5	Quality of Evidence to Determine Emission Reductions	6
3.6	Management System and Quality Assurance	6
4	VERIFICATION STATEMENT	7
5	REFERENCES	9
	Initial Verification Checklist	1
	Appendix A Verification Checklist	



Abbreviations

ADATS	Agricultural Development and Training Society
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH ₄	Methane
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
DOE	Designated Operational Entity
ERU	Emission Reduction Units(s)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MNES	Ministry of Non-Conventional Energy Sources
MNRE	Ministry of New and Renewable Energy.
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
GWP	Global Warming Potential



1 INTRODUCTION

Det Norske Veritas Certification AS (DNV) has been commissioned by Velcan Energy India Pvt. Ltd, to carry out the verification of emission reductions reported for the “Bagepalli CDM Biogas Programme” (hereafter called the project) for the period 01 September 2006 to 31 August 2007. This report contains the findings from this verification assignment.

The verification team included:

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Country</i>
CDM Validator	Kutty	Mathsy	India
Team leader, CDM verifier	Kakaraparthi	Raman	India
Technical reviewer	Chandrashekara	Kumaraswamy	India
Sector Expert	Lehmann	Michael	Oslo

1.1 Objective

Verification is the periodic independent review and *ex post* determination by the Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of a registered CDM project activity during a defined verification period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan,
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material mis-statement,
- to verify that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

The verification team has, based on the recommendations in the Validation and Verification manual /8/, employed a risk-based approach, focusing on the identification of significant reporting risks.

1.3 GHG Project Description

The project activity includes installation and operation of 5 500 biogas plants (digesters) of 2 m³ capacity, at individual households in various villages located in five taluks in the Kolar district of Karnataka, India. The taluks in Kolar district, where the project activity has been implemented include: Sidlaghatta, Chintamani, Chikkaballapura, Gudibande and Bagepalli. The project helps replace the commonly used inefficient fuel wood fired, mud stove technology (baseline scenario)



with clean, sustainable and efficient biogas plants (digesters) that uses cow dung, thereby replacing non-renewable biomass (fuel wood) and kerosene with renewable biogas.

The responsibility of operation and maintenance of these digesters have been taken up by Agricultural Development and Training Society (ADATS). The technology used in the project activity is indigenously available in India and is based on the Deenbandhu model that has been approved by the Ministry of Non-Conventional Energy Sources (MNES), now referred to as the Ministry of New and Renewable Energy (MNRE).

Prior to the implementation of the project activity, the source of thermal energy in the households was non renewable biomass (wood) and kerosene. The implementation of the project activity is estimated to have resulted in reduction of the consumption of fuel wood by nearly 2.85 tonnes per annum at individual household where the digesters have been installed, of which approximately 2.15 tonnes per annum is non-renewable biomass. The annual consumption of kerosene has also reduced from 31.2 litres to being zero.

The emission reductions reported for the project activity for the period from 01 September 2006 to 31 August 2007 is estimated to be 11 761 tCO₂e.

The project details are as given below:

<i>Project Parties:</i>	India and France.
<i>Title of project activity:</i>	Bagepalli CDM Biogas Programme
<i>UNFCCC registration No:</i>	0121
<i>Project Participants:</i>	Agricultural Development and Training Society (ADATS) and Velcan Energy.
<i>Location of the project activity:</i>	The project activity (i.e.: the individual digesters at households) is spread over 5 taluks in the Kolar district, Karnataka state, India. Of the 5 500 digesters mentioned in the registered PDD, a total of 4 399 digesters have already been commissioned for the chosen verification period.

The project proponent has chosen a renewable crediting period of 7 years and was registered with start date of crediting period as 18 December 2005 – 17 December 2012. However, the same was changed to 01 September 2006 – 31 August 2013, through a request made to the secretariat.

Vide the revised modalities of communication, dated 02 June 2006, the project participant, Women for Sustainable Development, addressed in the registered PDD, withdrew from the project. The current participants include ADATS and Velcan Energy, with Velcan Energy serving as the focal point for all communications for the project.

2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. As the CDM Executive Board has not yet formally endorsed the application of any materiality principle for verification of emission reductions from CDM projects - implying that emphasis should be on the significant contributors to emission reductions - DNV has for this assignment decided to check all factors and issues with the same



emphasis. In line with the monitoring plan in the PDD and validation report, a statistically significant sample (5% of total installed capacity) was planned. The team had during its preparations identified the key reporting risks and used the assessment to determine to which extent the project operator's control systems were adequate for mitigation of these key reporting risks. The verification process was guided by periodic verification checklist (see appendix A), which provides for a transparent periodic verification process, and documents emission reductions verified and the reasoning behind the verification findings.

Duration of verification

Preparations: *05 November to 07 November 2007.*
 On-site verification: *09 November 2007 to 10 November 2007.*
 Reporting: *19 November 2007 – 5 December 2007*

2.1 Review of Documentation

The monitoring report for the period 01 September 2006 – 31 August 2007 /4/, the emission reduction calculation sheets /3/ and the survey results /6/ /7/ submitted by Velcan Energy were assessed as a part of the verification. Additionally, the monitoring plan contained in the PDD /1/, the validation report /2/, the simplified baseline and monitoring methodology applied to the project at the time of PDD registration, AMS IC version 05 /5/, were assessed as part of verification activity.

The project operator also provided additional documents to the verification team, which provided input data for the emission reduction calculations, like data from daily monitoring biogas user's manual book, InfoNeeds (online database), necessary for verification of the required emission factors. The survey results for non-renewable wood and kerosene usage and energy production were also provided to re-iterate the conservativeness and the applicability of the selected baseline.

2.2 Site Visits

Detailed verification of all data contained in the monitoring report was performed during a site visit at ADATS, Bagepalli between 09 November 2007 and 10 November 2007. During the site visit, the following personnel were interviewed by and/or assisted the verification team:

<u>Name</u>	<u>Organization</u>	<u>Position</u>
Mr. Ram Esteves	ADATS	Director.
Mr. Mario Esteves	ADATS	Assistant Director
Dr. Sudha Padmanabha	Velcan Energy	CDM In Charge
Mr Abid Pasha	ADATS	System Administrator

Additionally, a sample of about 5% of the total installed 4 399 digesters was selected and the validation team visited the 220 individual households. The 220 sample covered included all the 5 taluks addressed above, covering the following villages:



 VERIFICATION / CERTIFICATION REPORT

<i>Taluk Name</i>	<i>Villages visited</i>
Bagepalli	<ul style="list-style-type: none"> • D Kothapalli • Jeekavanlapalli • Sajjapalli MV • Sajjapalli HC
Siddlagatta	<ul style="list-style-type: none"> • Raguttahalli • Marihalli • Chowdireddihalli
Gudibande	<ul style="list-style-type: none"> • Kondavulapalli • Singanapalli
Chintamani	<ul style="list-style-type: none"> • Raguttahalli • Kottagal B • Dodda Kondarahalli • Mailapura HC • Mailapura MV
Chikkaballapur	<ul style="list-style-type: none"> • Reddigollarahalli

The interview included having dialogues with the household members regarding their usage of fuel wood since the implementation of the project activity, the frequency and dependence on the biogas from the digesters for cooking, use of kerosene, if any, etc.

2.3 Assessment

The data presented in the monitoring report were assessed in detail through a review of the detailed project documentation, survey studies, daily monitoring of operational biogas systems and interviews with individual household members of the selected sample of 5% at the 5 taluks included, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This enabled the verification team to assess the accuracy and completeness of the reported monitoring results and verify the correct application of the approved monitoring methodology.

Data that has been estimated and fixed ex-ante include the emission reduction factor of 3.56 tCO_{2e} per operational unit (through the avoidance of combustion of nonrenewable biomass fuel) in the given year. However, to confirm the applicability and conservativeness of this factor, the project proponent carries out voluntary surveys annually. The energy produced by the system is also monitored once in every six months, in line with the monitoring plan.

2.4 Reporting of Findings

Findings established during the verification may be that:

- i) the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;
- ii) the verification has identified material misstatements in the reported emission reductions. Emission reductions with material misstatements shall be discounted based on the verifier's ex-post determination of the achieved emission reductions.



A Forward Action Requests (FAR) should be issued, where:

- i) The actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or an adjustment of the monitoring plan (MP) is recommended.

In the context of FARs, risks have been identified, which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the monitoring plan. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.

3 VERIFICATION FINDINGS

In the following sections the findings of the verification are stated. The verification criteria (requirements), the means of verification and the results from verifying the identified criteria are documented in more detail in the verification checklist described in Appendix A to the verification/certification report.

3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification

According to the validation report /2/, no CARs or CLs were required to be closed out during verification. This has again been confirmed by DNV. All the identified issues were closed during the validation of the project.

3.2 Project Implementation

The project activity involved installation and operation of 5 500 digesters in phases, at individual households, thus avoiding the use of non-renewable biomass like the fuelwood from forests and the use of kerosene in the baseline scenario. For the chosen monitoring period, a total of 4 399 digesters have been installed, which have been accounted for in the estimation of emission reductions.

3.3 Completeness of Monitoring

As stated in the monitoring plan of the registered PDD, the following parameters are being monitored:

- Number of digesters installed
- Number of digesters operational
- Average annual operating time
- Survey of energy produced by the digesters

In addition to the above parameters as defined in the monitoring plan, the project proponent also voluntarily carries out an annual survey of the non-renewable wood and kerosene usage, to confirm the conservativeness and applicability of the baseline selected. The monitoring for the project was found to be complete and in accordance with the approved monitoring methodology AMS-I.C, version 05, and the monitoring plan contained in the registered PDD. Knowledge of personnel associated with the project activity was also found to be satisfactory.



3.4 Accuracy of Emission Reduction Calculations

In line with the registered PDD, the project proponent adopted a half yearly monitoring of the operational digesters, which is the main and only parameter that is utilised in the emission reduction calculations. However, to have a more accurate estimate of the emission reductions due to the project implementation, the monitoring frequency for the operational digesters were switched to daily monitoring, starting February 2007. Hence, for each day where the digester was not operational in a given year, the emission reduction calculation reflects the same. The emission reductions are estimated using the formula given below:

$$\text{Emission reductions (tCO}_2\text{e/year)} = (\text{total number of operational days for each digester} / 365) \times \text{ex-ante baseline emission ratio per household of 3.56 tCO}_2$$

Hence, the formula accounts for emission reductions only for each operational day for a specific digester, since its commissioning, taking into account the fact that the digesters have been commissioned in phases at different times.

Additionally, surveys to confirm the conservativeness and the applicability of the ex-ante baseline factor of 3.56 tCO₂e are carried out. The surveys carried out once in six months during the monitoring period include monitoring of the firewood and kerosene usage by the non-biogas users and the energy produced by the system. It has been adequately demonstrated that the baseline is still applicable, since the actual firewood and kerosene usage was found to be 3.82 tonnes and 34.75 liters per household per annum, respectively, as against the lower and conservative values of 2.15 tonnes and 31.2 liters per household per annum, respectively, used in the estimation of the baseline emission ratio.

3.5 Quality of Evidence to Determine Emission Reductions

The daily monitoring report for the operational digesters was presented to DNV during the verification site visit. The completed books are maintained at ADATS. This data from the daily monitoring report for operational digesters are further uploaded on the ADATS online database – InfoNeeds.

Additionally, all necessary data from the surveys carried out including the energy production (monitored once in six months) and the voluntary annual survey of the non-renewable wood and kerosene usage are entered and archived in a database in the office of ADATS. All the data are also available in hardcopies and were evidenced during the verification process.

3.6 Management System and Quality Assurance

ADATS has sufficiently established management procedures and has implemented them effectively to ensure that the process is consistent. The complete project boundary has been divided into 16 designated “Areas”, comprising of a total of 341 villages. Each area consists of a field worker, case worker, and a Mahila trainer. Each “Area Team” further disseminates the responsibility at village level, through cluster secretaries, village health workers and Balakendra teachers. The procedures cover management responsibilities, data monitoring procedures, training procedures, periodical internal audits, management reviews and corrective actions in case of any deviations effectively.



4 VERIFICATION STATEMENT

Det Norske Veritas Certification AS (DNV) has been engaged by Velcan Energy, to verify the greenhouse gas (GHG) emission reductions reported for the “Bagepalli CDM Biogas Programme” in India for the period from 01 September 2006 to 31 August 2007, amounting to 11 761 tonnes of CO₂ equivalent.

The project has applied the approved baseline and monitoring methodologies AMS I C, version 05, and emission reductions are reported in the monitoring report dated 05 October 2007. We express no opinion on the baseline methodology neither on the project nor on the validated and registered PDD.

Responsibilities of the Bagepalli CDM Biogas Programme’s project management – Velcan Energy and Det Norske Veritas Certification AS.

The management of the “Bagepalli CDM Biogas Programme” project is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the monitoring report (dated 05 October 2007). The development and maintenance of records and reporting procedures are in accordance with the approved monitoring methodology AMS I C, version 05, and the monitoring plan contained in the registered PDD, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

It is DNV’s responsibility to express an independent verification statement on the GHG emission reductions reported for the project for the period from 01 September 2006 to 31 August 2007 based on the verified emissions for the same period and the project’s compliance with the approved baseline and monitoring methodology AMS I C, version 05, and the monitoring plan contained in the registered PDD.

Basis of GHG verification opinion

Our verification approach was based on the requirements as defined under the Kyoto Protocol, the CDM modalities and procedures, as well as those defined by the CDM Executive Board and by the baseline and monitoring methodology AMS I C version 05.

Our verification approach draws on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment of evidence relevant to the amounts and disclosures in relation to the project’s GHG emission reductions reported for the period from 01 September 2006 to 31 August 2007.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the reported amount of GHG emission reductions for the period from 01 September 2006 to 31 August 2007 are fairly stated.

We conducted our verification on the basis of the monitoring methodology AMS I C, version 05, and the monitoring plan contained in the registered PDD of the project. The verification included:

- *Collection of evidence supporting the reported data.*



- *checking whether the provisions of the monitoring methodology AMS I C, version 05, and the monitoring plan in the PDD were consistently and appropriately applied.*

Certification Statement

In our opinion, the GHG emission reductions stated in the revised CDM monitoring report of 10 October 2006 for the “Bagepalli CDM Biogas Programme” in India for the period from 01 September 2006 to 31 August 2007 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology (AMS-I.C) and the monitoring plan contained in the registered PDD. Hence, Det Norske Veritas Certification AS is able to certify that the reported emission reductions from the project during the period 01 September 2006 to 31 August 2007 amount to 11 761 tonnes of CO₂ equivalent.

Bangalore and Oslo, 5 December 2007

Manager
Climate Change Services
Det Norske Veritas Certification AS.

Technical Director
Climate Change Services
Det Norske Veritas Certification AS



5 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the periodic verification conclusions, and are usually further checked through interviews with key personnel.

- /1/ Velcan Energy; Project Design Document – “Bagepalli CDM Biogas Programme” in Kolar, India.
- /2/ Det Norske Veritas (DNV): Validation Report, (report number: 2005-9058) dated 30 October 2005
- /3/ Emission reduction calculation sheet for the first monitoring period (01 September 2006 – 31 August 2007)
- /4/ Velcan Energy and ADATS: Monitoring Report for “Bagepalli CDM Biogas Program” for the period 01 September 2006 – 31 August 2007, dated 05 October 2007.
- /5/ CDM Executive Board: Approved Monitoring methodology AMS 1-C , version 05, September 2005

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

- /6/ Results of survey of the non-renewable wood and kerosene usage (excel sheet)
- /7/ Results of the survey carried out for energy production (excel sheet)
- /8/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): Validation and Verification Manual. <http://www.vvmanual.info>.

Persons interviewed during the initial verification, or persons contributed with information.

- /9/ Mr. Ram Esteves, ADATS – Director.
- /10/ Mr. Mario Esteves, ADATS – Assistant Director
- /11/ Dr. Sudha Padmanabha, Velcan Energy India Pvt – Ltd CDM In Charge
- /12/ Mr Abid Pasha, ADATS – System Administrator
- /13/ Individual households in the 5 Taluks, where the digesters have been implemented considering a 5% sample was also interviewed.

APPENDIX A

VERIFICATION CHECKLIST

Initial Verification Checklist

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
A. Opening Session			
A.1. Introduction to audits		Outline of the Initial verification process was presented by Team Leader. <ul style="list-style-type: none"> ➤ Objectives ➤ Verification team, plan ➤ Confirmation of participation ➤ Definition of FAR/CAR ➤ Obligation to confidentiality 	OK
A.2. Clarification of access to data archives, records, plans, drawings etc.		Activities related to the project, e.g.: Measurement, calculation, reporting, calibration, control of documentation and records is planned and covered as per procedures defined. Access to these was verified to be clear and implementation was verified to be effective.	OK
A.3. Contractors for equipment and installation works <i>Who has installed the equipment? Who was contracted for planning etc.?</i>		Agricultural Development and Training Systems (ADATS) took the responsibility of installation of each digester in the 5500 households. 123 masons were trained by ADATS for the construction of the digesters. The information regarding each mason, including the digesters installed by them, is maintained in the online database – InfoNeeds.	OK
A.4. Actual status of installation works <i>Project installation should be finished at time of initial verification in so far as the project should be ready to generate</i>		The project involves installation of a total of 5 500 digesters in phases. For the chosen monitoring period i.e.: 01 September 2006 to 31 August 2007, the project has 4 399 digesters commissioned. Hence, the emission reductions due to the project are estimated based on the 4 399	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>emission reductions afterwards.</i>		<p>digesters already in operation during this period.</p> <p>The project was initially registered with start date of crediting period as 18 December 2005. However, the project proponent requested the EB for change of the start date of crediting period to 01 September 2006.</p>	
<p>B. Open issues indicated in validation report</p> <p><i>Especially in projects which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues which should have been indicated by the validation report.</i></p>			
<p>B.1. Missing steps to final approval</p>		<p>No issues remain to be addressed as per the registered validation report submitted.</p>	<p>OK</p>
<p>C. Implementation of the project</p> <p><i>This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification</i></p>			
<p>C.1. Physical components</p> <p><i>Check the installation of all required facilities and equipment as described by the PDD.</i></p>		<p>The biogas digesters were planned to be installed in phases and currently 4399 digesters (of 2 m³ capacity) have been commissioned for the chosen monitoring period of 01 September 2006 to 31 August 2007. The biogas from the fixed dome digesters (Deenbandhu model) are passed through the pipe to the stoves provided to individual households.</p>	<p>OK</p>
<p>C.2. Project boundaries</p> <p><i>Check whether the project boundaries are still in compliance with the ones indicated by the PDD.</i></p>		<p>The project boundaries are in line with those defined in the registered PDD to include the individual biogas plants installed (4 399 digesters of the said 5500 digesters), the pipes and the stove. The geographical boundary includes the taluk of Bagepalli, Sidlagatta, Chintamani,</p>	<p>OK</p>

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
		Gudibande and Chikkaballapur, in Kolar District, in the state of Karnataka, India.	
<p>C.3. Monitoring and metering systems <i>Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i></p>		The project does not involve any metering systems since the emission reductions are estimated based on the number of operational digesters in the given monitoring period. This is in line with the registered PDD and the methodology.	OK
<p>C.4. Data uncertainty <i>How will data uncertainty be determined for later calculations of emission reductions? Is this in compliance with monitoring and metering equipment?</i></p>		The only parameter monitored and used for the estimation of the emission reductions is the number of operational digesters each day. In line with the PDD, the project proponent initially monitored the number of operational digesters for the first six months, in February 2007. However, for a much precise estimation of the emission reductions, the project proponent has followed continuous monitoring of the number of the operational digesters, since February 2007, to account for the non-operational digesters in any given day.	OK
<p>C.5. Calibration and quality assurance <i>Check how monitoring and metering systems are subject to calibration and quality assurance routines</i> a) <i>with installation</i> b) <i>during future operation</i></p>		Not applicable.	OK
<p>C.6. Data acquisition and data processing systems <i>Check the eligibility of used systems.</i></p>		Same as above.	OK
<p>C.7. Reporting procedures <i>Check how reports with relevance for the</i></p>		Project Management system procedures as uploaded in InfoNeeds, the company database for the project, including responsibility and authority of monitoring and reporting activities, have been verified to	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>later determination of emission reductions will be generated</i>		be meeting the requirements as indicated in the registered validation report.	
<p>C.8. Documented instructions <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.</i></p>		All the activities have been performed as per the defined procedures and are satisfying the requirements needed to monitor emission reductions effectively.	OK
<p>C.9. Qualification and training <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.</i></p>		Monitoring mainly involving the noting down of the operational digesters is carried out as per procedures defined and by competent personnel. The procedures defined take care of required competence for performing tasks as per documented instructions.	OK
<p>C.10. Responsibilities <i>Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have been allocated to responsible employees.</i></p>		Responsibility and authority of monitoring and reporting activities have been verified to be as per that indicated in the registered PDD and in line with the monitoring plan provided.	OK
<p>C.11. Troubleshooting procedures <i>Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions</i></p>		<p>Each digester installed has unique identification number, name of the beneficiary, etc. The product of the number of operational digesters and the ex-ante emission factor (3.56tCO₂e/digester/annum) gives the total emission reductions due to the project.</p> <p>To ensure that this ratio of 3.56 tCO₂e is still applicable and conservative, a survey was voluntarily carried out on an annual basis to check for the usage of kerosene and firewood by the non-biogas users.</p>	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>(e.g. the Client)</i>		<p>It was found from the survey results that the firewood usage was higher than that used in the ex-ante baseline estimation. (3.82 t/household/year as compared to the 2.85t/household/year considered in the ex-ante baseline estimation). Furthermore, the kerosene usage was found to be 34.75 litres/household/annum as compared to a lower value of 31.2 litres/household/annum considered for the ex-ante baseline ratio, estimation.</p> <p>Thus it has proven that the main factor in emission reduction estimation (baseline factor of 3.56 tCO₂e) is still applicable to the project and follows a conservative approach.</p>	
<p>D. Internal Data <i>Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data.</i></p>			
<p>D.1. Type and sources of internal data <i>Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g. "continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".</i></p>		<p>The only monitored data includes the number of operational digester on a daily basis. This is further multiplied with the ex-ante factor 3.56 tCO₂e as arrived at in the registered PDD.</p>	OK
<p>D.2. Data collection <i>How is data collected and processed? What are the means of quantifying</i></p>		<p>The operational digesters were required to be monitored once in six months as per the registered PDD. This information is further submitted to the system administrator at the ADATS office for entering</p>	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>emissions from the different data sources?</i>		the same into the online database: InfoNeeds.	
D.3. Quality assurance <i>Does internal data collection underlie sufficient quality assurance routines?</i>		Yes. The data undergoes monthly audits through operating team and plant management as a part of quality assurance.	OK
D.4. Significance and reporting risks <i>Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.</i>		The emission reductions are based on two factors – the number of operational digesters and the average annual operating time and the ex-ante factor 3.56 tCO ₂ e/digester/year. No significant reporting risks have been foreseen with regards to the emission reduction estimation.	OK
E. External Data <i>Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.</i>			
E.1. Type and sources of external data <i>Acquire information on type and source of external data, which is used in</i>		No external data is required to be monitored, which can be used for the calculations of emission reductions.	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>calculations of emission reductions</i>			
E.2. Access to external data <i>How is data transferred? How can reproducibility of data set be ensured?</i>		Same as above.	OK
E.3. Quality assurance <i>Does external data underlie any quality assurance routines?</i>		Same as above.	OK
E.4. Data uncertainty <i>Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?</i>		Same as above.	OK
E.5. Emergency procedures <i>Are there any procedures which will be applicable if there is no access to relevant external data?</i>		No such emergencies have been foreseen.	OK
F. Environmental and Social Indicators <i>A Monitoring Plan may comprise environmental and/or social indicators which could be necessary to monitor for the success of the project activity.</i>			
F.1. Implementation of measures <i>A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal</i>		The project activity is not expected to lead to any adverse environmental impacts.	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>requirements. A check of the implementation or realization of such measures should be part of the initial verification.</i>			
F.2. Monitoring equipment <i>Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		Same as above	OK
F.3. Quality assurance procedures <i>What quality assurance procedures will be applied for such data?</i>		Same as above.	OK
F.4. External data <i>Check the quality, reproducibility and uncertainty of external data.</i>		Same as above.	OK
G. Management and Operational System <i>In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system.</i>			
G.1. Documentation <i>The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The</i>		The procedures are documented, controlled and available for personnel working for the project.	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>accessibility of such documentations to persons working on the project has to be secured.</i>			
<p>G.2. Qualification and training <i>The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.</i></p>		Defined procedures ensure the compliance with methodology and criteria for training of personnel working on emission reductions.	OK
<p>G.3. Allocation of responsibilities <i>The allocation of responsibilities should be documented in written manner.</i></p>		Roles and responsibilities are defined in procedures and are in place.	OK
<p>G.4. Emergency procedures <i>The system should contain procedures which provide emergency concepts in case of unexpected problems with data access and/or data quality.</i></p>		The data monitored on a daily basis (since February 2007) are maintained in the “daily monitoring manual”. The same is further uploaded on the online database – InfoNeeds at ADATS. The system procedures define the back up mechanism for data protection. All records are maintained at the ADATS office. Prior to February 2007 there was half yearly monitoring of the operational digesters.	OK
<p>G.5. Data archiving <i>The system should provide routines for the archiving of all data which is required for verifying the project’s performance in the context of consecutive verifications.</i></p>		All the data required by the methodology were made available to DNV and the effectiveness of document control was satisfactory. The data will be stored for a period of 2 years in addition to the crediting period.	OK
<p>G.6. Monitoring report <i>The system includes procedures for the</i></p>		Yes, the mechanism for the calculation of emission reductions and preparation of monitoring report is in place.	OK

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<i>calculation of emission reductions and the preparation of the monitoring report.</i>			
<p>G.7. Internal audits and management review</p> <p><i>The system includes internal control procedures, which allow the identification and solution of problems at an early stage.</i></p>		The procedures are defined and have been implemented accordingly.	OK