

VALIDATION REPORT

SKG SANGHA

RAMANAGARA BIOGAS PROJECT, VERSION
02; 10TH NOVEMBER 2010

Report No: 53600211- 11/158

Date: 2012-12-18

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|--|--|---------------------------------------|--|--------------------------|
| Validation Report: | Report No. | Rev. No. | Date of 1st issue: | Date of this rev. |
| | 53600211- 11/158 V01 | 0 | 2012-12-18 | 2012-12-18 |
| Project: | Title: | Initial PDD Version: | Final PDDVersion | |
| | Ramanagara Biogas Project version 02; 10th November 2010 | 2010-11-10, ver 02 | 2012-12-12 | |
| Client: | SKG Sangha | Client ref: | Mr. Vidya Sagar Devabhaktuni- President, SKG Sangha | |
| Project Participant(s): | Host Party: | Other involved parties: | | |
| | India | - | | |
| Applied methodology/ies: | Title: | No.: | Scope / TA: | |
| | Switch from Non-Renewable Biomass for Thermal Applications by the User, and Methane recovery in agricultural activities at household/small farm level | AMS I.E ver. 4 AMS III.R ver.2 | 1 / 1.2 3/15.1 and 15.2 | |
| Validation team / Technical Review and Final Approval | Validation Team: | Technical review: | Final approval: | |
| | Manjari Chandra ¹ C.A. Sahana (TE) (TL) R.S. Nikesh (TM) Ma.Paa. Lokesh Chandra Puratchikkanal ² (TE) Dube (TE) | Kunal Rami Stefan Winter | Stefan Winter | |
| Expected Emission reductions: [t CO₂e] | Expected emission reductions over the first crediting period: | | (Expected) starting date of the crediting period: | |
| | 548,318 t CO ₂ e | | 2013-01-01 | |
| Confidential content: | <input type="checkbox"/> Yes | | <input checked="" type="checkbox"/> No | |
| Summary of Validation Opinion: | <input checked="" type="checkbox"/> Positive validation opinion | | <input type="checkbox"/> Negative validation opinion | |
| | <p>In detail the conclusions can be summarised as follows:</p> <p><input checked="" type="checkbox"/> The project is in line with all relevant host country criteria (India) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of India vide the Letter of Approval (HCA) (4/12/2011-CCC) dated 2011-09-27.</p> <p><input checked="" type="checkbox"/> The project additionality is sufficiently justified in the PDD.</p> <p><input checked="" type="checkbox"/> The monitoring plan is transparent and adequate.</p> <p><input checked="" type="checkbox"/> The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 548,318 tCO₂e are most likely to be achieved within the fixed crediting period.</p> <p><input checked="" type="checkbox"/> The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p> | | | |
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¹ TL from 2012-02-25

² In team till 2012-01-25

Abbreviations

| | |
|------------------------|---|
| CA | Corrective Action / Clarification Action |
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| CL | Clarification Request |
| CO₂ | Carbon dioxide |
| CO_{2e} | Carbon dioxide equivalent |
| CP | Certification Program |
| DNA | Designated National Authority |
| EB | CDM Executive Board |
| EIA | Environmental Impact Assessment |
| FAR | Forward Action Request |
| GHG | Greenhouse gas(es) |
| GoK | Government of Karnataka |
| HH | Households |
| IPCC | Intergovernmental Panel on Climate Change |
| PDD | Project Design Document |
| PP | Project participant |
| QC/QA | Quality control/Quality assurance |
| SKGS | SKG Sangha |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VVM | Validation and Verification Manual |

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1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual^{VVM}, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

| Item | Data |
|---|--|
| Project title | Ramanagara Biogas Project version 02; 10th November 2010 |
| Project size | <input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale |
| Project Scope (according to UNFCCC sectoral scope numbers for CDM) | <input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources) |
| | <input type="checkbox"/> 2 Energy distribution |
| | <input type="checkbox"/> 3 Energy demand |
| | <input type="checkbox"/> 4 Manufacturing industries |
| | <input type="checkbox"/> 5 Chemical industry |
| | <input type="checkbox"/> 6 Construction |
| | <input type="checkbox"/> 7 Transport |
| | <input type="checkbox"/> 8 Mining/Mineral production |
| | <input type="checkbox"/> 9 Metal production |
| | <input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas) |
| | <input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride |
| | <input type="checkbox"/> 12 Solvents use |
| | <input type="checkbox"/> 13 Waste handling and disposal |
| | <input type="checkbox"/> 14 Afforestation and Reforestation |
| | <input checked="" type="checkbox"/> 15 Agriculture |
| Applied Methodology | AMS I.E- Switch from Non-Renewable Biomass for Thermal Applications by the User, AMS III.R- Methane recovery in agricultural activities at household/small farm level |
| Technical Area(s) | 1.2, 15.1 and 15.2 |
| Crediting period | <input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (10 y) |
| Start of crediting period | 2013-01-01 |

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

| Characteristic | Party | Project Participant |
|--------------------------|-------|---------------------|
| Host party | India | SKG Sangha |
| Other involved party/ies | - | - |

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

| No. | Project Location |
|--------------|------------------|
| Host Country | India |

| No. | Project Location |
|---------------------------|---|
| Region: | Karnataka |
| Project location address: | Kanakapura, Ramanagara, Channapatna and Magadi Taluks , Ramanagara District |
| Latitude: | Provided in the table below |
| Longitude: | " |

| Geographical coordinates for the project area Taluks: | | |
|---|-----------------------|-----------------------|
| District | Latitude | Longitude |
| Ramanagara Taluk | 77° 08' 23" ° N | 12° 35' 08" ° E |
| | to 77° 29' 03" ° N | to 12° 52' 44" |
| Kanakapura Taluk | 77° 14' 47" ° N | 12° 14' 24" ° E |
| | to 77° 38' 16" ° N | to 12° 48' 01" ° E |
| Magadi Taluk | 77° 10' 04" ° N | 12° 49' 57" ° E |
| | to 77° 19' 52" ° N | to 13° 11' 44" ° E |
| Channapatna Taluk | 77° 19' 29" ° N | 12° 27' 45" ° E |
| | to 77° 04' 11" ° N | to 12° 48' 20" ° E |

2.4 Technical Project Description

The technical key data are provided in table 2-4 below

Table 2-4: Technical data of the project activity

| Parameter | Unit | Value |
|---|----------------|-------------|
| Biodigester model | - | Deenabandhu |
| Capacity of biodigester | m ³ | 2 and 3 |
| Minimum cattle required per HH/biodigester unit | Nos. | 2 |
| No of households (HH) | - | 7620 |
| Average consumption of firewood | t/yr/HH | 5.315 |
| NCV of firewood | MJ/kg | 15 |
| VS _{Dairy cow} | kg | 3.8 |
| VS _{Buffalo} | kg | 3.1 |
| Efficiency of biogas stove | % | 98 |

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Validation sequence

| Topic | Time |
|---|---------------------------|
| Assignment of validation | 2011-02-07 |
| Submission of PDD for global stakeholder commenting process | 2011-08-04 |
| On-site visit date | 2011-09-21 and 2011-09-22 |
| Draft reporting finalised | 2012-01-09 |
| Final reporting finalised | 2012-12-18 |
| Technical review on final reporting finalised | 2012-12-18 |

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,

- the necessary competences to carry out the validation can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities, a validation team, consisting of one team leader and 3 additional team members, as well as the Technical Review personnel were appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

| | Name | Company | Function ¹⁾ | Qualification Status ²⁾ | Scheme competence | Technical competence ⁴⁾ | Host country Competence | Team Leading competence | On-site visit |
|---|--------------------------------------|-------------------------------------|------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Ma.Paa. Puratchik kanal ⁵ | TUV INDIA Private Limited Bangalore | TM ^{6A)} - | TE | <input checked="" type="checkbox"/> | 15.1, 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms. | Manjari Chandra ⁷ | TUV India Pvt. Ltd, Bangalore | TL ^{A)} | LA | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | R.S. Nikesh | TUV India Pvt. Ltd, Bangalore | TM ^{A)} | LA | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms. | C.A. Sahana | TUV INDIA Private Limited Bangalore | TM ^{A)} | LA/TE | <input checked="" type="checkbox"/> | 15.1, 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Lokesh Chandra Dube | TUV India Pvt. Ltd, | TM ^{A)} | TE | <input checked="" type="checkbox"/> | 15.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

⁵ In team till 2012-01-25

⁶ Same as above

⁷ TL since 2012-01-25

| | Name | Company | Function ¹⁾ | Qualification Status ²⁾ | Scheme competence | Technical competence ⁴⁾ | Host country Competence | Team Leading competence | On-site visit |
|---|---------------|--------------|--|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|---------------|
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Kunal Rami | TN CERT GmbH | TR ^{B)} | LA | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Stefan Winter | TN CERT GmbH | FA ^{B)} / TR ^{B)} | SA | <input checked="" type="checkbox"/> | 1.2, 15.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | - |

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ GHG auditor status (at least Assessor)

⁴⁾ As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

⁵⁾ In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

In order to qualify further personnel the project team was accompanied by observers and/or trainees as indicated in the table above. They are usually not considered as team members.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

3.4 Consideration of Public Stakeholder Comments

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments are received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

3.5 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

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

The validation protocol is described in Figure 1.

| Validation Protocol Table A-1: Requirement checklist | | | | |
|--|---|--|--|--|
| Checklist Item | Validation Team Comment | Reference | Draft Conclusion | Final Conclusion |
| <i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.</i> | <i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i> | <i>Gives reference to the information source on which the assessment is based on</i> | <i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.</i> | <i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i> |

Figure 1: Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

3.6 Review of Documents

The published PDD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Site Visit and Follow-up Interviews

The validation team has carried out a site visit in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

| Interviewed Persons / Entities | Interview topics |
|---|---|
| Project proponent representatives- /IM01/ | <ul style="list-style-type: none"> - Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Financial aspects - Crediting period - Project activity starting date - Additionality - Editorial issues of the PDD - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation |
| Stakeholders- /IM02/ | <ul style="list-style-type: none"> - CER allocation / ownership - Baseline study assumptions - Monitoring and measurement equipment and system - Sustainable development issues - Monitoring - Analysis of local stakeholder consultation |

A comprehensive list of all interviewed persons is part of section 7 'References'.

3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

Table 4-1: Summary of CARs, CLs and FARs issued

| Validation topic ¹⁾ | No. of CAR | No. of CL | No. of FAR |
|---|---------------|--------------|---------------|
| General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed | 1 | 2 | 1 |
| Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning | 7 | 8 | 1 |
| Duration of the Project / Crediting Period (C) | 0 | 2 | 0 |
| Environmental impacts (D) | 0 | 0 | 0 |
| Stakeholder Comments (E) | 0 | 0 | 0 |
| SUM | 8 | 12 | 2 |

¹⁾ The letters in brackets refer to the validation protocol

Table 4-2: PDD versions used for assessments
/PDD1/ (published) to /PDD4/ (final)

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

| Finding | A1 | | |
|---|---|-----------------------------|------------------------------|
| Classification | <input checked="" type="checkbox"/> CAR | <input type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The host country letter of approval is to be submitted | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | Host country approval copy was provided to the DOE on 25-11-2011 and a Scanned copy was sent by email as an attachment. | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The host country approval letter (4/12/2011-CCC) dated 2011-09-27 was verified and found to be in order. The DNA of India, MoEF has issued the approval for the "Ramanagara Biogas Project version 02; 10th November 2010" for contributing to sustainable development in the project region. The letter of approval confirms that:</p> <ul style="list-style-type: none"> - India is a Party to the Kyoto Protocol, and that the participation is voluntary. -the project contributes to sustainable development in the host country -the title of the project referred to is the same as that of the PDD -the approval is conditional to the above mentioned points. -The project participant is SKG Sangha <p>Therefore, CAR A1 is closed.</p> | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | | |

| Finding | A1 | | |
|--|--|--|------------------------------|
| Classification | <input type="checkbox"/> CAR | <input checked="" type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ The PDD states that the capacity of the units will be determined based on the number of members of a HH and the number of cattle in the HH. Please clarify if these criteria are exclusive of each other. | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The capacity of the unit to be installed in the household will be decided based on the number of members and the number of the cattle they own. If the family is big and they are having less number of cattle then a small size unit will be installed. If the family is small and they own large number of cattle then also a small size unit will be installed. If the family is big and they own more than 3 cattle then a large size unit will be installed. This | | |

| Finding | A1 |
|--|---|
| | <p>project is meant for creating sustainable energy supply to the households for their energy needs. In some cases where the family is small and having more than 3 cattle and have to cook for the labourers a big size unit will be installed. In the baseline survey we have calculated the wood use meant for the family members only.</p> |
| <p>DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p> | <p>/PDD2/ The baseline survey sample documents were verified by the validation team. The survey covered areas such as the number of members in each household, fossil fuel (firewood and kerosene) consumption, and the number of cattle in each household. The survey responses were used in determining the capacity of the biogas units assigned to households. The units have been chosen keeping in mind cattle availability, and size of household. The same was verified during the site visit. The validation team finds the method to be appropriate. However, it was noted in the revised PDD^{/PDD3/} that the number of households involved in the project was reduced from 10,000^{/PDD} to 9000, and further reduced to 8500 units. Please clarify and maintain consistency throughout the PDD.</p> |
| <p>Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p> | <p>The numbers of units were reduced to keep the project under small scale level according to the board decision to take up the small scale project and to keep the project under the limits of the methodologies. The discrepancies in the PDD were corrected and project units' number 9,100 was maintained throughout.</p> |
| <p>DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p> | <p>/PDD4/ The PP has envisaged investing in the project with a capacity and numbers restricted to that of a small scale threshold. In keeping with this, the number of units were reduced initially from 10,000 to 9000 in version 3 of the PDD^{/PDD2/}, and further to 8500 units,(version 4)^{/PDD3/}. Furthermore, in PDD, version 5^{/PDD4/}, the number of units of biogas digesters is 9100 units. In the latest PDD^{/PDD5/}, the number of units are 7620 units. This is due to the following reasons: 1. the most suitable NRB value applicable for the region was chosen by the PP from the Forest Survey of India publically available data^{/REF03/}. As per this study the NRB is higher than that provided earlier PDD versions from the study "Inventorying, Mapping and Monitoring of Bioresources Using GIS and Remote Sensing (Kolar District)", which is no longer relevant. As per the FSI report on State of Forests, the data on demand and supply of wood from forests has been made use of, thereby increasing the f_{NRB} value from 0.78 to 0.955 and consequently the ER from the NRB component have increased. 2. Therefore, with the new data and to fulfil the requirements of the microscale thresholds for ER, the number of units was reduced by the PP. As no biogas units are installed and the project is still in conception, the validation team deems this</p> |

| Finding | A1 |
|---|--|
| | <p>acceptable</p> <p>3. In the course of the technical review process, the project was found to be in line with EB 68, Annex 27, thus rendering it auto-additional. The PDD^{/PDD6/} section B.5 provides the justification for the same suitably. Furthermore, the PDD, version 7^{/PDD6/} includes a declaration by the PP that the number of units of biodigestors will not exceed 7620, i.e. the numbers of the 2m³ and 3m³ biodigestor units will not exceed 3810, each.</p> <p>Thus the project activity maintains the threshold limit of ER for SSC activities, i.e. the annual aggregate ER is 54,831 tCO₂e which is less than 60k tCO₂e threshold for SSC projects, and is in line with EB68, Annex 27. Please refer to section 7.1 for detailed reference to the PDD versions. However, in order that the project is implemented as per the validated PDD and as declared by the PP^{/PDD6/}, a FAR has been raised, which is to be checked during verification, FAR A1 has been raised.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input checked="" type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed |

| Finding | A1 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input type="checkbox"/> CL <input checked="" type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>The number of units installed shall comply with the declaration “<i>The total number of units will not exceed 7620 in number i.e. 3810 of 3m³ and 3810 unit of 2m³ biodigestor units.</i>” as given in the validated PDD.</p> |
| 4.1 Corrective Action #1 <i>4.2 This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure additional corrective action and DOE assessments(#2, #3, etc.) shall be added.</i> | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed |

| Finding | A2 |
|-----------------------|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |

| Finding | A2 |
|---|---|
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ The aggregate capacity of the biodigesters is given as 29 MW. The thermal energy generation capacity (MW_{th}) has not been written correctly in the PDD. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | This has been corrected in the revised PDD |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/, /PDD3/ The aggregate capacity of 25 MW_{th} for 9000 biodigester units has been included in the revised PDD. However, the calculation and conversion between thermal and electrical capacities has not been adequately demonstrated. Therefore, CL A2 remains open.. |
| Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | EB61, Annex 21 – general guidelines to SSC CDM methodologies (version 17) para 4 sub section c states that 45 MWt is equal to 15 MWe. Hence it is changed to 15Mwe, and steps of the conversion have been included in the revised PDD. |
| DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD4/-/PDD6/ The PDD in section A.4.2 mentions that the project adheres to the SSC threshold as described by the General guidelines to SSC methodologies. The complete calculation has been given in sections A.4.2 and B.5 of the PDD. The total electrical capacity of the project is now 2.64 MW for 7620 biogas units, which is below the 15 MW threshold for SSC project activities, and section c of paragraph 2 for type I an activity of the guidelines for demonstrating additionality of microscale project activities. Furthermore, the PDD, version 7 ^{/PDD6/} includes a declaration by the PP that the number of units of biodigestors will not increase 7620 , i.e. the numbers will not exceed 3810 of the 2m ³ and 3810 units 3m ³ biodigester units. Hence, CL A2 is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B1 |
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| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | 1. Supporting literature and scientific papers to be submitted, as well as 2. Survey samples and database of all beneficiaries 3. The PDD ^{/PDD1/} does not provide reference for the of the project area belonging to the same agro-climatic zone as Kolar |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | 1. a) Bio resource Potential of Karnataka (taluk wise inventory with management options) – Ramachandra T.V. and Kamakshi G. – Technical Report no. 109 –Centre for Ecological Sciences, Indian institute of Science, Bangalore b) Inventorying, Mapping and Monitoring of Bioresources using |

| Finding | B1 |
|--|---|
| | <p>GIS and Remote Sensing – T.V. Ramachandra and G.R. Rao of Indian Institute of Science, Bangalore</p> <p>c) Mapping of Fuel Wood Trees in Kolar District Using Remote Sensing Data and GIS – Jagadeesh K, Rao G.R, Kiran M.K, Jagadish K.S and Ramachandra T.V.</p> <p>d) Bio resource status in Karnataka – T.V. Ramachandra, G. Kamakshi and B.V. Shruthi – Indian Institute of Science, Bangalore</p> <p>Above hard copies were submitted to the DOE on 25-10-2011.</p> <p>2. Survey data Excel sheet was sent to the DOE through email on 25-10-2011</p> <p>3. a) Bio resource Potential of Karnataka (taluk wise inventory with management options) – Ramachandra T.V. and Kamakshi G. – Technical Report no. 109 –Centre for Ecological Sciences, Indian institute of Science, Bangalore – page no. 41-42</p> <p>Hard copy was submitted to the DOE on 25-10-2011.</p> <p>The above reference material soft copy availability links have been provide in the PDD in Annex 5</p> |
| <p>DOE Assessment #1</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p> | <p>/PDD2/</p> <p>1. The references listed in the PDD were verified against the hard copies of the scientific papers submitted by the PP. The following observations were made:</p> <p>(1) Reference 7 of Annex 5 has in the PDD text has been written as Nijaguna, 2002, which contradicts the list provided in Annex 5.</p> <p>(2) Please provide the following reference: Footnote 8 - Renewable energy for rural development, Annual report – 2008_2009, (Document provided as- 'Rural_Development_RajPanchayat_Karnataka_Annual_Report_0809', page 26.</p> <p>(3) Please provide evidence for the biogas targets for Karnataka State as mentioned in page 23 section d) of the PDD.</p> <p>(4) A copy of a letter from the Zilla Panchayath (local government) of Ramanagara District</p> <p>(5) The costs of 2m³ and 3m³ biogas units as given in the PDD do not tally with the estimates of Sree Consultants. Please clarify</p> <p>2. Survey data has been submitted and found to be in order. For the page in the excel spreadsheet on 'NRB', the source of the data has not been mentioned.</p> <p>3. The project is in Ramanagara District, which is an Eastern Dry agro climatic Zone, same as Kolar District, on which the latest biomass studies are available. This was verified by the scientific paper - Bio resource Potential of Karnataka, by T.V. Ramachandra et al.</p> <p>Points 1 and 2 are yet to be clarified. Thus, CAR B1 is open.</p> |

| Finding | B1 |
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| <p>Corrective Action #2</p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p> | <p>1. corrected the discrepancies as follows:</p> <ul style="list-style-type: none"> (1) The reference was wrongly mentioned as 7 and was corrected as 5 throughout the PDD. (2) The document was provided to the DOE on 25-11-2011 (3) The hard copies of the Targets for 2008-10 of biogas plants were provide to DOE on 25-11-2011 (4) The letter soft copy was submitted to the DOE on 25-11-2011 (5) The cost of the unit provide by the Sree Consultants is an estimate. If a plant installation work is endorsed to a contractor then estimate of cost will be the cost provided by the consultant. SKG Sangha with its expertise and experience in installation of biogas plants will install the same unit at a lower cost. Even costs can be reduced by procuring the material in bulk. This is the reason for the cost variations between the cost mentioned in the PDD and cost provided by the consultant. <p>2. The source data has been provided in the ER spread sheet</p> |
| <p>DOE Assessment #2</p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p> | <p>/PDD3/</p> <p>The justification provided for using the Bioresource study and NRB percentage of Kolar District for the project is not robust. The reasoning behind the use of biomass statistics of Kolar is not clear in the PDD, nor is there a clear concluding statement to the section B.4.</p> |
| <p>Corrective Action #3</p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details</i></p> | <p>Karnataka is divided in to 10 agro climatic zones taking into consideration the rainfall pattern-quantum and distribution, soil types, texture, depth and physio-chemical properties, elevation, topography major crops and type of vegetation. (Bioresource Potential of Karnataka - Ramachandra T.V. and Kamakshi G. – (Page 40)</p> <p>Taluks under Eastern dry zone: Gubbi, Tumkur, Anekal, Bangalore-N, Bangalore S, Channapatna, Devanahally, Doddaballapur, Hoskote, Kanakapura, Magadi, Nelamangala, Ramnagar, Bagepalli, Bangarpet, Chikkaballapur, Chintamani, Gudibande, Gowribindanur, Kolar, Malur, Mulbagal, Shidlaghatta, Srinivasapur - (Page – 42)</p> <p>The Eastern dry zone (5) - is also bioresource deficient as bioresource status is 0.39. It covers a geographic area of 1.80 Mha, which is 9.49% of the geographic area of the State. The net-cropped area is about 0.88 Mha and the ratio of the net irrigated area to the net cropped area is about 18.92%. The agro-residues available for this zone are about 1.81 million tonnes from which 557287.23 Mkal can be obtained. From Figure 7, it follows that horticulture residues contribute 54% (4025853.012 Mkal) to the total available energy followed by forests-39% and agro residues-7%. The rural population of this zone is 4704991 persons, with a population density of 1.79 persons/ha. The average rural energy</p> |

| Finding | B1 |
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| | <p>demand for domestic purposes works out to be 19009680.2 Mkal. (Page - 90).</p> <p>It is clear from the above statements that all the parameters of the areas under the particular agro climatic zone are similar. The study by Ramachandra T.V. and Rao, G.R, Inventorying, Mapping and Monitoring of Bioresources Using GIS and Remote Sensing (Kolar District) (2005) – reference No.3 in Annex 5 of the PDD was taken up in Eastern Dry Agro Climatic Zone. The study was taken up in Kolar district (part of the same agro climatic zone) to provide the value for the agro climatic zone. As the project Taluks falls under this same agro climatic zone the study results are applicable to the project.</p> <p>The necessary changes were made in the PDD (Section B.4) with inserting comparative table.</p> |
| DOE Assessment #3 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>/PDD5/</p> <p>The comparison of biomass resources and availability in the districts of Kolar and Ramanagara has been since removed from the revised PDD^{/PDD5/}. The PP has chosen to opt for biomass statistics from the Forest Survey of India report. The surveys are conducted by the Forest Dept., Govt. of India in all states, and thus published reflects the current forest statistics and scenario in the country. For the State of Karnataka, where the project is located, the FSI report data on the demand and supply of fuel wood. NRB fraction has thus been calculated. The report has been verified, and data in Annex 3 NRB calculation and ER sheet found to be consistent.. The calculation of fraction of NRB from FSI report of 2011, as the project units are not yet under construction. The NRB fraction of 0.9553 is deemed as appropriate for calculation of BE_NRB value for the project. Hence CAR B1 is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p> |

| Finding | B2 |
|---|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>The concluding statement for the baseline scenario for the ii) Non-renewable component is unclear. Kerosene has been mentioned, which is a repetition of baseline-thermal energy. Please clarify</p> |

| Finding | B2 |
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| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>In the AMS I E version 3 a projected fossil fuel emission factor has to be used for calculating the NRB emission savings in the place of the emission factor of the wood. In the PDD we have used the Version 3 and the projected fossil fuel, Kerosene was mentioned. The PDD has been revised using latest version 4 to calculate baseline emissions of the wood using the default value provided by the methodology.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The statement has been corrected and version of methodology updated to the latest available. CAR B2 is thus closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p> <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed </p> |

| Finding | B3 |
|---|--|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>/PDD1/ Section B.5 additionality is not as per the CDM-SSC guidelines. Alternatives and investment barriers have been combined and not explained separately. The "investment analysis" does not include a verifiable third party source/ specific to host country. All claims and assumptions are to be substantiated with adequate third party evidence.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>The additionality part of the PDD has been revised and all the data was supported with references. The additionality part of the PDD was revised as per the CAR and cost estimate copies were provided to the DOE.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>/PDD2/ The revised PDD additionality has been revised. The investment barrier has been supported with adequate data. The cost of construction of a biogas unit, SKG Sangha's estimated costs from years of experience in the field, and the third party estimated costs were verified and found to be in agreement. An estimate from of INR 27,000 for the 3m³ unit and INR of 22,000 for 2m³ from Sree Consultants, a third party entity, was submitted and verified. It is evident that a barrier does exist as the cost of each biogas unit is higher than or equal to the annual income of the households of the project activity. However, the validation team was of the opinion that the explanation in the additionality section was not robust enough, even though the evidence provided supported the barrier faced by the project developer. CAR B3 is open.</p> |
| Corrective Action #3 <i>This section shall be filled by the PP. It shall address</i> | <p>A complete new method was used to demonstrate the additionality in Version 6 of the PDD (current version). It is demonstrated that the project is deemed to be additional with the current EB</p> |

| Finding | B3 |
|---|---|
| <i>the corrective action taken in details.</i> | guidelines meant for micro scale projects. |
| DOE Assessment #3 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD3/ The additionality section has been revised to that applicable for a microscale project. Automatic additionality is applicable for the project considering that it adheres to the various thresholds prescribed by the “ Guidelines For Demonstrating Additionality Of Microscale Project Activities ”. The validation team accepts and confirms the applicability of the project to the revised additionality. However, <ol style="list-style-type: none"> 1) the write up in the PDD is not precise and the conditions of the guideline have not been listed correctly. 2) W.r.t the 20k tCO₂ e limit for type III, the value provided in the PDD and ER sheet are not consistent. Please justify the same in section B.5 of the PDD 3) In addition, the version of the guideline used is not the latest available version. CAR B3 is open. |
| Corrective Action #4 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The additionality part of the PDD has been revised and the latest version of the guidelines was followed. 20kt tCO ₂ e limit for type III project activity has been revised and explained in detail. |
| DOE Assessment #4 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD4/ The project fulfils the additionality criteria of the “ Guidelines For Demonstrating Additionality Of Microscale Project Activities ”. The validation team confirms that the project is additional, and that the revised PDD is correct and in line with the guideline. Please see section 5.2.5 of this report for details. Hence, CAR B3 is closed. /PDD6/ -However during the technical review, as the project adheres to the version 09 of the “Guidelines for demonstrating additionality of small scale project activities”- EB 68 Annex 27, the PDD section B.5 was changed accordingly. Validation team has reviewed the justification provided by the PP, and found it to be in line with the guidelines mentioned above. Detailed assessment provided in section 5.2.5 of this report. CAR is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B4 |
|---|--|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ Write up on serious consideration and the chronology as per EB 62 Annex 13 in section B.5 is missing in the PDD. |

| Finding | B4 |
|---|---|
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>Section B.5 of the PDD has been revised and the chronology of serious consideration of the CDM revenue and to take up the project under CDM was incorporated in the PDD. The following hard Copies of the relevant documents about the prior consideration of CDM submitted to the DNA to get HCA were also provide to the DOE on 21-10-2011:</p> <ol style="list-style-type: none"> Affidavit about the CER ownership agreement with the future beneficiaries Prior consideration of CDM – 2 pages Clarification of Prior consideration of CDM <p>Prior consideration of CDM form submission to UNFCCC is available at the following link: https://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>/PDD2/ The PDD lacks information of continuous action. When did SKG Sangha first decide to opt for CDM for this project? Kindly submit the relevant supporting documents. CAR B4 is open</p> |
| Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details</i> | <p>Corrective action has been taken up in the PDD. SKG Sangha governing body resolution to take up Ramanagara biogas project copy is provided to the DOE on 25-11-2011</p> |
| DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>/PDD3/ The revised section B.5 contains a description of the actions taken by SKG Sangha w.r.t the Ramanagara Biogas Project version 02; 10th November 2010 including the resolution made by the executive committee of SKG Sangha, and various continuous actions made with not more than a year apart between consecutive actions. The section on prior consideration is thus in line with Annex 13 of EB 62. The evidences for the events such as the board resolution letter dated 2009-04-13, sample of baseline survey documents, the validation contract dated 2011-02-27, and the host country approval letter dated 2011-09-27 have been verified and found to be in order. Intimation to UNFCCC on the PP's intention seek CDM status (http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html) as received by UNFCCC on 2011-10-18 has been verified. Therefore, CAR B4 is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p> <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed </p> |

| Finding | B5 |
|---|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>/PDD1/ Proof of costs incurred for the construction of a both the 2m³ and the 3m³ digester units is to be provided for verification</p> |

| Finding | B5 |
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| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | Hard copies of the cost estimate of 2 and 3 cubic meter capacity plants by a certified engineer was provide to the DOE on 25-10-2011. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ Copies of estimates verified and found to be in line with the data in the PDD. The estimates prepared by a third party source and found to be in order. CAR B5 is closed. However, this CAR is irrelevant as the additionality argument was revised by the PP. The final PDD ^{/PDD4/} demonstrates additionality as per the Guidelines For Demonstrating Additionality Of Microscale Project Activities. Please see section 5.2.5 of this report for more details. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B6 |
|---|--|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>The values for the parameters to be monitored are incomplete.</p> <p>With respect to the applicability to the AMS. III.R, the monitoring plan in the PDD does not elaborate on data collection</p> <p>a) whether “the amount of manure fed is consistent with the capacity of the system” or</p> <p>b) “the proper soil application” as required by AMS. III R.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The PDD has been updated. The elaboration on feeding and sludge handling was updated in the section B.7.2. and also in Annex 4, monitoring scheme, point F. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The monitoring of the manure fed into the system and sludge handling has been elaborated upon in the revised PDD. However, instrument/ technique used for monitoring is still not clear.</p> <p>CAR B6 is open.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | OK. Explanation provided |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>a) The monitoring of the manure fed into the system has been elaborated in the revised PDD. It has been stated that during the survey conducted to determine the amount of manure fed into the biogas digester, a weighing scale will be used. The response provided and the changes made to the PDD were found to be satisfactory</p> <p>b) As clarified during the interviews with PP and beneficiaries, the sludge will be aerobically treated and used as fertilizer in the</p> |

| Finding | B6 |
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| | farms. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B7 |
|---|---|
| Classification | <input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ Methodologies applicability criteria in section B.2 need to be reworked on; all criteria have not been included, and non-applicable points have not been ruled out with suitable justification. Additionally, the latest EB guidelines and latest versions of the methodologies have not been used. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | Project proponents decided not to use the AMS I.C methodology for baseline emission calculations as a conservative measure. This decision was made to avoid monitoring of many aspects. At the time of the first PDD writing the AMS III R methodology is available only if AMS IC is used. Presently the AMS III R methodology has been revised to Version 2 and AMS IE is also allowed. Accordingly the PP decided to use AMS IE and not to use AMS IC for calculation of baseline emissions. So the methodological aspects in relation to the AMS I.C were removed from the PDD. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ The PP has chosen to remove the methodology, AMS I.C which was meant for the thermal applications due to the difficulties which may arise during monitoring the kerosene usage of quantity, baseline calculations due to displacement of fossil fuel for heating and cooking needs have thus been omitted in the PDD version 4. The ER has been revised accordingly. The VT has verified the revised PDD, and the applicability for the methodologies AMS. III R and AMS. I.E are in order. The latest version of the AMS.III R meth allows for a choice of combination of AMS. III R with AMS. I.E or AMS.I.C. The latest version of AMS.IE, i.e. version 4 has been applied. The baseline, emission reduction calculation and the monitoring is in line with the applicable methodologies. However points 4 and 7 of the methodology AMS I.E have not been included in the applicability criteria. |
| Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details</i> | Points 4-7 of the methodology AMS I E were included in the relevant section of the PDD |

| Finding | B7 |
|---|---|
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD3/ The applicability criteria for the applicable methodologies have been fulfilled and presented in the PDD. CAR B7 is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B1 |
|--|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ 1. As per the PDD and the survey samples "Total quantity of the manure produced by animals" is equal to the total quantity of manure put into the pits. How is this measured? 2. Please elaborate on the anaerobic nature of the waste in the open pits 3. Please elaborate and substantiate "estimation of the total amount of manure collected and out in pits...less accurate than estimation of time....shed" in point iii) of section B.4 of PDD 4. Is the depth of the compost pit standard for all beneficiaries HHs? 5. The value for the total amount of manure collected from the shed is not consistent in the PDD. Please clarify |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | 1. The quantity of the manure produced in the animal confinement will be removed every day along with any fodder waste to the compost pit. This is the usual practice of the households as the animal confinement is either a part of the house or a place very near to the house. Cleaning of the animal confinement everyday is done to create sanitation. Hence all the excrement generated in the animal confinement invariably enters the compost pit every day. This quantity is measured using weighing machines during the baseline survey. 2. Village farmers those who have animals will dig out a pit in the lowest part of their area to keep their animal confinement waste. The material in the pits is used as fertiliser for their agricultural lands. In majority of the cases this material will be shifted to agricultural lands once in year. Few farmers use the material for two crops seasons and empty the pit more than once. The material in the pits is never turned upside down or mixed to make it ferment faster. These pits are more than a meter deep. Few pits are more than 3 meter deep and few pits about a meter deep. Usually farmers pour water on the material in the pit to make it wet so that it ferments well and could get good manure. Agricultural residues, fodder waste and the animal excrements are the main composition of the pits. During the rainy season (pre monsoon rains start in May |

| Finding | B1 |
|---|---|
| | <p>and rains will continue during south west monsoon unit middle of September and North east monsoon sets in October) the rain water will accumulate in these pits and submerge the material inside it crating anaerobic condition. After receding of rains, a thick layer will form on the top of the pit with water clogged material inside as the waste material accumulation continues. At this state also the anaerobic condition in the pit will continue. Slowly the new material, which is dumped every day, will absorb water and the material inside the pit becomes wet but solid. During the summer the top layer of the pit material becomes dry and the material inside will be solid but wet. The entire material in the pit is never dry as the wet dung and urine absorbed fodder waste enters the pit every day.</p> <p>3. The animals will excrete while they were in the animal confinement area and also while they are taken out for grazing. The amount of dung excreted in the confinement can be measured accurately as it is available at one location. The amount of excrement while the animals are grazing spreads in a wide area and also on the way to the grazing area. Is difficult to calculate or measure. With the experience of the farmers in handling the excrements every day, they will provide the approximate amount of the total excrement per day. The confinement time is more accurate as every day the farmers release the animals for grazing at a fixed time and tie them at a fixed time. During the dry season the animals will be released early and come back to the confinement area late. The survey was conducted during this dry season to make the value conservative.</p> <p>4. The depth of the pit is not standard and is varying for each household. This can be found in the survey data sheet.</p> <p>5. The variations in the PDD were corrected.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ CL B1 is closed, as the revised PDD sufficiently provides justifications for the clarifications raised on the amount of manure generated the manure management in open pits in the baseline scenario. The same was verified during the site visit ^{/photo/} . |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B2 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ Please clarify what is meant by "other waste". The PDD mentions kitchen waste, please clarify the same. How exactly will the "other waste" dumped into the pit be monitored? |
| Corrective Action #1 <i>This section shall be filled by</i> | The other waste consisting of agricultural residues, kitchen waste water, which very rarely enters the pit. This kitchen waste is a |

| Finding | B2 |
|---|--|
| <p><i>the PP. It shall address the corrective action taken in details.</i></p> | <p>rare material and the quantity is very meagre when compared with the animal confinement waste and agricultural residues. According to the AMS III R methodology Para 10 “this methodology is only applicable to the portion of the manure, which would decay anaerobically in the absence of the project activity established by the survey” the baseline emissions were calculated for the amount of dung decaying anaerobically in the compost pits. There is no relation between the emission reductions and the amount of the kitchen and toilet waste entering into the compost pit. So there is no need to monitor the other waste entering into the compost pits.</p> |
| <p>DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p> | <p>/PDD2/ As the kitchen waste is negligible; this was confirmed during the site visit interviews. The households of beneficiaries in the area were randomly selected and the adjacent pits were observed. The validation team noticed that the majority if the wastes was animal manure. Agricultural wastes were also present in the mix. As AMS III R allows for the agricultural waste along with animal waste, CL B2 is closed.</p> |
| <p>Conclusion <i>Tick the appropriate checkbox</i></p> | <p> <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed </p> |

| Finding | B3 |
|--|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| <p>Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p> | <p>/PDD1/ Common Practice analysis is not applicable for SSC projects. Please clarify.</p> |
| <p>Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p> | <p>No action has been taken. The additionality is demonstrated using the latest version (version 5.2) of the “Tool for the demonstration and assessment of additionality” that is available on the UNFCCC website as required by the methodology. Identification of Project alternatives, identification of at least one alternative which is more economically feasible than the project activity to the beneficiaries, simple cost analysis and common practice analysis are parts of this document. The PDD was prepared with identified project alternative scenarios’ and their simple cost analysis to identify at least one feasible alternative and common practice analysis. We have decided to keep this common practice analysis in the PDD to give more clarity to the readers.</p> |

| Finding | B3 |
|---|---|
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ The steps required in the “Tool for the demonstration and assessment of additionality” are missing. CAR B5 is open. |
| Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The additionality section of the PDD was revised |
| DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD3/ Common practice has been removed in the latest PDD version. Section B.5 has been simplified and is in line with requisites for SSC CDM projects. CL B3 is closed. It may be noted that that during the validation the additionality argument was revised by the PP. The final PDD ^{/PDD4/} demonstrates additionality as per the Guidelines For Demonstrating Additionality Of Microscale Project Activities. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B4 |
|--|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ Please clarify how project emissions will be measured, considering the survey is conducted on an annual basis. In case of use of firewood, what is the monitoring mechanism? How is the firewood/kerosene used by the HHs computed? |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The project emissions will be computed by conducting yearly surveys. Project emissions will be computed based on animal population and their type in relation to manure management methodology AMS IIIR. The Project emission will be calculated based on the yearly surveys conducted in the sampled households of the project participants. These are the ex-ante calculations. Baseline data is used to calculate the projected emission savings the real values will be available once the units were installed and the monitoring surveys were conducted. For wood and the NRB: data about the use of fire wood for cooking will be collected from the project participants. 10% of the project households, who are using fire wood for cooking, will be selected randomly and their wood consumption per day will be measured when they are cooking for the entire members of the household for a period of 4 days spread in a month. The average consumption figure will be taken into account. The second part will be the |

| Finding | B4 |
|---|---|
| | <p>monitoring of the 100 non participating households wood consumption for cooking. The data is collected as we have done in the case of baseline survey. The data will be compared with baseline data to know the increase or decrease of the wood consumption. If the consumption of wood by the non participating households is increased this is treated as leakage and added to project emissions.</p> <p>The kerosene component is completely omitted from project emission savings as a conservative measure and to lessen the monitoring burden.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>/PDD2/, PDD4/, /PDD5/</p> <p>For the baseline determination, the surveys were conducted in a sample of the households, wherein the firewood was weighed (scales) before and after the cooking and/or heating for entire households. The difference in weights represents the amount of firewood thus used. The same was verified during the site visit interviews. SKG Sangha proposes to use the same method during the monitoring periods.</p> <p>Leakage if any due to an increase in use of firewood in non-participating households was determined by means of option provided in paragraph 10 a. of the methodology, AMS.I.E, version 4, wherein the default leakage factor of 0.95 was multiplied the gross BE_{NRB}. Thereby the leakage due to saved biomass used by non project HHs has been considered in the net BE_{NRB} of 5.90^{/PDD5/}. This was verified during the site visit interviews; and the baseline survey documents were checked and found to be in order.</p> <p>As AMS IC is no longer used in the PDD, use of kerosene need not be determined. The baseline emissions have been determined using the non-renewable biomass component and the emissions of methane avoided from proper manure management. All computations of BE, ER and PE have been modified to retain these two components.</p> <p>The VT finds the method to be feasible and appropriate and it is deemed that results can be obtained by the surveys.</p> <p>Thus, CL B4 is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B5 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | Emission reduction to be submitted in an excel format. |
| Corrective Action #1 <i>This section shall be filled by</i> | Emission reduction spread sheet has been sent to the DOE through email dated: 25-10-2011 |

| Finding | B5 |
|---|---|
| <i>the PP. It shall address the corrective action taken in details.</i> | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /XLS1/ Emission reduction sheet has been submitted. 1. However, it was noticed that equations for BE and PE in places in the PDD were not exactly as given in the methodologies, and 2. The annual ER reported in the published PDD is less than that of the latest PDD version. Please provide an explanation for the same. |
| Corrective Action #1 | The methodological formulas were introduced in the PDD. Secondly, the published PDD used the older versions of the methodologies as the PDD was prepared before these new versions came. In the current PDD the latest versions of the Methodologies were applied and accordingly the emission savings were calculated and this lead to higher emission saving figures than the web published PDD. Besides this, the baseline emissions from use of firewood for cooking as well as other purposes has been included in later versions of the PDD. |
| DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /XLS2/, /XLS3/ 1. Equations and formulae used for computation of the BE _y , PE _y and ER have been rewritten in the revised PDD and found to be in line with the respective methodologies. 2. The PP's argument is valid, as minor changes in the ER can be attributed to the latest versions of the methodologies. However, the increase in ER is mainly due to the use of different B _{biomass} values in the webhosted and latest PDD. The initial values of B _{biomass} considered in the calculation of BE _{NRB} was 3.543 t per year, which is the survey result for the biomass consumption for cooking purposes. However, in the later version of the PDD ^{/PDD6/} , the biomass usage for cooking and other uses, such as heating of water, have been considered directly from the baseline survey. The validation team confirms that even with the increased B _{biomass} of 5.315t, the project adheres to SSC and microscale norms. In relation to the increase in B _{biomass} , the BE _{NRB} , and correspondingly, the ER have increased from 547,386 to 548,318. The calculations have been checked and found to be in order. However during the technical review, it was pointed out that nomenclature for the biomass substituted or displaced in the methodology AMS I.E is "B _y ", but both "B _{biomass} " and "B _{biomass} " have been used in the PDD and ER sheet, respectively. Hence, CL B5 is reopened. |
| Corrective Action #2 | "B _{biomass} " and "B _{biomass} " have been removed in the revised PDD and ER sheet. "B _y " of 5.3153 t for "Quantity of biomass substituted in an average household per year" has been used instead. Rounddown has been applied to ER value of 548,324, thus making it conservative value of 548,318 ^{/XLS4/} . |
| DOE Assessment #2 | /XLS4/, /PDD6/ |

| Finding | B5 |
|---|--|
| <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | The revised PDD version 07 ^{/PDD6/} and ER sheet version 04 ^{/XLS4/} has been verified, and the nomenclature for the parameter “Quantity of biomass substituted in an average household per year” has been replaced by “B _y ”. The value was found consistent and in line with the applicable methodology. /XLS4/ has been verified and the total ER of 548,318, from the PA was found to be correct. Hence CL is closed. |
| checkbox | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B6 |
|---|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ 1. Source of data to be used for the number of operating systems and hours of operation has been termed as “SKG Sangha”. Please be specific. Is this monitored by means of a survey or continuous monitoring? 2. Please clarify on what basis the percentage of representative samples have been considered for the monitoring parameters. Also comment on the frequency of the survey conducted |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | 1. The data will be collected by conducting monitoring surveys by the SKG Sangha. The units were continuously monitored by the supervisor or the village level motivator placed by SKG Sangha. Necessary corrections were made in the PDD in this regard 2. The sample size is 5% of the plants installed. The project is to install 9,000 plants and the sample size will be 450. With a 90% confidence interval and 10% margin error suggested by the AMS III R methodology Para 10, sample size will be 98. The project proponents have decided to take up survey with a sample size of 450 to get more accurate numbers. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ 1. SKG Sangha is responsible for conducting the monitoring surveys which forms the basis for the monitoring parameters. 2. The PP has chosen to conduct the monitoring surveys for a sample size of 450 households; which is line with the UNFCCC guidelines for sampling and AMS.III.R. 3. However, during the course of the validation, it was found that the monitoring of use of biomass by non-project households saved by/displaced by the project activity was removed from section B.7 of the PDD. Please clarify. In light of this, CL B6 is re-opened . |
| Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | As the applicable methodology provides a choice of ex-post surveys or default adjustment factor 0.95 on B _y , we have used the latter in the revised PDD. Therefore it need not be monitored. |

| Finding | B6 |
|---|---|
| DOE Assessment #2 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>The revised PDD^{/PDD5/} was checked and leakage from use of non-renewable biomass saved under the project activity by non-project households has been considered by multiplying the quantity of biomass substituted by each unit /year with an adjustment factor of 0.95, which is in line with paragraph 10 of AMS.I.E, version 04. Validation team accepts PP's contention that the said parameter need not be monitored by surveys. Hence, CL is closed.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | B7 |
|---|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>Please elaborate on how the use of firewood will be monitored in case of shortage of biogas, especially for larger families.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>Since the biogas unit provided are 2m³ and 3m³ capacities, which is sufficient for a family size of an average of 6 members. Therefore, for families with less than 6 members, if the biogas supply is more than the cooking needs the households will use it for water heating, reducing the firewood use. This has been observed from the previous biogas projects implemented by SKGS. For families where there are more than 6 members, there are possibilities of the biogas supply not to be sufficient for their daily the cooking needs. Therefore, the households will either use additionally, firewood to meet their daily cooking needs. This will be monitored by asking each beneficiary (included in the monitoring survey) the total quantity of firewood used due to the shortage of biogas. The monitoring team will weigh the total quantity of firewood used by families with bigger size (more than 6 members) and the data will be accordingly recorded on the monitoring sheets. To reduce the weighing errors while recording the firewood weight, the SKGS team will use the same weighing instrument throughout the monitoring survey.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure additional corrective action and DOE assessments(#2, #3, etc.) shall be added.</i> | <p>During the site visit and follow-up interviews with the PP it was noted that an annual monitoring is conducted in the presence of the entire family for larger HHs wherein a shortage of biogas forces them to use firewood for cooking purposes. The monitoring is done on a day when all members of the family are present; the firewood quantity before and after cooking is measured by weighing scales and recorded. The use of firewood for that particular HH is deducted from the ER. The same shall be verified during the verification. Hence FAR B1 is raised.</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) |

| Finding | B7 |
|---------|---|
| | <input checked="" type="checkbox"/> The finding is closed |

| Finding | B1 |
|---|---|
| Classification | <input type="checkbox"/> CAR <input type="checkbox"/> CL <input checked="" type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The monitoring of the amount of firewood used during the shortage of biogas for cooking, especially in households with 6 or more members shall be done during the annual monitoring survey. The measured and recorded data shall be submitted for verification. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure additional corrective action and DOE assessments(#2, #3, etc.) shall be added.</i> | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed |

| Finding | B8 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD1/ The footnotes 5 and 6 URL in the PDD are incorrect |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>The foot note 5 link which works now is given below:</p> <p>http://www.hedon.info/BP42_EnvironmentalImplicationsOfTheEnergyLadderInRuralIndia&highlight=EnvironmentalimplicationsOfTheEnergyLadderInRuralIndia</p> <p>The information in relation to the foot note 6, is updated with new information and new references</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | /PDD2/ Footnote references were rectified, and found to be in order. CL B8 is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | C1 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | /PDD2/ The start date of the project was changed from June 2011 (webhosted PDD) to January 2012. As per the CDM glossary of terms "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins". Please clarify |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The project units installation or construction or real action has not yet been started. The start dates provided in the PDDs (different versions) are the anticipated dates. The actual real action will start only after registration of the project with UNFCCC. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | Since the project installation is post registration, the change in the start date is found to be in order, which is 2013-01-01. Hence, CL C1 is closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

| Finding | C2 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | Proof for the operational lifetime of a biogas unit was not submitted. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The DOE can see the units installed by us during 1992 are still working. So the operational life time of the unit is more than 19 years. The same has been provided in the literature too. BT Nijaguna in his book Biogas Technology page number 232 stated the life time as 20 years. (A Photo copy of the relevant pages of the book has been sent to DOE along with other hard copies on 25-10-2011). |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | The lifetime of a biogas unit as per BT. Nijaguna 'Biogas Technology' was reviewed, wherein the operating lifetime of a biogas unit is given as 20 years. CL C1 was thus closed. |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |

5 VALIDATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA

The host Party for this project activity is India. India has ratified the Kyoto protocol in August 2002, which has been confirmed from the UNFCCC web site. (http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php)

The project has obtained the host country approval^{/HCA/} dated 2011-09-27 issued by the Ministry of Environment and Forests (DNA of India), which confirms voluntary participation by M/s SKG Sangha in the CDM project activity entitled "Ramanagara Biogas Project version 02; 10th November 2010". The Host country approval^{/HCA/} was verified the validation team and found to be in conformity with the EB guidelines.

Project Participants

The PP is M/s. SKG Sangha, and is consistently written in section A.3 and Annex 1 of the PDD. India is the host country, and has issued an approval^{/HCA/} to the SKG Sangha.

5.1.2 Contribution to Sustainable Development

The project contributes to sustainable development in the region. The introduction of biogas units in the project area will reduce the dependence on non-renewable biomass which is the main fuel used for cooking. The implementation of the biogas units will also improve the indoor quality as the biogas stoves will replace traditional firewood stoves. On the whole, the quality of life in the region is expected to improve; women need not travel long distances for collecting firewood. The sludge from the biogas digester is used as a fertilizer in the agricultural fields. The project overall creates many environmental and social benefits, and improved lifestyle for rural women. The host country has accorded approval to the project; the approval letter states that the project contributes to sustainable development.

5.1.3 PDD editorial Aspects

The latest version (version 03) of small scale CDM-SSC-PDD format has been used. The content of the PDD is line with the guidelines for completing CDM-SSC-PDD version 05 dated 2007-09-14, EB 34, Annex 09.

5.1.4 Technology to be employed.

The project activity is the installation of 7620 biogas units. i.e. 3810 Nos. of 2m³ and 3m³ each, in individual households within the project boundary.. The biogas units will be fed by cattle dung and vegetable wastes. The biogas stoves will replace the traditional fire wood stoves used for cooking and heating purposes. Section A.2 of the PDD contains a clear description of the project activity. The project technology is explained in a detailed manner in section A.4 of the PDD. The biogas model used in the project is the Deenabandhu model approved by the Ministry of New and Renewable Energy. The technology involves the construction of a dome into which the animal manure mixed with water is introduced. Through a series of biochemical reactions, the organic matter is broken down by mesophilic microorganisms to release biogas, of which methane is the major component. The biogas is released into the pipes connected to the stoves when the stove burner is switched on. The technology to be employed is environmentally safe and sound.

5.1.5 Small Scale Projects

The project corresponds to the thresholds for the SSC type. The project thermal capacity is less than the 45 MW_{th} threshold. The project applies the approved methodologies AMS I.E. and AMS III.R. The small scale type thresholds include the individual biogas unit having an emission reduction of less than 5 tCO₂e, from the recovery of methane, and an aggregate ER less than 60 ktCO₂e. In the project activity, the ER achieved by individual biodigester units is 2.351 from methane recovery, and the aggregate annual ER expected to be achieved from all the systems (NRB and methane avoidance components) is 54,831 tCO₂e. The SSC methodologies applied are correct, and have been referred correctly in the PDD.

By reviewing the conditions stipulated in EB-36, Annex 27 compendium of guidance on the Debundling for SSC project activities, it is confirmed that the project activity is not a debundled component of any large scale project.

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The project applies the valid versions of a combination of CDM Methodologies approved by the board. The methodologies: AMS I.E. "Switch from non-renewable biomass for thermal applications by the user", version 4, and AMS III.R. "Methane recovery in agricultural activities at the household/small, version 2.

The project activity comprises biodigesters of capacities 2m³ and 3 m³ in the District of Ramanagara. The biodigesters in the project are not included in any other CDM project, and they are within the project boundary which consists of 4 Taluks of Ramanagara District, Karnataka .

The project in line with all requirements and stipulations of the applied methodologies.

With respect to applicability for the methodology AMS I.E., the project involves the installation of biogas stoves that replace the use of traditional stoves fueled by non-renewable biomass. Though similar projects do occur in the State; the NRB collection is not related. The collection of firewood is done from areas near to the households, and do not border the areas of other CDM projects. The PP has proved that the the NRB computed from resource availability vis-a-vis the demand for biomass, sourced from the State of Forests report 2011, from FSI, GoI, is a fraction 0.9553, i.e the State has an NRB of 95.5%. With respect to applicability for the methodology AMS III.R., the practice of disposal of manure and agricultural wastes in pits is avoided by the use of biogas digestors. The amount of methane avoided is computed by the amount of manure fed into the biodigestors. The individual units are the biogas stoves in the communities in the project area. Each unit achieves emission reductions of 2.351 tCO₂ e. The project uses a combination if AMS.I.C and AMS I.E. The sludge from the units is to be used as fertilizers by the individual HHs. The emission reductions from avoiding methane from all the 7620 units are 17,910 t CO₂e which is less than 60k tCO₂ e.

It may be noted that the option of use of kerosene was described in the PDD under AMS.I.C, which was removed by the PP. During the preparation of the published PDD, the applicability criterion was that AMS I.C. be combined with AMS III.R. However, the later version of the AMS III.R. provides for a choice of AMS I.C. or I.E. in the combination. The PP envisaged difficulties in monitoring the kerosene component, as it is used negligibly in the project area, and chose to retain AMS.I.E alone.

Nevertheless, CARs B1, B2 and B7, and CLs A2 and B1 were identified and successfully closed. FAR A1 was raised in due course which shall be checked at verification.

5.2.2 Project Boundary

The 7620 biodigesters of the project are located across villages in 4 Taluks of four Taluks- Kanakapura, Ramanagara, Channapatna and Magadi of Ramanagara District.

The geographical coordinates of the project are given in Table 2-3 of this report.

The sources and gases to be considered for the baseline and project scenario have been included in the PDD. They include CO₂ and methane emissions, which is in line with the applied methodologies.

5.2.3 Baseline Identification

The baseline identified consists of two components- baseline emissions from the non-renewable biomass component and the methane emissions from the anaerobic decay of the animal waste in the HHs.

1) Use of Non-renewable biomass

A survey has been conducted in a sample of the population (600 households) to determine the baseline consumption of fossil fuels and non-renewable biomass. The results of the survey clearly depict that in the absence of the project, the use of biomass and /or fossil fuel (kerosene) is most prevalent in the project area, along with increased trends in biomass price, distance travelled for gathering biomass, The survey results also reflect the use of biomass as the preferred trend, which is not influenced by laws or regulations. Biomass is freely available from the surrounding forest areas. Kerosene and LPG are not preferred due to high costs. However, kerosene is used as an accelerant and added to the firewood. The survey conducted in 600 households is conclusive and has been conducted with a 90/10 confidence/precision level as per the EB 50 Annex 30 guidelines.

The baseline survey database and results^{/BASELINE/} were verified and found to be transparent, reproducible, result-oriented, and in line with the EB guidelines for sampling and surveys.

A clear description has been provided in sections B.4 and B.5 of the PDD of the activities that would take place in the absence of the project. Without the biodigesters, the households in the project area would continue to use fossil fuel and/or fuel wood for thermal needs. The baseline identified is in line with the applicable methodology, AMS. I.E.

The description of the baseline is verifiable and transparent as the baseline is determined by the survey data, and supported by published scientific literature. TÜV Nord has reviewed the supporting literature. Of the list, the baseline identification is evidenced by three major published studies. The assessment of each is given below:

The studies on NRB and biomass trends are sourced from the biomass statistics from the Forest Survey of India report. The surveys are conducted by the Forest Dept., Govt. of India in all states, and the published report reflects the current forest statistics and scenario in the country. For the State of Karnataka, where the project is located, the FSI report provides data on the demand and supply of fuel wood. NRB fraction of 0.9553 has thus been calculated. The report has been verified from the website^{8/FSI/,/REF03/}, and data in Annex 3 NRB calculation and ER sheet found to be consistent. The calculation of fraction of NRB from FSI report of 2011, as the project units are not yet under construction, and the trend of increasing distances and time spent in collecting of NRB, yearly. The NRB fraction of 0.9553 is deemed as appropriate for calculation of baseline emissions for the NRB component of the

⁸ <http://www.fsi.org.in> , http://www.fsi.org.in/sfr_2011.htm

project activity. The statistics published by the Government of India through FSI, includes an analysis of population density, area under forests, cultivable land, trees and shrubs and fallow land etc. Secondly, the published study^{/REF04/} "*Bioresource Potential of Karnataka: Technical Report No: 109*") reiterates that the Eastern Dry zone has a deficit of biomass, and that use of biogas technology can be one way to reduce the dependence on the biomass in the region. The validation team thus confirms that as a result of the shortage of biomass in the region, the biomass available and utilised as fuel is of non-renewable nature.

The FSI study of 2011 has been used in the PDD to demonstrate the NRB value of 95% for the project activity. The validation team has reviewed the published study on demand (20,967,000 tonnes/year) and supply (30,000 tonnes/year) of bioresources in Karnataka State. Therefore, the fraction of non-renewable biomass (f_{NRB}) in the region is 0.9553, after taking into account trees outside forests or TOF, which is also deducted from the demand for fuelwood. Thus the fraction NRB is appropriate as it reflects the actual situation in trends of fuelwood usage, . The validation team accepts the study, which is a scientific study based on national surveys, to be appropriate for the project activity, as the PDD and /REF03-FSI/ demonstrates sufficiently that the energy consumption trends, bioresource availability for the project region.

From the baseline survey it was verified that the annual average firewood usage, B_y for cooking and other purposes per household is 5.315 tCO_{2e} per year. Waste management

The other component identified in the baseline is the management of cattle manure in the project households. During the onsite visit where several householders were questioned, it was observed and documented that in the absence of the project, the cattle manure along with the agricultural wastes, and negligible amounts of food wastes is disposed in dedicated open pits which are present in the back yards of the houses. The validation team noted that the pits were more than a metre deep. From the baseline survey, the average depth of the pit was found to be 1.1218 m.

It was also noted that only the manure from the cattle sheds were collected. The waste is disposed regularly and left to decay without stirring and cleared only once in six months or annually. The same was reiterated by interviewed householders in the project region. As per the survey results about 86% of the manure from the cattle is put into the pits.

The survey questionnaires and documents were verified, along with supporting literature^{/REF01/} "*Report on Manure Management Systems by Regional Biogas Development and Training Centre*" by Kumargoud, and^{/REF07/} "*Studies on Scope for Biomass Management for Achieving Sustainable Soil Fertility in the Hassan District of Karnataka*" by M Shankar, UAS. The published literature confirms that the traditional practice of waste management is the use of rough pits for disposal of cattle manure. No other action is performed, except the clearing of the pits each year.

| | | |
|---------|------------------------------|---|
| 7 | B_y | 7.1 Quantity of woody biomass that is substituted or displaced in tonnes (per unit per year) |
| | $f_{NRB,y}$ | 7.1.1 Fraction of woody biomass used in the absence of the project activity in year y that can be established as non renewable biomass using survey methods |
| 7.1.2 | $NCV_{biomass}$ | 7.1.2.1 Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne) |
| 7.1.2.2 | $EF_{projected_fossilfuel}$ | Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO ₂ /TJ |

Equation 2- BE from the anaerobic waste handling

$$BE_y = GWP_{CH_4} * D_{CH_4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{Bl,j}$$

Where,

| | |
|--------------|--|
| BE_y | Baseline emissions in year y (tCO ₂ e) |
| GWP_{CH_4} | Global Warming Potential (GWP) of CH ₄ (21) |
| D_{CH_4} | CH ₄ density (0.00067 t/m ³ at room temperature (20 °C) and 1 atm pressure) |
| LT | Index for all types of livestock |
| j | Index for animal manure management system |
| MCF_j | Annual methane conversion factor (MCF) for the baseline animal manure management system j |
| $B_{0,LT}$ | Maximum methane producing potential of the volatile solid generated for animal type LT (m ³ CH ₄ /kg dm) |
| $N_{LT,y}$ | Annual average number of animals of type LT in year y (numbers) |

| | |
|---------------|---|
| $VS_{LT,y}$ | Volatile solids for livestock LT entering the animal manure management system in year y (on a dry matter weight basis, kg dm/animal/year) |
| $MS\%_{Bl,j}$ | Fraction of manure handled in baseline animal manure management system j |
| UF_b | Model correction factor to account for model uncertainties (0.94) |

Project emissions from the physical leakage from the biogas units have been considered from the default value provided in AMS. III.R

Leakage from “Use of non-renewable biomass saved under the project activity by non-project households” has been considered by multiplying the quantity of biomass substituted by each unit /year with an adjustment factor of 0.95, which is in line with paragraph 10 of AMS.I.E, version 04.

Thus, $BE = BE_{NRB} + BE_{manure}$ has been calculated. The data not to be monitored are correct. The values to be monitored for the ER calculation are plausible and explained further in section 5.2.7 of this report.

The estimated average annual ER is 54,831 tCO₂e. Aggregated annual emission reductions of all systems included shall be less than or equal to 60 kt CO₂ equivalent as per the methodology.

7.1.3 Additionality Determination

Consideration of CDM in decision making

The start date of the project is 2013-01-01, which is after validation. Nevertheless, the decision to opt for CDM was made on 2009-04-13 by the SKG Sangha. The PP has submitted the board resolution document with excerpts from the minutes of meeting dated 2009-04-13; at which the CDM was considered for the Ramanagara Biogas Project. The decision was taken by the President and Secretary of SKG Sangha. The consideration for CDM for the project is serious. Interviews were conducted during the on-site visit.

CAR B4 was raised in this and subsequently closed out.

Application of methodology / methodological tools

The project being a SSC project of capacity less than 5 MW, i.e. 2.64 MW, the additionality as described in the final PDD has been determined as per EB 68, Annex 27, “Guidelines on the demonstration of additionality of small-scale project activities”- Version 09. The information in the PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines, and hence is deemed additional.

The table below describes validation team assessment on each of the criteria of the guidelines for demonstrating additionality:

As per paragraph 2 and 2 (c) of EB68, Annex 27,

“Documentation of barriers, as per paragraph 1 above, is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). The positive list comprises of:

(c) Project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises (SMEs) and where the size¹ of each unit is no larger than 5% of the small-scale CDM thresholds;

During the site visit and subsequent document review, assessment team found that the project activity involves installation of isolated biodigester units within the project boundary where the users are individual households. The size of each unit is no larger than 5% of the small –scale threshold as explained below:

| Steps as per Annex 27 of EB 68 “Guidelines on the demonstration of additionality of small-scale project activities” Version 9 | Argument /justification from PDD | Validation team assessment | | | | | | | | | | | | | | | | |
|---|---|----------------------------|---|------|--------|----------------------|------|--------|---|---|------|-------------------|---|-----------------------|---|------------------|-----------|---|
| Paragraph 2 c of the guideline (footnote 1) That is the size of each unit under 750 kW installed capacity | <p>The net installed electrical capacity of each 2m³ unit of the project is 0.2772 kW, and 3m³ unit is 0.4158 kW, which is lower than the stipulated limit of 750 kWh.</p> <table><tr><th>Parameter</th><th>Value</th><th>Unit</th><th>Source</th></tr><tr><td>Unit conversion rate</td><td>0.28</td><td>kWh/MJ</td><td>http://www.unitconversion.org/energy/megaajoules-to-kilowatt-hours-conversion.html</td></tr><tr><td>Calorific value of biogas in a digester</td><td>21.6</td><td>MJ/m³</td><td>Nijaguna B.T, Biogas Technology (New Age International (P) Ltd. 4835/24 Ansari Road, Daryaganj, New Delhi – 110 002, 2002</td></tr><tr><td>Digester capacity/day</td><td>3</td><td>2 m³</td><td>unit size</td></tr></table> | Parameter | Value | Unit | Source | Unit conversion rate | 0.28 | kWh/MJ | http://www.unitconversion.org/energy/megaajoules-to-kilowatt-hours-conversion.html | Calorific value of biogas in a digester | 21.6 | MJ/m ³ | Nijaguna B.T, Biogas Technology (New Age International (P) Ltd. 4835/24 Ansari Road, Daryaganj, New Delhi – 110 002, 2002 | Digester capacity/day | 3 | 2 m ³ | unit size | <p>The computation of the electrical capacity for the 2m³ and 3m³ capacities arrived at in the PDD has been verified and found to be in order.</p> <p>The values calorific value of the biogas and the volume of the digester unit (the higher volume has been used in the calculation), and the stove efficiency have been used to determine the capacity (kWh_e), which in turn has been calculated for per hour. The result is</p> |
| Parameter | Value | Unit | Source | | | | | | | | | | | | | | | |
| Unit conversion rate | 0.28 | kWh/MJ | http://www.unitconversion.org/energy/megaajoules-to-kilowatt-hours-conversion.html | | | | | | | | | | | | | | | |
| Calorific value of biogas in a digester | 21.6 | MJ/m ³ | Nijaguna B.T, Biogas Technology (New Age International (P) Ltd. 4835/24 Ansari Road, Daryaganj, New Delhi – 110 002, 2002 | | | | | | | | | | | | | | | |
| Digester capacity/day | 3 | 2 m ³ | unit size | | | | | | | | | | | | | | | |

| | | | | | | |
|--|---|-------|-----|-------|---|---|
| | Installed Digester electrical capacity /day | 18144 | 126 | kWh | Calorific value of biogas (21.6MJ) x digester capacity x unit conversion value (0.28) | <p>the net installed capacity in kW_e of each unit of 2 m³ arrived at is 0.2772 kW, and that of 3m³ unit is 0.4158 kW.</p> <p>Therefore the installed capacity for each unit is under 750kW.</p> <p>The calorific value of the biogas, the efficiency of biogas stove has been sourced from /REF05/- Biogas technology by Nijaguna. The calorific value has been cross verified with page 78 of /REF 12/⁹ wherein the calorific value of 23.012 MJ/m³ (5500 kcal/m³) verified by the validation team. The biogas stove efficiency (55%) was crosschecked with that provided in page 5 of /REF12/, i.e. 55-60%. Biogas technology by Nijaguna ^{/REF05/} is predominantly used for scientific calculations, it is found to be appropriate.</p> |
| | Hours per day | 24 | | hours | | |
| | Installed digester electrical capacity / hour | 0756 | 054 | kWh | Installed project unit electrical capacity per day / hours in a day (24) | |
| | Stove efficiency | 55 | | % | Nijaguna BT | |
| | Net installed electrical capacity of the project unit | 0418 | 027 | kWh | Installed digester electrical capacity x stove efficiency (55%) | |
| <p>The installed capacity of each of the independent subsystem/measure in the project activity is is thus lower than the stipulated capacity of 750 kWh</p> <p>The project activity is solely composed of isolated units, biogas plants and these units are used by the individual households. The generated biogas is used to fulfil the daily cooking needs of the households spread in a wide area, a district.</p> | | | | | | |

¹⁰ <http://envfor.nic.in/legis/eia/so1533.pdf>

| | | <p>End users are the beneficiaries of the 7620 households belonging to the project.</p> <p>Therefore, the project conforms to paragraph 2 for type I activities of the guideline.</p> <p><input checked="" type="checkbox"/> Step passed <input type="checkbox"/> Step not passed <input type="checkbox"/> Not applicable</p> | | | | | | | | | | | | |
|--|---|---|------|------------|------|-----------|----|-----------------|------|------|------|------|------|--|
| <p>Paragraph 2 c of the guideline (footnote 1)</p> <p>Or under 3000 tonnes of emission reductions per year</p> | <p>Emission reductions for each unit</p> <table><tr><th>Average units in operation</th><th>NRB</th><th>Manure CH4</th><th>BE</th><th>PE Manure</th><th>ER</th></tr><tr><td>For 1 unit/year</td><td>5.90</td><td>2.35</td><td>8.25</td><td>0.39</td><td>7.87</td></tr></table> <p>The maximum gross emission reductions per unit is 7.87 t CO2e which is well below the limit of 3,000 t CO2 e, stipulated by the guidelines of the EB 68, Annex 27.</p> | Average units in operation | NRB | Manure CH4 | BE | PE Manure | ER | For 1 unit/year | 5.90 | 2.35 | 8.25 | 0.39 | 7.87 | <p>The detailed assessment of computation of parameters for determining the ER has been done in sections 5.2.3 and 5.2.4 of this report. The ER achieved per unit is 7.87 t CO2e per year which is below the 3000 t CO2e limit prescribed by the guideline. The same was verified from the ER sheet and ER computation. Each unit achieves an ER of 5.90 from the replacement of NRB with biogas as the main source of fuel in the project areas. The use of manure prevents the emission of methane from the open pit storage</p> |
| Average units in operation | NRB | Manure CH4 | BE | PE Manure | ER | | | | | | | | | |
| For 1 unit/year | 5.90 | 2.35 | 8.25 | 0.39 | 7.87 | | | | | | | | | |

| | | |
|--|--|--|
| | | <p>method, adding a 2.35 t CO₂e to the total baseline emissions. The PP has accounted for PE of 0.39 tCO₂e as physical leakage of methane from the digester.</p> <p>Therefore, the total estimated ER from each unit is 7.87 t CO₂e. The baseline sheet, survey results, F_{NRB} /REF03/ has been verified and found to be in order.</p> <p>Therefore, the project conforms to the guideline.</p> <p> <input checked="" type="checkbox"/> Step passed <input type="checkbox"/> Step not passed <input type="checkbox"/> Not applicable </p> |
|--|--|--|

As the conditions stipulated by the “Guidelines on the demonstration of additionality of small-scale project activities , **version 9**” – **Annex 27 of EB 68** are met by the project, it is deemed additional.

CAR B5 was raised and successfully closed.

Due to changes in the numbers of biodigester units for installation, since the publishing of the PDD^{/PDD2/-/PDD6/}, the validation team has carried out an analysis of the number of units in relation to the possible capacities and emissions reductions.

Installed capacity as per the webhosted PDD (where 5000 units of sizes 2m³ and 3m³ each, were considered)

- For 5000 units of 3m³, total installed capacity is 0.4158 x 5000= 2079 kW or 2.079 MW
- For 5000 units of 2m³ size biodigesters, the capacity is 0.2772 x 5000 =1386 kW or 1.386 MW

It is to be noted that even with 10,000 units, which is unlikely, the total installed capacity is 3.465 MW which is within the 5 MW threshold for microscale projects. Additionally, the individual capacities for the 2m³ and 3m³ biodigester units is 0.2772 kW and 0.4158 kW, which is below the 750 kW limit (EB 68, Annex 27), rendering the project auto-additional.

Emission reductions comparison:

- As per the webhosted PDD, the total ER for 5000 units each of 2m³ and 3m³ digestors is 55,516 t, which is below the 60kt CO₂e / per year small scale threshold.
- As per the latest version of the PDD^{/PDD6/}, the total ER is 54,831 tCO₂e, which is still below the 60kt CO₂e / yearsmall scale threshold.
- Furthermore, there is a vast difference between the ER achieved by each unit, 7.67 tCO₂e and the 3000 tCO₂e limit prescribed by EB 68, Annex 27.

In conclusion, as declared by the PP that the number of units of 2m³ and 3m³ digestors will not exceed 3810 numbers each^{/PDD6/}, the validation team confirms that it is unlikely that the installed capacity and the ER will exceed the limits prescribed in EB 68, Annex 27. Nevertheless, FAR was raised to be checked during the first periodic verification. Please refer section 4 for details.

Common practice analysis

This is not applicable as the project is a SSC project.

7.1.4 Monitoring Methodology

The monitoring plan in compliance with the applicable methodologies AMS.I.E version 04 AND AMS.III.R version 2.

7.1.5 Monitoring Plan and project management planning

All monitoring parameters in the PDD are realistic and feasible to measure and monitor. The monitoring of the parameters :

- N_{operating} - the number of biogas units in operation
- N_T - Annual average animal population in a household
- B_{manure,generated} - Average amount of animal manure generated per household per year which is based on the animals kept in the sheds
- B_{manure,fed} - Average amount of animal manure fed into a biogas digester per year, and
- Application of sludge

will be done by means of a survey conducted annually in all the HHs of the project. The validation team has verified the survey questionnaires (Annex 6 of the PDD) to be used, and thus finds the means of monitoring suitable to the project

The sample plan for the annual surveys will adhere to a 95% confidence level with 10% precision level, which is in line with the "Guidelines for sampling and surveys for CDM project activities and programme of activities; Version 02.0 - EB69, Annex 5"

The QA/QC measures, including the sample surveys are conducted by a group of SKG Sangha employees for each village, each Taluk and the District as a whole a project team. The input data for the above parameters will be recorded in electronic database. All maintenance repairs of biogas stoves will be undertaken immediately. The monitoring team at the village level is available round the clock and resides in the same villages. The roles and responsibilities in the organizational hierarchy are well established. The records are checked at each level.

It is likely that the monitoring plan would be properly implemented.

Nevertheless, CAR B6 and CLs B1 and B7 were raised and closed successfully. FAR B1 was raised, which shall be checked during verification.

7.1.6 Crediting Period

The fixed crediting period has been chosen for the project. This has been given clearly in the PDD. The crediting period starting date has been chosen as 2013-01-01, or the date on which the project is registered. The date given in the PDD is appropriate, and unambiguous.

7.1.7 Environmental Impacts

As per the Schedule 1 of the EIA notification 2006, given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed wind power project activity doesn't fall under the list of activities requiring EIA¹⁰.

7.1.8 Comments by Local Stakeholders

The local stakeholder meeting was held in Pattlu Village, Channapatna District on 6th December 2009. Relevant stakeholders from the local government bodies, NGOs, women, farmers and general population were invited. A cross section of people attended the meeting, and comments and views were compiled. The summary of comments is available in the PDD. The comments and views were answered by the PP appropriately. No negative comments were received.

¹⁰ <http://envfor.nic.in/legis/eia/so1533.pdf>

8 VALIDATION OPINION

SKG Sangha has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Ramanagara Biogas Project version 02; 10th November 2010" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the validation 8 Corrective Action Requests (CARs) and 12 Clarification Requests (CLs) were raised and successfully closed. 2 FARs has been raised, to be assessed during the first periodic verification.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

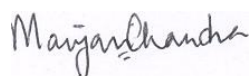
In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (India) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of India vide the Letter of Approval (HCA) (4/12/2011-CCC) dated 2011-09-27.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 548, 318 tCO₂e are most likely to be achieved within the fixed crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Bangalore, 2012-12-18

Essen, 2012-12-18



Manjari Chandra
TÜV India Private Limited
Validation Team Leader



Stefan Winter
TÜV NORD JI/CDM CP
Final Approval

9 REFERENCES

Table 7-1: Documents provided by the project participant

| Reference | Document |
|-------------------|--|
| /BASELINE/ | Baseline survey database with results |
| /FORM/ | Sample copies of the stakeholder feedback forms of the SKG Sangha local stakeholder meeting |
| /HCA/ | Letter of approval for the “Ramanagara Biogas project version 02; 10th November 2010” (4/12/2011-CCC) dated 2011-09-27 |
| /gmi/ | Renewable energy for rural development, Annual report – 2008_2009, |
| /MIN/ | Minutes of the local stakeholder meeting held in Channapatna on 2009-12-06 |
| /PDD1/ | Published Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 02 dated 2010-11-10 |
| /PDD2/ | Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 03 dated 2011-10-21 |
| /PDD3/ | Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 04 dated 2011-11-21 |
| /PDD4/ | Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 05 dated 2012-02-09 |
| /PDD5/ | Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 06 dated 2012-09-25 |
| /PDD6/ | Project Design Document for “Ramanagara Biogas Project version 02; 10th November 2010”, version 07 dated 2012-12-12 |
| /REF01/ | Dr. Viresh Kumargoud, V, Report on Manure Management Systems by Regional Biogas Development and Training Centre, University of Agricultural Sciences, Bangalore |
| /REF02/ | Ramachandra, T.V. et al, <i>Bioresource Status in Karnataka</i> , Renewable and Sustainable Energy Reviews, Volume 8, Issue 1, February 2004, pages 1-47. http://wgbis.ces.iisc.ernet.in/energy/paper/bioresources.htm |
| /REF03/ | “India State of Forest Report” 2011; Forest Survey of India, MoEF, Government of India (http://www.fsi.org.in/sfr_2011.htm) |

| Reference | Document |
|---------------------------|--|
| /REF04/ | Ramachandra, T.V. and Kamakshi, G, <i>Bioresource Potential of Karnataka: Technical Report No: 109</i> , Energy and Wetlands Research Group, Indian Institute of Science, Bangalore, 560012 (November 2005). http://wqbis.ces.iisc.ernet.in/energy/paper/TR109/TR109_TVR.pdf |
| /REF05/ | Nijaguna, B.T, <i>Biogas Technology</i> (New Age International (P) Ltd, 4835/24 Ansari Road, Daryaganj, New Delhi 110 002, 2002 |
| /REF06/ | Mahesha M – Can organic fertiliser (manure) replace the chemical fertiliser.....?, -Assistant Professor, Department of Agricultural Engineering, University of Agricultural Sciences, Bangalore |
| /REF07/ | M. Shankar – Studies on Scope for Biomass Management for Achieving Sustainable Soil Fertility in the Hassan District of Karnataka – Assistant Professor, Department of Agricultural Engineering, University of Agricultural Sciences, Bangalore |
| /REF08/ | Temperature data by the Indian Meteorological Department, Government of India |
| /REF09/ | Mapping of Fuel Wood Trees in Kolar District Using Remote Sensing Data and GIS – By Jagadeesh K, Rao G.R, Kiran M.K, Jagadish K.S and Ramachandra T.V – Indian Institute of Science, Bangalore |
| /REF10/ | Photo copy of a bill of Kedar gas agencies – showing the cost of the LPG refill |
| /REF11/ | C. Muniraju, Civil Engineer and Approved Valuer, Sree Consultants – Cost estimates of 2 and 3 cubic meter capacity biogas plants |
| /REF12/ | Handbook on Biogas and its Applications, National Institute of Industrial Research, 2004. (http://books.google.de/books?id=Zjp6R4Vd1PEC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false) |
| /PHOTO/ | Photographs taken during the on-site visit of the “Ramanagara Biogas Project version 02; 10th November 2010 “ on 21 st and 22 nd September 2011 |
| /SHCP/ | Stakeholder consultation process evidences: Questionnaires |
| /NC/ | Validation contract |
| /XLS1/- /XLS4/ | Emission reduction calculation spreadsheet |

| Reference | Document |
|----------------|--|
| /ZP-AK/ | Letter from the Zilla Panchayat of Ramanagara District acknowledging SKG Sangha as the only entity implementing biogas digesters in the District |

Table 7-2: Background investigation and assessment documents:

| Reference | Document |
|----------------------------------|--|
| /AMS.I.C./ | "Thermal energy production with or without electricity", <i>version 19</i> |
| /AMS.I E./ | Switch from non-renewable biomass for thermal applications by the user", Version 04 |
| /AMS.III.R/ | "Methane recovery in agricultural activities at the household/small farm level", Version 2 |
| /AMS.III.D/ | "Methane recovery in animal manure management systems" Version 18 |
| /IPCC/ | <ul style="list-style-type: none"> • IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 • Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual |
| /PDD-T/ | Project Design Document Form (CDM PDD) – Version 03 |
| /KP/ | Kyoto Protocol (1997) |
| /MA/ | Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7)) |
| /Attachment A Appendix B/ | Attachment A Appendix B of simplified modalities and procedures for SSC projects |
| /unfccc/ | <p>Guidelines for demonstrating additionality of microscale project activities, (Version 3., Annex 23, EB 63)</p> <p>General guidelines to SSC methodologies (Version 17, Annex 21, EB 61)</p> <p>Guidelines for demonstrating additionality of small scale project activities (Version 09, EB 68, Annex 27)</p> <p>Guidelines for sampling and surveys for CDM project activities and programme of activities; Version 02.0 of EB 69, Annex 5</p> |
| /VVM/ | Validation and Verification Manual (Version 01.2, Annex 1, EB 55) |

Table 7-3: Websites used:

| Reference | Link | Organisation |
|-----------------------|---|---|
| /dna/ | http://www.cdmindia.gov.in/ | National CDM Authority, Ministry of Environment and Forests, DNA, India |
| /skg/ | http://www.skgsangha.org/index01.html | SKG Sangha |
| /energy-rural/ | http://www.hedon.info/BP42_EnvironmentalImplicationsOfTheEnergyLadderInRuralIndia&highlight=EnvironmentalimplicationsOfTheEnergyLadderInRuralIndia | Literature Review- Preeti Malhotra |
| /fsi/ | http://www.fsi.org.in | Forest Survey of India, MoEF, Government of India |
| /mnre/ | http://www.mnre.gov.in/ ; http://www.mnre.gov.in/admin-approvals/prog-ftbp.htm | Ministry of New and Renewable Energy |
| /M2M/ | http://www.methanetomarketsindia.com/sectors/agri.htm | Methane to markets –India |
| /satsig/ | http://www.satsig.net/maps/lat-long-finder.htm | Satellite signal |
| /kar/ | http://www.karnataka.com/districts | Districts of Karnataka |
| /ipcc/ | http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf | 2006 IPCC Guidelines for National Greenhouse Gas Inventories |

| Reference | Link | Organisation |
|-----------|---|--------------|
| /unfccc/ | http://cdm.unfccc.int | UNFCCC |

Table 7-4: List of interviewed persons

| Reference | Mol ¹ | | Name | Organisation / Function |
|-----------|------------------|---|-----------------------------|--|
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Vidya Sagar Devabhaktuni | President, SKG Sangha |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | S.K Umesha | Director, SKG Sangha |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Srinivasa | Supervisor, SKG Sangha |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Raghava Rao | Director, SKG Sangha |
| /IM02/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Thagdegowda | Beneficiary Harekoppa Village, Ramanagara Taluk |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Shobha Raju | Beneficiary, Dunnasandra Village, Kanakapura Taluk |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Punnamma | Beneficiary, Muniyappanadoddi Village, Ramanagara Taluk |
| /IM02/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Krishnappa | Beneficiary, Chikkanahalli Village, Channapatna Taluk |
| /IM02/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | D. Raju | Beneficiary, Chikkanahalli Village, Channapatna Taluk |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Shivamma | Beneficiary, Ramanahalli Village, Ramanagara Taluk |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Hanuamma | Beneficiary, Ramanahalli Village, Ramanagara Taluk |
| /IM02/ | V | <input type="checkbox"/> Mr. | Chikamma | Beneficiary, Mangadahalli Village, |

| Reference | Mol ¹ | | Name | Organisation / Function |
|---------------|------------------|--|-------------|---|
| | | <input checked="" type="checkbox"/> Ms | | Channapatna Taluk |
| /IM02/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Jayaramappa | Beneficiary, Garepalya Village, Kanakapura Taluk |

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Validation Protocol
- A2:** Assessment of Baseline
Identification
- A3:** Assessment of Financial
Parameters
- A4:** Assessment of Barrier analysis
- A5:** Outcome of the GSCP
- A6:** Appointment certificates of the
team members

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|------|---------------------|-----------------|
| A. General Description of Project Activity | | | | |
| A.1. Approval <i>The written approval of the parties involved is a mandatory requirement</i> | | | | |
| A.1.1. Has the project provided written approvals of all parties involved? (EB 55 Annex 1, § 44) <i>Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.</i> <i>Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA</i> | <i>Description:</i> National CDM Authority, under the Ministry of Environment and Forests, Government of India, is the Designated National Authority in India. The letter of approval is to be submitted. <i>Justification of evidences:</i> The letter of approval is to be submitted. <i>Conclusion:</i> CAR A1 has been raised. | | /CAR A1/ | OK |
| A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website? | The host country letter of approval has not been submitted. Hence CAR A1 is raised. | | /CAR A1/ | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|---|------|---------------------|-----------------|
| (EB 55 Annex 1, §§ 44, 47, 48, 49 (b), 49 (c), 53) <i>Indicate the means of validation employed to assess the authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity submitted the LoA for validation.</i> | | | | |
| A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol? (EB 55 Annex 1, § 45(a)) | The host country letter of approval has not been submitted. Hence CAR A1 is raised. | | /CAR A1/ | OK |
| A.1.4. Do the written approvals confirm that the participation is voluntary? (EB 55 Annex 1, § 45(b)) | The host country letter of approval has not been submitted. Hence CAR A1 is raised. | | /CAR A1/ | OK |
| A.1.5. Does the written approval from the host country confirm ⁷ that the project contributes to the sustainable development in the country? (EB 55 Annex 1, § 45(c)) | The host country letter of approval has not been submitted. Hence CAR A1 is raised. | | /CAR A1/ | OK |
| A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration or an additional specification of the project activity, e.g. PDD version number? (EB 55 Annex 1, §§ 45(d), 50) | The host country letter of approval has not been submitted. Hence CAR A1 is raised. | | /CAR A1/ | OK |
| A.1.7. Are the written approvals unconditional with | The host country letter of approval has not been submitted. | | /CAR | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|--------|------------------------|-----------------|
| regard to A.1.3 to A.1.6? (EB 55 Annex 1, § 46) | Hence CAR A1 is raised. | | A1/ | |
| A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? (EB 55 Annex 1, § 51) | <p><i>Description:</i></p> <p>Information regarding the project participants provided in Section A.3 and Annex 1 of the PDD is consistent. The name of the project participant is M/s. SKG Sangha.</p> <p><i>Justification of evidences:</i></p> <p>The name of the PP mentioned in section A.3 and Annexure 1 are one and the same.</p> <p><i>Conclusion:</i></p> <p>The information regarding the project participants listed in section A.3 and in Annex 1 of the PDD is consistent.</p> | /PDD1/ | OK | OK |
| <p>A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? (EB 55 Annex 1, § 51)</p> <p><i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.</i></p> <p><i>Describe the means of validation employed to draw this conclusion.</i></p> | M/s. SKG Sangha is the only project participant, and India is the Party involved in the project. The host country letter of approval has not been submitted. Hence CAR A1 is raised. | /PDD1/ | /CAR A1/ | OK |
| <p>A.1.10. Are any other project participants approved but not listed in the PDD? (EB 55 Annex 1, § 52)</p> | Please refer A.1.9. | | | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|------------------------|----------------------------|-------------------------|
| <p>A.1.11. Does the DoE have a direct contractual relationship with the PP?</p> <p>(EB 55 Annex 1, § 51; EB 50 Annex 48, §§ 7–9)</p> <p><i>Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.</i></p> | <p><i>Description:</i></p> <p>The PP has signed a contract with the DOE for the validation of the CDM project as per the UNFCCC guidelines. The PDD submitted for webhosting and the PDD which will be submitted for request for registration contains the same name (M/s. SKG Sangha) with whom TÜV NORD has entered into a contractual relationship.</p> <p><i>Justification of evidences:</i></p> <p>The evidence for direct contractual relationship with the PP is the validation proposal signed between TÜV NORD CERT GmbH and M/s. SKG Sangha which was verified and found to be in order.</p> <p><i>Conclusion:</i></p> <p>It is concluded that the DoE have a direct contractual relation with the PP as per EB requirements.</p> | <p>/PDD1/ /VC/</p> | <p>OK</p> | <p>OK</p> |
| <p>A.2. Contribution to Sustainable Development</p> <p><i>The project's contribution to sustainable development is assessed.</i></p> | | | | |
| <p>A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development?</p> | <p>The Host Country Approval has not been submitted. Hence CAR A1 is raised.</p> | | <p>/CAR A1/</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|--|-------------|-------------------------|-------------------------|
| (EB 55 Annex 1, §§ 125–127) <i>Contains a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.</i> | | | | |
| A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 55 Annex 1, §§ 125–127) <i>Describe the other positive aspects not related to GHG emission reduction on the environment.</i> | <i>Description:</i> The project will reduce the dependence on non-renewable biomass that is generally used for cooking purposes in the project area. The implementation of the biogas units will improve the indoor quality as the biogas stoves will replace traditional firewood stoves. Quality of life will improve; the women need not travel long distances in search of firewood. The sludge from the biogas digester is used as a fertilizer in the agricultural fields. The project overall creates many environmental and social benefits, especially better living for rural women. <i>Justification of evidences:</i> The same was verified during the on-site visit interviews with PP. <i>Conclusion:</i> Other than the reduction of GHG emissions, the project creates other environmental and social benefits in the project area. | /PDD1/ | OK | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|--|-------------|-------------------------|-------------------------|
| A.3. PDD editorial aspects <i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i> | | | | |
| A.3.1. Has the latest version of the PDD form been applied? (EB 55 Annex 1, § 55) | <p><i>Description:</i></p> <p>The PDD version 2, the webhosted version, and all subsequent revised versions (current version number 4) have all been presented in the prescribed format Clean Development Mechanism Project Design Document Form (CDM-SSC-PDD), Version 03, in effect as of 22 December 2006. The template has not been altered and no modifications have been made to the font, format, headings and logo.</p> <p><i>Justification of evidences:</i></p> <p>The following web link can be referred to check the latest version of the PDD format uploaded in the UNFCCC website. http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/PDD_for_m02_v03.pdf</p> <p><i>Conclusion:</i></p> <p>The project description is presented in the latest template available in the UNFCCC website. It is verified and found to be valid.</p> | /unfccc/ | OK | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|-----------------|-------------------------|-------------------------|
| <p>A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)</p> | <p><i>Description:</i></p> <p>Yes, the PDD has been duly filled in accordance with the “Guidelines for completing the simplified Project Design Document (CDM-SSC-PDD)”, Version 5, dated 14 September 2007, and the directions contained under Section B (Pages 6/24 to 16/24) of the above guidelines.</p> <p><i>Justification of evidences:</i></p> <p>The following web link can be referred to check the latest version of the Guidelines to develop small scale PDD.</p> <p>http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid02_v05.pdf</p> <p><i>Conclusion:</i></p> <p>The PDD has been developed based on the Guidelines for completing the simplified project design document (CDM-SSC-PDD), version 05. It is checked from UNFCCC website and the same procedure has been followed to prepare the PDD.</p> | <p>/unfccc/</p> | <p>OK</p> | <p>OK</p> |
| <p>A.4. Technology to be employed</p> <p><i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i></p> | | | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|--|-------------------------------------|-----------------------------|-------------------------|
| <p>A.4.1. Does the PDD contain a clear, accurate and complete project description?</p> <p>(EB 55 Annex 1, §§ 58–59, 64)</p> <p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i></p> <p>§64 (a) Describe the process undertaken to validate the accuracy and completeness of the project description.</p> <p>§64 (b) Contain the DOE's opinion on the accuracy and completeness of the project description.</p> | <p><i>Description:</i></p> <p>Sections A.2 and A.4.2 of the PDD describe the project activity in a clear and concise manner. The project activity is the construction and implementation of an estimated 9000 biogas digesters. The biodigesters of the Deenabandhu model will have a capacity of 2m³ or 3m³. Nevertheless, CL A1 has been raised in this regard.</p> <p><i>Justification of evidences:</i></p> <p>The project technology is explained in a detailed manner in section A.4 of the PDD. The Deenabandhu model approved by the Ministry of New and Renewable Energy is used in the project.</p> <p>http://www.mnre.gov.in/; http://www.mnre.gov.in/adm-approvals/prog-ftbp.htm</p> <p><i>Conclusion:</i> The revised PDD contains a complete and accurate description of the project technology. CL A1 has been raised. However, during the course of validation, the number of units was reduced to 7620 biodigestors. The same has been explained in CL A1. FAR A1 has been raised.</p> | <p>/PDD1/ /IM01/ /IM02/</p> | <p>CL A1 FAR A1</p> | <p>OK</p> |
| <p>A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description?</p> | <p><i>Description:</i></p> <p>The description of the project technology is identical to the real scenario as was verified by the validation team during the site visit. The project technology is as outlined in the contractual agreement of PP.</p> | <p>/PDD1/ /IM01/ /IM02/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|--|---|-------------------------|-------------------------|
| | <p><i>Justification of evidences:</i></p> <p>Photographs of the project biodigesters were taken during the site visit, and the interviews with the beneficiaries and PP vouch for the same.</p> <p><i>Conclusion:</i></p> <p>The project description in the PDD is in accordance with the real situation.</p> | | | |
| <p>A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation?</p> <p>(EB 55 Annex 1, §§ 63–64)</p> <p><i>Describe the steps taken to validate this issue.</i></p> | <p><i>Description:</i></p> <p>The project does not involve alteration of existing process or installations.</p> <p><i>Justification of evidences:</i></p> <p>This was verified during the site visit.</p> <p><i>Conclusion:</i></p> <p>No alteration of existing installation is involved.</p> | <p>/PDD1/ /IM01/ /IM02/</p> | <p>OK</p> | <p>OK</p> |
| <p>A.4.4. Does the project design engineering reflect current good practices?</p> <p><i>Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i></p> | <p><i>Description:</i></p> <p>The project involves the construction and installation of 9000 biogas units across villages in Kanakapura, Ramanagara, Channapatna, and Magadi Taluks in Ramanagara District in Karnataka. The biogas unit is the well-known Deenabandhu model which is approved by the Ministry of New and Renewable Energy (MNRE), Govt. of India.</p> <p><i>Justification of evidences:</i></p> | <p>/mnre/ /PDD1/ /XLS/ /IM01/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|-------------------------------------|-------------------------|-------------------------|
| | http://www.mnre.gov.in/ http://www.mnre.gov.in/adm-approvals/prog-ftbp.htm <i>Conclusion:</i> The project design thus reflects good practices. | | | |
| <p>A.4.5. 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?</p> <p><i>Describe the process undertaken to assess the state of the art technology.</i></p> | <p><i>Description:</i></p> <p>The Deenabandhu model biogas technology is a well known and commonly used model in India, and has been approved by the Ministry of New and Renewable Energy (MNRE), Govt. of India.</p> <p><i>Justification of evidences:</i></p> <p>http://www.mnre.gov.in/</p> <p><i>Conclusion:</i></p> <p>The project uses state of the art technology. The Deenabandhu model biogas technology is a well known and commonly used model in India, and has been approved by the Ministry of New and Renewable Energy (MNRE), Govt. of India.</p> | /mnre/ /PDD1/ /XLS/ /IM01/ | OK | OK |
| <p>A.4.6. Does the project make provisions for meeting training and maintenance needs?</p> <p><i>Describe the process undertaken to assess the maintenance and training needs.</i></p> | <p><i>Description:</i></p> <p>SKG Sangha has employed personnel who are trained as supervisors/motivators on the field. They are in charge of the overall functioning of the biodigesters in the beneficiary households. The supervisors in turn train the beneficiaries in</p> | /PDD1/ /IM01/ /IM02/ | OK | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|---|-------------|-------------------------|-------------------------|
| | <p>handling and operation of the units. It was verified during the site visit interviews that any minor problem with the functioning of the units are reported to the supervisors who in turn ensure that the unit is repaired immediately. The village level supervisors report to their counterparts at the Taluk level who in turn report to the district level coordinators. Monthly reports are prepared at each level.</p> <p>The same is mentioned in the B.7 of the PDD.</p> <p><i>Justification of evidences:</i></p> <p>The validation team held interviews with the project developer, supervisors and the beneficiaries. The interviewed personnel were well aware of the workings of the biodigestors. It was evident that the project has a systematic approach to training and maintenance requirements.</p> <p><i>Conclusion:</i></p> <p>The project makes provisions for meeting training and maintenance needs.</p> | | | |
| A.5. Small scale project activity <i>It is assessed whether the project qualifies as small-scale CDM project activity</i> | | | | |
| A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? | <p><i>Description:</i></p> <p>The project activity qualifies small scale CDM project activity. The total capacity of the project activity is 29 MW_{th} which is</p> | /PDD1/ | GL-A2 | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|--|-------------|-------------------------|-------------------------|
| (EB 55 Annex 1, §§ 135–136 (a)) | <p>less than 45 MW_{th}, which is the maximum capacity for SSC projects as per the Decision 4 of CMP.1 Annex II. Nevertheless, CL A2 has been identified.</p> <p><i>Justification of evidences:</i></p> <p>The published PDD was verified</p> <p><i>Conclusion:</i></p> <p>The project qualifies as a small scale CDM project. Nevertheless, CL A2 has been identified.</p> | | | |
| <p>A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein?</p> <p>(EB 55 Annex 1, § 136 (b))</p> <p><i>Check, if applicable the expiry dates of the applied methodology. Further, take into consideration the general guidance to the methodologies¹¹, which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.</i></p> | <p><i>Description:</i></p> <p>The project applies the following approved methodologies:</p> <p>For purposes of non-renewable biomass usage in the baseline, AMS I.E “Switch from non-renewable biomass for thermal applications by the user”, version 4. For the thermal component, and usage of fossil fuels such as kerosene in the baseline scenario, AMS. I.C “Thermal energy production with or without electricity”, version 19 has been used.</p> <p>For the generation of methane due to agricultural activities, AMS.III.R “Methane recovery in agricultural activities at household/small farm level”, version 2 has been used.</p> <p>The methodologies used are the latest versions available on the UNFCCC website at the time of webhosting.</p> | /PDD1/ | CAR B7 | OK |

¹¹ <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>Nevertheless, CAR B7 was raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been crosschecked with the methodologies.</p> <p><i>Conclusion:</i></p> <p>The project activity uses approved and valid methodologies.</p> <p>It shall be noted, that since the webhosted PDD, AMS I.C has been removed as the PP is not applying for emissions reduced by the replacement of usage of kerosene. The latest PDD consist of the applicable methodologies-AMS I.E and AMS. III.R</p> | | | |
| <p>A.5.3. Is the small scale project activity not a debundled component of a larger project activity?</p> <p>(EB 55 Annex 1, § 136 (c))</p> <p><i>Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB 36, Annex 27 54, Annex 13).</i></p> | <p><i>Description:</i></p> <p>The project is not a debundled component of a larger project activity. There is no similar project by the PP, in the same category and technology or registered within the last two years, and within 1 Km of the project boundary.</p> <p><i>Justification of evidences:</i></p> <p>The same was checked during the site visit interviews.</p> <p><i>Conclusion:</i></p> <p>The project is not a debundled component of a larger activity.</p> | <p>/PDD1/</p> | <p>OK</p> | <p>OK</p> |
| <p>A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party?</p> | <p><i>Description:</i></p> <p>No assessment is required on environmental impacts of the</p> | <p>/moef/</p> | <p>OK</p> | <p>OK</p> |

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| (EB 55 Annex 1, § 136 (d)) | <p>proposed SSC CDM project activity.</p> <p><i>Justification of evidences:</i></p> <p>http://www.envfor.nic.in/legis/eia/so-60%28e%29.html</p> <p>The MoEF notification (http://envfor.nic.in/legis/eia/so1533.pdf) confirms that the project is not in the list of projects that require environmental clearance.</p> <p><i>Conclusion:</i></p> <p>The MoEF notification confirms that the project is not in the list of projects that require environmental clearance.</p> | | | |
| B. Project Baseline, Additionality and Monitoring Plan | | | | |
| B.1. Application of the Methodology | | | | |
| <p>B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof?</p> <p>(EB 55 Annex 1, § 65)</p> <p><i>Describe the steps taken to validate this issue.</i></p> | <p><i>Description:</i></p> <p>The project applies the following approved methodologies:</p> <ol style="list-style-type: none"> 1) AMS I.E “Switch from non-renewable biomass for thermal applications by the user”, version 4. 2) AMS. I.C “Thermal energy production with or without electricity”, version 19 has been used. 3) AMS.III.R “Methane recovery in agricultural activities at | <p>/PDD1/ /AMS.IC/ /AMS.IE/ /AMS.III R/</p> | OK | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>household/small farm level", version 2 has been used.</p> <p>The methodologies used are the latest versions available on the UNFCCC website at the time of webhosting, and are hence valid.</p> <p><i>Justification of evidences:</i></p> <p>The versions of the methodology were crosschecked with the UNFCCC weblink</p> <p>http://cdm.unfccc.int/methodologies/SSCmethodologies/approved</p> <p><i>Conclusion:</i></p> <p>The project applies applicable approved methodologies, and their valid versions thereof.</p> | | | |
| <p>B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website?</p> <p>(EB 55 Annex 1, §§ 65, 70)</p> <p><i>Describe the steps taken to validate this issue.</i></p> | <p><i>Description:</i></p> <p>The applied methodologies are identical with the versions available on the UNFCCC website.</p> <p><i>Justification of evidences:</i></p> <p>The versions of the methodology were crosschecked with the UNFCCC weblink</p> <p>http://cdm.unfccc.int/methodologies/SSCmethodologies/approved</p> <p><i>Conclusion:</i></p> <p>The applied CDM methodology identical with the version available on the UNFCCC website.</p> | <p>/PDD1/ /AMS.IC/ /AMS.IE/ /AMS.III R/</p> | <p>OK</p> | <p>OK</p> |



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| <p>B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled?</p> <p>(EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76)</p> <p><i>Describe for <u>each</u> applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i></p> | <p><i>Description:</i></p> <p>All applicability criteria have not been mentioned in section B.2 of the PDD. In this regard, CAR B7 has been identified.</p> <p>The applicability criteria mentioned in the PDD are as follows:</p> <p>For AMS.I.C-</p> <p>i. This methodology comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.</p> <p>The project involves the construction of biogas digestors, which replaces the use of kerosene and firewood</p> <p>ii. The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal</p> <p>The installed thermal capacity of the project is 29 MWth, which is lesser than 45 MWth. Nevertheless, CL A2 has been raised in this regard.</p> <p>For AMS. I.E.-</p> <p>i. This category comprises small thermal appliances</p> | <p>/PDD1/ /AMS.IC/ /AMS.IE/ /AMS.III R/</p> | <p>CAR B4 CAR B2 CAR B7 CL-B4 CL-A2</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>that displace the use of non-renewable biomass by introducing new renewable energy end-user technologies. Examples of these end user technologies include biogas stoves and solar cookers.</p> <p>The project involves the installation of biogas stoves that replace the use of traditional stoves fueled by non-renewable biomass.</p> <p>ii. If any similar registered small scale CDM project activities exist in the same region as the proposed project activity then it must be ensured that the proposed project activity is not saving the non-renewable biomass accounted for by the other registered project activities.</p> <p>Similar projects in the State; however the NRB collection is not related. The collection of firewood is done from areas near to the households, and do not border the areas of other CDM projects.</p> <p>iii. Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods.</p> <p>Published literature of bioresources in Karnataka, wherein the project area falls under the Eastern Dry agro-climatic zone, and gives a comparison of the</p> | | | |



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| | <p>resource availability vis-a-vis the demand for biomass. GIS studies conducted in a nearby similar agro zone conclude that the fraction of NRB is 0.78 of the total biomass, i.e. 78% of the biomass is non-renewable.</p> <p>Nevertheless, CAR B1 and CAR B2 has been raised.</p> <p>For AMS. III. R</p> <p>i. This project category comprises recovery and destruction of methane from manure and wastes from agricultural activities that would be decaying anaerobically emitting methane to the atmosphere in the absence of the project activity. Methane emissions are prevented by: (a) Installing methane recovery and combustion system to an existing source of methane emissions, or (b) Changing the management practice of a biogenic waste or raw material in order to achieve the controlled anaerobic digestion equipped with methane recovery and combustion system.</p> <p>The practice of disposal of manure and agricultural wastes in pits is avoided by the use of biogas digestors. The amount of methane avoided is computed by the amount of manure fed into the biodigestors.</p> <p>ii. The category is limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester). Methane recovery systems</p> | | | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>that achieve an annual emission reduction of less than or equal to 5 tonnes of CO₂e per system are included in this category.</p> <p>The individual units are the biogas stoves in the communities in the project area. Each unit achieves emission reductions of 2.88 tCO₂ e.</p> <p>iii. This project category is only applicable in combination with AMS I.C</p> <p>The project uses a combination if AMS.I.C, AMS. I.E and AMS III R.</p> <p>iv. The sludge must be handled aerobically. In case of soil application of the final sludge the proper conditions and procedures that ensure that there are no methane emissions must be ensured.</p> <p>The sludge from the units is to be used as fertilizers by the individual HHs.</p> <p>v. Aggregated annual emission reductions of all systems included shall be less than or equal to 60 kt CO₂ equivalent.</p> <p>The emission reductions from avoiding methane from all the 10,000 units is 28,800 t CO₂e which is less</p> | | | |

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| | <p>than 60k tCO₂ e</p> <p>Nevertheless, CL B1 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>The applied methodologies were compared to the applicability criteria provided in the webhosted PDD.</p> <p><i>Conclusion:</i></p> <p>PDD mentions the applicability criteria. Nevertheless, CARs B1, B2 and B7, and CLs A2 and B1 have been raised.</p> | | | |
| <p>B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines?</p> <p>(EB 55 Annex 1, §§ 72–75)</p> | <p><i>Description:</i> As all applicability criteria have been met for the project activity, no revision/deviation has been requested by the validation team. Nevertheless, as few criteria were not listed in the PDD, CAR B7 has been raised.</p> <p><i>Justification of evidences:</i> The project documents have been checked against the applicability criteria of the applied methodologies, ANMS.IC, AMS.IE, and AMS.III R. The physical site visit was conducted by the validation team which affirms the applicability of the methodology to the project.</p> <p><i>Conclusion:</i> No request for revision of or deviation from the methodology was found necessary. However, CAR B7 has been raised as few criteria were missed out from the applied methodologies.</p> | <p>/PDD1/ /AMS.IC/ AMS.IE/ /AMS.III R/</p> | <p>CAR B7</p> | <p>OK</p> |
| <p>B.1.5. Is the project in accordance with every other</p> | <p><i>Description:</i></p> | <p>/PDD1/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>stipulation or requirement mentioned in all sections of the methodology and in guidances for approved methodologies provided by the CDM EB?</p> <p>(EB 55 Annex 1, § 69, 71)</p> <p><i>Describe the steps taken to check whether the proposed project activity meets all the other possible stipulations and /or limitations mentioned in all sections of the approved methodology selected.</i></p> | <p>The project is in accordance with all other stipulations in the applied methodologies.</p> <p><i>Justification of evidences:</i></p> <p>The project documents have been checked against the applicability criteria of the applied methodologies, ANMS.IC, AMS.IE, and AMS.III R. The physical site visit was conducted by the validation team which affirms the applicability of the methodology to the project.</p> <p><i>Conclusion:</i></p> <p>The project adheres to the applied methodologies.</p> | <p>/AMS.IC/ AMS.IE/ /AMS.III R/</p> | | |
| <p>B.2. Project Boundaries</p> <p><i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i></p> | | | | |
| <p>B.2.1. Are the project's spatial boundaries (geographical) clearly defined?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><i>Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p> | <p><i>Description:</i></p> <p>As per AMS. IE, the project boundary is the physical, geographical site of the use of biomass or the renewable energy.</p> <p>As per AMS III R, the project boundary is the physical, geographical site of the methane recovery and combustion systems. The project adheres to the stipulations above. The project boundary includes the biogas digestors (inlet), stoves, and the outlet or sludge from the reactor.</p> <p>The units are spread over the districts of Ramanagara-Kanakapura, Ramanagara, Channapatna and Magadi</p> | <p>/PDD1/ /AMS.IE/ /AMS.III R/</p> | OK | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>Taluks.</p> <p><i>Justification of evidences:</i></p> <p>The project boundary is in line with that stipulated by the applied methodologies. The same was crosschecked during the site visit.</p> <p><i>Conclusion:</i></p> <p>The project's spatial boundaries are clearly defined.</p> | | | |
| <p>B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><i>Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p> | <p><i>Description:</i></p> <p>According to applicable methodologies, the GHGs which need to be considered for the project include CO₂ from the use of fossil fuels and NRB for thermal energy, and methane emissions from the management of the animal waste and slurry, and the physical leakage of the gas directly from the biodigester. The same have been considered in the PDD.</p> <p><i>Justification of evidences:</i></p> <p>As per the PDD, the gases and emission resources included in the project boundary comprise CO₂ emissions and methane emissions. This information has been cross-checked against the requirements in the applicable methodologies. The site conditions were verified and the other than the CO₂ and methane emissions, there are no other GHGs.</p> <p><i>Conclusion:</i> The requirement is fulfilled.</p> | <p>/PDD1/ /AMS.IC/ AMS.IE/ /AMS.III R/</p> | <p>OK</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80)</p> <p><i>Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.</i></p> | <p><i>Description:</i></p> <p>In the case of thermal energy produced by the use of fossil fuels and biomass, the emissions of methane and N₂O have been excluded as allowed by the methodologies. In the case of emissions from animal waste/sludge, CO₂ and N₂O have been excluded as allowed by the methodologies. The exclusions have been suitably justified.</p> <p><i>Justification of evidences:</i></p> <p>As per the PDD, the gases and emission resources included in the project boundary comprise CO₂ emissions and methane emissions. This information has been cross-checked against the requirements in the applicable methodologies. The site conditions were verified and the other than the CO₂ and methane emissions, there are no other GHGs.</p> <p><i>Conclusion:</i></p> <p>Exclusions of some GHGs as allowed by the methodologies have been suitably justified.</p> | <p>/PDD1/ /AMS.IC/ AMS.IE/ /AMS.III R/</p> | <p>OK</p> | <p>OK</p> |
| <p>B.3. Baseline Identification</p> <p><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></p> | | | | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.3.1. What possible baseline scenarios have been considered?</p> <p>(EB 55 Annex 1, §§ 67(b), 83)</p> <p><i>Fill in all alternatives in table A-2.</i></p> | <p><i>Description:</i></p> <p>The baseline alternatives considered for the project:</p> <ol style="list-style-type: none"> 1) Baseline emissions that result from thermal energy demand- In the absence of the project activity, fossil fuels such as kerosene, LPG as used for cooking and heating water. Through the baseline survey, the PP has determined that kerosene is used for starting wood fires for cooking. 2) The other scenario is the emissions in the absence of the project activity that result from the use of non-renewable biomass in traditional cook stoves. The baseline survey depicts clearly the dependence of the communities in the project areas on firewood. The survey also proves that biomass is the most preferred fuel in the area. In support of the survey, published literature has been provided which highlights the shortage of biomass in the area which is an 'eastern dry zone'. 3) The project aims to avoid methane emissions by adopting proper animal waste management practices. In the baseline scenario, the animal waste is mixed with agricultural wastes and dumped in pits dug for this singular purpose. These dedicated pits occur near the households, are cleared only annually, and being anaerobic in nature, lead to methane emissions, and 4) The project activity without CDM as an option <p>Nevertheless, CAR B1, CAR B2, CL B1 and CL B2 have</p> | <p>/PDD1/ /BASELI NE/ /XLS1/ /AMS.IC/ AMS.IE/ /AMS.III R/ /REF01/ /REF02/ /REF03/ /REF04/ /REF09/</p> | <p>CAR B1 CAR B2 CL B1 CL B2</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD was crosschecked with the baseline prescribed by the applied methodologies and the results of the baseline survey conducted by the PP. The baseline scenarios chosen were thus found to be in order.</p> <p><i>Conclusion:</i></p> <p>The possible baseline scenarios have been described in section B.4 of the PDD. Nevertheless, CAR B1, CAR B2, CL B1 and CL B2 have been raised.</p> | | | |
| <p>B.3.2. Is the list of alternatives complete? (EB 55 Annex 1, §§ 67(b), 83)</p> <p><i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i></p> | <p><input checked="" type="checkbox"/> All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted.</p> <p><input type="checkbox"/> The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued</p> <p>In the case of thermal energy demand and fuel use, the PP has considered the use of LPG, kerosene and biomass. The former two not being affordable by the households. Kerosene obtained by the HHs through the PDS or Public Distribution System is insufficient for regular usage, which leaves biomass as the predominant fuel in the region.</p> <p>For solid waste management in the region is the use of dedicated</p> | <p>/PDD1/ /REF05/ /REF01/ /REF03/ /REF04/ /energy-rural/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | pits where the waste is allowed to decay anaerobically. No other waste management system is prevalent in the baseline scenario. | | | |
| <p>B.3.3. What has been identified as the baseline scenario?</p> <p>(EB 55 Annex 1, §§ 81–82, 86)</p> <p><i>Describe the chosen BL scenario, taking into consideration the technology that would be employed and / or the activities that would take place in the absence of the proposed CDM project activity.</i></p> | <p><i>Description:</i></p> <p>For the thermal energy demand in the project area, kerosene and biomass usage have been identified as the baseline scenarios.</p> <p>In case of the waste management in the absence of the project, the manure is fed into pits and left to decay anaerobically.</p> <p>Nevertheless, CAR B1, CAR B2, CL B1 and CL B2 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The baseline survey results were verified, along with supporting literature. The use of non-renewable biomass and kerosene were identified in the project areas, of which the biomass usage was more prevalent. The same was verified during the on-site visit.</p> <p><i>Conclusion:</i></p> <p>The usage of biomass and fossil fuels has been identified as the baseline scenario. In the absence of the project, animal waste is left in open pits around the HHs. CAR B1, CAR B2, CL B1 and CL B2 have been raised.</p> | <p>/PDD1/ /BASELINE/ /XLS1/ /AMS.IC/ /AMS.IE/ /AMS.III R/ /REF01/ /REF02/ /REF03/ /REF04/ /REF09/</p> | <p>CAR B1 CAR B2 CL-B1 CL-B2</p> | OK |
| B.3.4. Has the baseline scenario been determined | For details of the assessment regarding the evaluation of the | /PDD1/ | CAR | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>according to the methodology?</p> <p>(EB 55 Annex 1, §§ 82, 87(e))</p> <p><i>Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.</i></p> | <p>baseline scenario pl. refer to table A-2.</p> <p><input checked="" type="checkbox"/> The determination has been carried out as per the procedure contained in the applied methodology.</p> <p><input checked="" type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario:</p> <p>The baseline scenarios identified by the PP are in line with the methodologies. The same was verified during the on-site visit to the project HHs, and non-project HHs.</p> <p>CAR B2 has been raised as the concluding statement for the non renewable biomass component is unclear.</p> | <p>/BASELI NE/ /XLS1/ /AMS.IC/ AMS.IE/ /AMS.III R/ /REF01/ /REF02/ /REF03/ /REF04/ /REF09/ /IM01/ /IM02/</p> | B2 | |
| <p>B.3.5. Has any plausible alternative scenario been excluded?</p> <p>(EB 55 Annex 1, § 83)</p> <p><i>Describe how it is validated that no plausible alternative scenario has been excluded.</i></p> | <p>For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2.</p> <p><input checked="" type="checkbox"/> No plausible baseline scenario has been excluded.</p> <p><input type="checkbox"/> The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:</p> | /PDD1/ | OK | OK |
| <p>B.3.6. Is the identified baseline scenario reasonable</p> | <p><input type="checkbox"/> The baseline scenario is reasonable and has been</p> | /PDD1/ | CAR | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>and has the baseline scenario been determined using conservative assumptions where possible, including relevant references and sources?</p> <p>(EB 55 Annex 1, §§ 84–86(a)–(c))</p> <p><i>Describe whether the choice of the identified baseline scenario is reasonable by validating the <u>key assumptions, calculations and rationales</u> used in the PDD. Describe whether these are listed, relevant and conservatively interpreted in the PDD.</i></p> | <p>determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above.</p> <p><input checked="" type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative</p> <p>baseline is determined by survey questionnaires distributed to a sample of the total population involved in the project. The excel sheet with the baseline survey data collected for 600 households from has been verified. The excel sheet contains data on the list of 600 beneficiaries and the consumption of kerosene, firewood, biomass, along with details of income of household, number of cattle, and number of individuals in each household.</p> <p>survey also contains statistics on livestock and animal waste management practices in the households. The survey results show that the consumption of fuel wood for cooking in the baseline scenario was around 3.543 t per year, and the kerosene consumption of about 19.88 per household annually. Each household is able to collect around 33.10 T of animal waster per year.</p> <p>values have been sourced from the baseline survey conducted in a sample of 600 households. The results of the survey are reasonable, and were checked by the VT during the site visit. The survey results have been listed in the PDD annexes. The survey questionnaires and the data have been verified and found to be in order.</p> | <p>/BASELI NE/ /XLS1/ /REF01/ /REF02/ /REF03/ /REF04/ /REF05/ /REF09/ /IM01/ /IM02/</p> | <p>B4 CL-B4 CL-B2</p> | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>Apart from the survey, published scientific literature has been used in the baseline determination. References - /REF01/ to /REF05/, and /REF09/ were verified and found to contain information relevant and suitable to the project. Nevertheless, CAR B1 and CLs B1 and B2 have been raised.</p> | | | |
| <p>B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?</p> <p>(EB 55 Annex 1, §§ 85, 87(d))</p> <p><i>Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).</i></p> | <p><i>Description:</i></p> <p>Macroeconomic trends have been described in sections B.4 and B.5; the government scheme for biogas digesters - National Program for Biogas Development (NPBD) has been taken into account at the time of project conception. However, the scheme has allotted only 10,000 units for the year 2009-2010 and 11,000 for the year 2010-2011 in the State of Karnataka which is well below the demand. The scheme also grants subsidies for construction of the biodigesters. SKG Sangha has till date not received any monetary benefits/ subsidies under the scheme.</p> <p><i>Justification of evidences:</i></p> <p>The validation team checked the PDD, corresponding references and held interviews with the PPs at the site. Targets letters and an acknowledgement from the Zilla Panchayat stating that SKG Sangha is the only organisation involved in the implementation of biogas units in Ramanagara District.</p> <p><i>Conclusion:</i></p> <p>The baseline scenario has taken into account relevant</p> | <p>/PDD1/ /ZP-AK/ /mnre/</p> | <p>OK</p> | <p>OK</p> |

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| | national policies, and national trends w.r.t biogas development in India. | | | |
| <p>B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?</p> <p>(EB 55 Annex 1, § 87(a)–(c))</p> <p><i>Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.</i></p> | <p><i>Description:</i> The determined baseline scenario is compatible with the provisions of the methodologies and the survey data conducted for a sample of beneficiaries. However, CAR B1 has been raised with regard to the survey and references used.</p> <p><i>Justification of evidences:</i> The baseline scenario determined in the PDD has been cross-checked against the methodologies and baseline survey data and references. Interviews with PP were also conducted.</p> <p><i>Conclusion:</i></p> <p>The baseline scenario is compatible with the data referenced in the PDD, as well as the baseline survey. Nevertheless, CAR B1 has been raised.</p> | <p>/PDD1/ /BASELINE/ /XLS1/ /REF01/ /REF02/ /REF03/ /REF04/ /REF05/ /REF09/</p> | CAR B1 | OK |
| <p>B.3.9. Does the PDD contain a <i>verifiable</i> description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.</p> | <p><i>Description:</i> The PDD contains a verifiable description of the baseline scenario, it is as follows:</p> <ol style="list-style-type: none"> 1) Baseline emissions from the thermal energy demand from fossil fuel and non-renewable biomass use-Survey conducted in a sample of the population to | <p>/PDD1/ /IM01/ /IM02/ /BASELINE</p> | CAR B1 CL-B1 | OK |



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| (EB 55 Annex 1, § 86) | <p>determine the baseline consumption of fossil fuels and non-renewable biomass. In the absence of the project, the use of fossil fuel and /or fuel wood would continue.</p> <p>2) Baseline emissions from handling of animal waste- the dung is disposed off in waste pits in the baseline scenario, releasing methane. With the biogas digesters, the waste is collected for the production of the biogas.</p> <p>A clear description has been provided in sections B.4 and B.5 of the PDD of the activities that would take place in the absence of the project. Without the biodigesters, the households in the project area would continue to use fossil fuel and/or fuel wood for cooking purposes. Animal waste generated would be disposed into pits leading to methane emissions.</p> <p>Nevertheless, CAR B1 n CL B1 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD and the applied methodologies have been checked, and the baseline description found to be OK. Interviews were also conducted with PP and beneficiaries.</p> <p><i>Conclusion:</i></p> <p>The validation team concludes that the PDD contains a verifiable description of the baseline scenario.</p> | NE/ /XLS1/ /AMS.IC/ AMS.IE/ /AMS.III R/ | | |

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| B.4. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i> | | | | |
| B.4.1. Methodology | | | | |
| <p>B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools?</p> <p>(EB 55 Annex 1, §§ 67(d), 94–95)</p> <p><i>Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.</i></p> | <p><i>Description:</i></p> <p>Section B.5 of the PDD describes the additionality of the project. The additionality justification aims to follow the requirement as stipulated in the tool for the demonstration and assessment of additionality-version 5.2. As prescribed in the tool, the PDD contains description of various alternatives to the project activity, including that of the project activity without CDM benefits. Investment Analysis and common practice analysis has been considered. Nevertheless, CAR B3 and CAR B5 and CL B3 have been raised.</p> <p>The PP's claim that the cost of the biodigester being much higher compared to the annual income of the beneficiaries of the project has been sufficiently justified by the baseline survey results and the third party estimate of the cost of each biodigester.</p> <p>Another point of contention of the PP is that the project is not covered, or has not received subsidies due under the NBMMP scheme of the Indian Government.</p> | <p>/energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>CAR B3 CAR B5 CL B3</p> | OK |



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| | <p>Hence, the project is only viable with CERs.</p> <p><i>Justification of evidences:</i></p> <p>The validation team held interviews with the PPs, checked the PDD and supporting documents.</p> <p>The estimate of the costs incurred for construction of each unit issued by the third party consultant has been verified. As per the estimate, the cost of each unit is INR 22,493. The average annual income of INR 21,714 mentioned in the PDD was cross checked with the baseline survey data.</p> <p><i>Conclusion:</i></p> <p>Nevertheless, CAR B3 and CAR B5 and CL B3 have been raised and closed out.</p> <p>The additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities (" - Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines, rendering the project auto-additional. The detailed explanation is provided in section B.2.5 of this report.</p> | | | |
| B.4.2. Consideration of CDM before project start | | | | |
| B.4.2.1. Is the project starting date reported in | <i>Description:</i> | /PDD1/ | CAR | OK |

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| <p>accordance with the CDM glossary of terms?</p> <p>(EB 55 Annex 1, § 104(a))</p> <p><i>Assess why the chosen starting date can be considered as the earliest date at which either the implementation or construction or real action of a project has begun or will begin.</i></p> <p><i>Check that no other activities related to the project that happened before the identified start date can be considered as start date. In this context please also take into consideration infrastructural expenses if they are relevant (in terms of costs and importance for the project implementation) in the specific context of the project activity.</i></p> | <p>The project starting date is in accordance with the CDM glossary. The expected implementation construction in all the Taluks. Nevertheless, write up on CDM consideration was missing in the PDD. CAR B4 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>Documents to be submitted</p> <p><i>Conclusion:</i></p> <p>CAR B4 has been raised.</p> | | B4 | |
| <p>B.4.2.2. In case the project start date is on or after 2nd August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status?</p> <p>(EB 55 Annex 1, §§ 99–101)</p> <p><i>Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.</i></p> | <p><i>Description:</i></p> <p>The PDD does not contain this information.</p> <p><i>Justification of evidences:</i></p> <p>PDD version 1 was checked.<i>Conclusion:</i></p> <p>CAR B4 was raised.</p> | /unfccc/ | CAR B4 | OK |
| <p>B.4.2.3. In case the project start date is before commencing of validation and 2nd August 2008, was the incentive from the CDM seriously considered and are details given</p> | NA | | | |



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| <p>in the PDD?</p> <p>(EB 55 Annex 1, §§ 100, 102)</p> <p><i>Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p> | | | | |
| <p>B.4.2.4. How and when was the decision to proceed with the project taken?</p> <p><i>Describe the steps taken to validate the starting date.</i></p> | <p><i>Description:</i></p> <p>The decision was taken on 2009-04-13. Nevertheless, CAR B4 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>The published PDD and the board resolution document were verified.</p> <p><i>Conclusion:</i></p> <p>The decision was taken on 2009-04-13. Nevertheless, CAR B4 has been raised.</p> | <p>/PDD1/ /BRD/</p> | <p>CAR B4</p> | <p>OK</p> |
| <p>B.4.2.5. Was the decision to proceed with the project taken by a person which has the authority to do so?</p> <p>(EB 55 Annex 1, § 102(a))</p> <p><i>Describe the steps taken to validate this issue.</i></p> | <p><i>Description:</i></p> <p>The decision to proceed with the project under the option of CDM was taken by the President and Secretary of SKG Sangha</p> <p><i>Justification of evidences:</i></p> <p>The board document dated 2009-04-13 was verified.</p> <p><i>Conclusion:</i></p> <p>The decision to opt for CDM was taken by a person who has</p> | <p>/BRD/ /IM01/</p> | <p>OK</p> | <p>OK</p> |



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| <p>B.4.2.6. How was the CDM involved in the decision making process? (EB 55 Annex 1, § 102) <i>Describe why CDM was a decisive factor in the decision making process.</i></p> | <p>the authority to do so.</p> <p><i>Description:</i> Carbon revenues were considered in an early stage of the project activity in order to overcome the investment barrier. The cost of each unit coupled with the training and maintenance costs make it unaffordable by the households in the project area. SKG Sangha, an NGO with experience in the construction and maintenance of biodigesters decided to proceed with the project under the CDM to overcome the barrier. The use of biogas reduces stress on the non-renewable biomass in the neighbouring areas, and prevents the use of fossil fuels.</p> <p><i>Justification of evidences:</i> The prior consideration of the carbon revenues has been confirmed during interviews with the project developer as well as from the UNFCCC website.</p> <p><i>Conclusion:</i> CDM revenue was crucial in the decision making process in order to overcome the costs of construction of the biogas units for 9000 beneficiaries.</p> | <p>/BRD/ /IM01/</p> | <p>OK</p> | <p>OK</p> |
| <p>B.4.2.7. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status? (EB 55 Annex 1, § 102; EB 49 Annex 22 § 7)</p> | <p><i>Description:</i> No write up was provided regarding this in section B.5 of the PDD.</p> <p><i>Justification of evidences:</i> The published PDD was verified</p> | <p>/PDD1/</p> | <p>CAR B4</p> | <p>OK</p> |

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| | <p><i>Conclusion:</i></p> <p>CAR B4 has been raised.</p> | | | |
| <p>B.4.2.8. Is the gap of documented evidences to secure the CDM status less than 3 years and are the evidences relevant for substantiating the action taken, credible, reliable and complete?</p> <p>(EB 49 Annex 22 § 8)</p> | <p><i>Description:</i></p> <p>No write up was provided regarding this in section B.5 of the PDD.</p> <p><i>Justification of evidences:</i></p> <p>The published PDD was verified</p> <p><i>Conclusion:</i></p> <p>CAR B4 has been raised.</p> | /PDD1/ | CAR B4 | OK |
| <p>B.4.2.9. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM?</p> <p>(EB 62 Annex 5, § 7)</p> <p><i>Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.</i></p> | NA | | | |
| <p>B.4.2.10. Can the CDM involvement in the decision assessed as serious?</p> <p>(EB 55 Annex 1, § 104(b)–(c))</p> <p><i>Describe whether or not the project would have been undertaken without the incentive of the CDM.</i></p> | <p><i>Description:</i></p> <p>The CDM involvement in the project decision is serious. The cost of each biogas unit is more than the average annual income of the beneficiaries –project households. This investment barrier faced by the PP can be alleviated through</p> | /BRD/ /PDD1/ | OK | OK |

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| | <p>CDM revenues.</p> <p><i>Justification of evidences:</i></p> <p>The board resolution document has been verified. CDM was the crucial factor in project conceptualisation.</p> <p><i>Conclusion:</i></p> <p>The project is not likely to have been undertaken without CDM. The CDM involvement is thus crucial and serious for the project.</p> | | | |
| B.4.3. Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2 if appropriate) | | | | |
| <p>B.4.3.1. Does the list of alternatives contain the status-quo situation, the project not undertaken as a CDM project as well as all other viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?</p> <p>(EB 55 Annex 1, §§ 105–107)</p> <p><i>Describe the steps taken to validate this issue on the basis of your local and sectoral knowledge.</i></p> | <p>NA</p> | | | |
| <p>B.4.3.2. Have all realistic alternatives been identified to the project?</p> <p>(EB 55 Annex 1, §§ 105–107)</p> <p><i>Describe whether the list of alternatives is credible and</i></p> | <p>NA</p> | | | |

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| <i>complete. Describe how it is validated that the alternatives are realistic.</i> | | | | |
| B.4.3.3. Do all identified alternatives comply with enforced legislations? (EB 55 Annex 1, §§ 106(c)) <i>Describe the steps taken to validate this issue. Refer to the legislations.</i> | NA | | | |
| B.4.4. Investment analysis Step 2 <i>In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment of Financial Parameters" has to be used to provide additional details of the calculation parameters..</i> | | | | |
| B.4.4.1. Does the PDD provide evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasible without the revenues from the sale of CERs? (EB 55 Annex 1, § 108) | NA | | | |
| B.4.4.2. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)? (EB 55 Annex 1, § 108; EB 39 Annex 10) | NA | | | |

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| <i>Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.</i> | | | | |
| B.4.4.3. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? (EB 55 Annex 1, § 110; EB 51, Annex 58, §8) <i>Describe the steps taken to validate this issue.</i> | NA | | | |
| B.4.4.4. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 3 – 4) <i>Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.</i> | NA | | | |
| B.4.4.5. Is the (remaining) technical lifetime of existing or project equipment defined in accordance with the guidance of the <i>Tool</i> | NA | | | |

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| <i>to determine the remaining lifetime of equipment?</i> (EB 50 Annex 15) | | | | |
| B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4) <i>State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value.</i> | NA | | | |
| B.4.4.7. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4) | NA | | | |
| B.4.4.8. Are depreciation and other non-cash related items only considered in the tax calculation and not as cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5) | NA | | | |
| B.4.4.9. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons? | NA | | | |

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| (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5) | | | | |
| <p>B.4.4.10. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?</p> <p>(EB 55 Annex 1, § 109,112; EB 62 Annex 5, § 6)</p> <p><i>In case the basis for input values is a Feasibility Study Report (FSR) describe how it has been ensured that the period in time between the finalisation of the FSR and the investment decision is sufficiently short so that it is unlikely that input values would have materially changed. Further confirm the consistency of values in FSR and PDD.</i></p> | NA | | | |
| <p>B.4.4.11. Is the plant load factor (PLF) chosen in a conservative manner, taking into account that the PLF may be different in the framework of demonstrating additionality and calculating the ex-ante ER?</p> <p>(EB 48, Annex 11)</p> | NA | | | |
| <p>B.4.4.12. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 9)</p> | NA | | | |
| <p>B.4.4.13. In cases where a post-tax benchmark is applied please ensure that actual interest</p> | NA | | | |

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| payable is taken into account in the calculation of income tax. (EB 62 Annex 5, § 11) <i>As per the guidance it is recommended to select a pre tax benchmark in order to Describe the steps taken in assessing this requirement.</i> | | | | |
| B.4.4.14. In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 10) | NA | | | |
| B.4.4.15. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)? (EB 55 Annex 1, § 111; EB 62 Annex 5, §§12 – 15) <i>In case risk premiums are applied precisely describe its suitability to reflect the risks associated with the project activity, considering the project type and market situation.</i> | NA | | | |
| B.4.4.16. Is the benchmark value suitable for the project activity and is it reasonable to assume that no investment would be made | NA | | | |

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| at a rate of a lower return than the benchmark? (EB 55 Annex 1, § 109; EB 62 Annex 5, §§13 – 15) <i>Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.</i> | | | | |
| B.4.4.17. Is it ensured that the project cannot be developed by other developers than the PP? (EB 55 Annex 1 § 109; EB 62 Annex 5, §§ 13 – 14) <i>Describe why the benchmark does not include the subjective profitability expectations or risk profile of the project developer. If applicable assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.</i> | NA | | | |
| B.4.4.18. Was the benchmark consistently used in the past for similar projects with similar risks? (EB 55 Annex 1, § 112(c)) | NA | | | |
| B.4.4.19. Does the PDD and related spreadsheets contain a sensitivity analysis and does the same contain variation of parameters which may vary throughout the project lifetime, (EB 55 Annex 1, §§ 109–110(e); EB 62 Annex 5, § 17– | NA | | | |

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| 18) <i>Describe relevance of parameters used in the sensitivity analysis as well as their likeliness to vary during the project's lifetime. Parameters which are fixed on the basis of contracts, PPAs etc. may not be subject to variation and not adequate.</i> | | | | |
| B.4.4.20. Were only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17) | NA | | | |
| B.4.4.21. Have parameters, constituting less than 20% of total project costs or revenues, been identified with potential material impact on the financial parameter? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 17) <i>Describe whether those parameters are considered in the sensitivity analysis?</i> | NA | | | |
| B.4.4.22. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 18) <i>Describe whether the range of variation is appropriate with focus on historic developments, e.g. price of oil / labour etc., energy potential in the region in question.</i> | NA | | | |

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| B.4.5. Barrier analysis Step 3 or SSC additionality assessment | | | | |
| <p>B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project?</p> <p>(EB 55 Annex 1, §§ 115, 134, 137)</p> <p><i>In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to EB 62 Annex 5.</i></p> | <p><i>Description:</i></p> <p>The barrier identified in the PDD is the barrier to investing in the biodigesters and subsidies not received by the PP by the Government under the NBMMP scheme.</p> <p>The cost of each unit of biodigester as mentioned in PDD is beyond the means of the population of the project areas. The annual income of the households determined by the baseline survey justifies the barrier that exists for the use of biodigesters. Apart from this, the subsidies under the NBMMP scheme were not made available to the PP. To overcome this, the SKG Sangha chose to opt for the CDM.</p> <p>Training of personnel to supervise the biodigesters in the field and maintenance of units are an additional cost to be borne by the PP. Proper maintenance of the units is crucial to their operation.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been crosschecked with the references provided, and the barriers described are deemed to exist.</p> <p><i>Conclusion:</i></p> <p>Investment barrier is real and has a clear and direct impact on the project. Nevertheless, CAR B3 and CAR B5 have been raised.</p> | <p>/PDD1/ /IM01/ /energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>CAR B3 CAR B5</p> | <p>OK</p> |



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| | However, it is to be noted that the additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities (" - Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines. The project is thus additional. The detailed explanation is provided in section B.2.5 of this report. | | | |
| <p>B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)?</p> <p>(EB 55 Annex 1, §§ 116, 134, 137)</p> <p><i>Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?</i></p> | <p><i>Description:</i></p> <p>The barrier is risk related. The hiring and training of skilled personnel and maintenance of biodigesters spread across the project boundary is crucial to reduce the risk of non-functioning of the units. Prevailing practice is the non-renewable biomass freely available in project region. The costs involved in the construction of the biodigester and stoves are the main deterrent.</p> <p><i>Justification of evidences:</i></p> <p>Interviews with the PP and the evaluation study by the Planning Commission on biodigesters were verified.</p> <p><i>Conclusion:</i></p> <p>The technological barrier mentioned in the PDD is risk related.</p> | <p>/PDD1/ /IM01/ /energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | OK | OK |
| <p>B.4.5.3. Has the unavailability of means of finance for the proejct been described and</p> | <p><i>Description:</i></p> <p>The unavailability of means of finance has been described in</p> | <p>/PDD1/ /IM01/</p> | CAR B3 | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>adequately substantiated? Do evidences doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM?</p> <p>(EB 55 Annex 1, §§ 116, 137, EB 50 Annex 13, § 9)</p> | <p>the PDD. The average annual income of the beneficiaries is not enough for construction and maintenance of the biodigesters. The cost of a biogas unit of capacity 2m³ capacity is INR 22,493, whereas the average annual income of the individual HHs is around IMR 22,000. The subsidies scheme announced by the Govt. has not been functional, and no monetary benefit has been made available to date. For proof of the costs incurred, CAR B5 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>The same has been verified during the site interviews with the PP, the third party cost estimates and the annual income decided based on the baseline survey.</p> <p><i>Conclusion:</i></p> <p>Unavailability of finance has been described in the PDD. The PP went ahead with the project after deciding to avail benefits from GS. Nevertheless, CAR B3 and CAR B5 have been raised and closed.</p> <p>However, it is to be noted that the additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities (" - Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines. The project is thus additional. The detailed explanation is provided in section B.2.5 of this report.</p> | <p>/energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>CAR B5</p> | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.4.5.4. How is it justified and evidenced that the barriers given in the PDD are real? (EB 55 Annex 1, § 116(a))</p> | <p><i>Description:</i></p> <p>The investment barrier is the main barrier to the project. As justified by the PP, the estimated costs involved in the construction of a biodigester and stove is well beyond the means of the households in the project area. The baseline survey mentions the average annual income of each household at INR 22,000.</p> <p>The barrier that exists due to non reckoning of the subsidies available under the NBMMP scheme has been justified with evidence from the Panchayat report on the same.</p> <p>The validation team is of the opinion that the barriers in the PDD are real and have been suitably justified. Nevertheless, CAR B3 and CAR B5 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The barrier analysis is in line with the Annex A to Appendix B. Site interviews with the PP, the annual income based on the baseline survey, and the third party cost estimate for biodigester units have been verified.</p> <p><i>Conclusion:</i></p> <p>The barriers mentioned in the PDD are real and justifiable. Nevertheless, CAR B3 and CAR B5 have been raised.</p> <p>However, it is to be noted that the additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities</p> | <p>/PDD1/ /IM01/ /energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>CAR B3 CAR B5</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | ("- Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines. The project is thus additional. The detailed explanation is provided in section B.2.5 of this report. | | | |
| B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives? (EB 55 Annex 1, § 116(b)) | <p><i>Description:</i></p> <p>The same barriers do not exist for the alternative of using fossil fuel and/or fuel wood as was prevalent prior to the project. While use of kerosene was not affordable by all households, it was used considerable for cooking purposes. Non renewable biomass from nearby forest areas were used for cooking on a daily basis, as there was no cost involved for the same.</p> <p>Investment barrier did not exist in the pre-project scenario.</p> <p><i>Justification of evidences:</i></p> <p>The validation team cross checked the PDD with the baseline survey data. Interviews with the PP and stakeholders were conducted. The baseline scenario required little or no investment by the beneficiaries.</p> <p><i>Conclusion:</i></p> <p>Investment barrier was not a reality in the alternatives to the project.</p> | /PDD1/ /IM01/ /energy-rural/ /BASELI NE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/ | OK | OK |
| B.4.5.6. Does the review of relevant background information on the nature of the | <p><i>Description:</i></p> <p>SKG Sangha is an NGO with vast experience in the</p> | /skg/ /BASELI | OK | OK |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>company(ies) and entitiy(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real?</p> <p>(EB 50 Annex 13, § 4)</p> | <p>construction and implementation of biodigesters and cook stoves. They are a non profit organisation and thus the barrier to invest in 9000 biogas units is evident.</p> <p><i>Justification of evidences:</i></p> <p>The website has been reviewed. Site visit interviews were conducted</p> <p><i>Conclusion:</i></p> <p>SKG Sangha is a non –profit organisation, the investment barrier is real.</p> | <p>NE/ /REF11/</p> | | |
| <p>B.4.5.7. Has it been demonstrated in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers?</p> <p>(EB 50 Annex 13, § 5)</p> | <p><i>Description:</i></p> <p>The conclusion of the barrier analysis in the PDD describes how CDM revenues would eliminate the investment barrier, and assist in construction of the biogas units.</p> <p>The CDM would alleviate the training and maintenance expenses, as would barrier due to not receiving subsidies be eliminated. Nevertheless, CAR B3 and CAR B5 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The validation team checked the PDD and conducted interviews with the PP in order to assess the subject. References related to the barrier analysis in the PDD were cross checked.</p> <p><i>Conclusion:</i></p> | <p>/PDD1/ /IM01/ /energy-rural/ /BASELINE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>CAR B3 CAR B5</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>It has been demonstrated that GS revenues would eliminate each of the identified barriers.</p> <p>However, it is to be noted that the additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities (" - Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines. The project is thus additional. The detailed explanation is provided in section B.2.5 of this report.</p> | | | |
| <p>B.4.5.8. Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated?</p> <p>(EB 50 Annex 13, § 7)</p> <p><i>Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .</i></p> | <p>As mentioned above, the provision of CDM revenues would eliminate the investment barrier that currently exists for the project.</p> <p>The validation team checked the PDD and conducted interviews with the PP in order to assess the subject. References related to the barrier analysis in the PDD were cross checked.</p> <p>It has been demonstrated clearly and suitably that CDM revenues would eliminate the barrier.</p> <p>However, it is to be noted that the additionality for the project has been determined as per EB 68, Annex 27- "Guidelines for demonstrating additionality of small scale project activities (" - Version 09. The information in the final PDD and supporting documents prove that the project falls under the thresholds and other criteria defined by the guidelines. The</p> | <p>/PDD1/ /IM01/ /energy- rural/ /BASELI NE/ /REF10/ /REF05/ /REF11/ /REF12/ /gmi/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | project is thus additional. The detailed explanation is provided in section B.2.5 of this report. | | | |
| B.4.6. Common practice analysis Step 4 (in case of SSC projects skip this step) | | | | |
| B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type? (EB 55 Annex 1, § 120(a)) <i>Describe why the project activity is not common practice in a transparent and unambiguous manner. If a region other than the entire host country is chosen, describe why this region is more appropriate.</i> | NA | | | |
| B.4.6.2. To what extent similar projects have been undertaken in the relevant region? (EB 55 Annex 1, § 120(b)) | NA | | | |
| B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed? (EB 55 Annex 1, § 120(c)) | NA | | | |
| B.5. Ex-Ante Calculation of GHG Emission Reductions <i>It is assessed whether the ex-ante calculations of</i> | | | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <i>project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i> | | | | |
| <p>B.5.1. Are the equations applied correctly according to the applied approved methodology?</p> <p>(EB 55 Annex 1, §§ 67(c), 89–90, 92)</p> <p><i>Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.</i></p> | <p><input type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context:</p> <p>CL B4 has been raised, with regard to determining the project emissions in B.6.2 of the PDD</p> <p><i>Description:</i></p> <p>The equations applied are as follows :</p> <p>The equation for BE_y applied in the PDD is as per the applicable methodology for the NRM component.</p> $ER_y = B_y * f_{NRB,y} * NCV_{Biomass} * EF_{projected_fossilfuel}$ <p>BE from the anaerobic waste handling:</p> $BE_y = GWP_{CH4} * D_{CH4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{Bl,j}$ <p>Therefore, total BE = $BE_{NRB} + BE_{manure}$</p> <p><i>Justification of evidences:</i></p> | <p>/PDD1/ /AMS.I.E/ /AMS.III R/</p> | <p>CL-B4 CL-B5</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| | <p>The PDD was cross checked with the applicable methodologies.</p> <p><i>Conclusion:</i> Equations for BE have been applied correctly. CL B4 was raised w.r.t PE. CL B5 has been raised as the excel sheet ER was not submitted.</p> | | | |
| <p>B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i></p> | <p><i>Description:</i> For calculating By (Quantity of biomass that is substituted or displaced in tonnes), the applied methodology allows for two options. Option 1 is used which involves use of historical data or survey methods. The PP chose to conduct a sample survey to establish By. A sample survey across 600 households belonging to the project was conducted. This was submitted by the PP and verified. Using the random sampling method, the PP prepared questionnaires to collect data on the use of fuelwood and kerosene.</p> <p>Parameters such as fuelwood and kerosene usage per household per day were found to be in agreement with the data in the PDD. The villages of the project activity were visited during the site visit.</p> <p>W.r.t to the AMS.III.R methodology, the option exists between direct measurement of the specific volatile solids of the manure and the PCC values for VS of the manure types. The PP has chosen the latter option. In this regard, CL B4 has been raised.</p> | <p>/PDD1/ /AMS.I.E/ /AMS.III R/</p> | <p>CL-B4</p> | <p>OK</p> |

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| | <p><i>Justification of evidences:</i></p> <p>The PDD has been crosschecked with the methodologies.</p> <p><i>Conclusion:</i></p> <p>The option chosen by the PP are in line with the methodologies. Nevertheless, CL B4 has been raised.</p> | | | |
| <p>B.5.3. Have conservative assumptions been used when calculating the project emissions?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i></p> | <p><i>Description:</i></p> <p>Project emissions from the physical leakage of the biodigestors have been considered. CL B4 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been crosschecked with the methodologies</p> <p><i>Conclusion:</i></p> <p>CL B4 has been raised.</p> | <p>/PDD1/ /AMS.III R/</p> | <p>CL-B4</p> | <p>OK</p> |
| <p>B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology?</p> <p>(EB 55 Annex 1, § 77)</p> | <p><i>Description:</i></p> <p>Project emissions from physical leakage have already been considered. No other source is likely for a biogas project. In this regard, CL B4 and CL B5 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD was crosschecked against the methodology.</p> <p><i>Conclusion:</i></p> <p>Project emissions are likely to be negligible and less than 1% of the expected ER.</p> | <p>/PDD1/ /AMS.III R/</p> | <p>CL-B4</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions?</p> <p>(EB 48 Annex 11, §§ 1, 3–4)</p> <p><i>Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.</i></p> | <p>PLF is not required to be determined for the project as there is no electricity generation involved. ER has been determined using baseline emissions from the thermal energy usage (from fossil fuel and /or fuel wood), as well as emissions from handling of animal waste.</p> | <p>/PDD1/</p> | <p>OK</p> | <p>OK</p> |
| <p>B.5.5. Are all data sources and assumptions appropriate and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i></p> | <p><i>Description:</i></p> <p>All sources and assumptions are appropriate. Parameters that remain fixed throughout the crediting period have been sourced from the IPCC default values or as required by the methodology. No equation or data is ambiguous.</p> <p>ER sheet has to be submitted, CL B5 has been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD EF-calculation has been checked against the requirements of the methodology.</p> <p><i>Conclusion:</i></p> <p>All sources and assumptions in the PDD are appropriate. Parameters that remain fixed throughout the crediting period have been sourced from the IPCC default values or as required by the methodology. CLs B4 and B5 has been raised.</p> | <p>/PDD1/</p> | <p>CL B4 CL B5</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i></p> | <p><input type="checkbox"/> All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context:</p> <p>R B6 has been raised as the parameters to be monitored as given in B.7.1 of the PDD is incomplete. Values have not been estimated for some parameters.</p> | <p>/PDD1/</p> | <p>CL B6</p> | <p>OK</p> |
| <p>B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.</p> <p><i>Describe the steps taken to validate this issue.</i></p> | <p><i>Description:</i></p> <p>The project activity is the construction and installation of 9000 biogas stoves in rural areas in Ramanagara District. The implementation of the project activity will eliminate the use of non-renewable biomass and kerosene as the fuel sources. The operation of the biogas stoves will be monitored by the PP. Since the baseline emissions for the calculation of ER have been considered from fuel consumption for thermal energy needs of household, and emissions from handling of animal waste, and the PE from physical leakage of biogas from the biodigester and any incomplete combustion have been deducted, the ER in the PDD are real and measurable.</p> <p><i>Justification of evidences:</i></p> <p>The PDD was verified, and site visit interviews conducted.</p> <p><i>Conclusion:</i></p> <p>The emission reductions are real, measurable and give long-term benefits related to the mitigation of climate change. CL</p> | <p>/PDD1/ /IM01/ /IM02/</p> | <p>CL B5</p> | <p>OK</p> |

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| | B5 has been raised. | | | |
| B.6. Monitoring of Emission Reductions <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i> | | | | |
| <p>B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan?</p> <p>(EB 55 Annex 1, §§ 67(e), 121, 123(a), 124)</p> <p><i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i></p> <p><i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i></p> <p><i>In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.</i></p> | <p><i>Description:</i></p> <p>The monitoring parameters in the published PDD include the number of operating systems, annual hours operation, the kerosene and fuel wood consumptions, the consumption of fuel wood in non-project HHs, annual average cattle population, average manure generated per HH per year, amount of manure fed into the biodigester per year, and the application of sludge.</p> <p>Nevertheless, CAR B6, CL B6 and CL B7 have been raised.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been cross-checked against the requirements of the applicable methodologies</p> <p><i>Conclusion:</i></p> <p>Monitoring parameters are in line with the methodologies' requirements. Nevertheless, CAR B6, CL B6 and CL B7 have been raised</p> | <p>/PDD1/ /AMS.I.C / /AMS.I.E/ /AMD.III R/</p> | <p>CAR B6 CL B6 CL B7</p> | <p>OK</p> |
| B.6.2. Are the means of monitoring of all parameters | <i>Description:</i> | /PDD1/ | CAR | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>contained in the monitoring plan feasible and in accordance with the requirements of the applied methodology?</p> <p>(EB 55 Annex 1, § 123(a)–(b), 124)</p> <p><i>Assess whether the provided information for all parameters w.r.t.</i></p> <ul style="list-style-type: none"> a) <i>Label (name of the data / parameter)</i> b) <i>data unit</i> c) <i>description</i> d) <i>source of data</i> e) <i>measurement equipment / method / procedure</i> f) <i>monitoring frequency</i> g) <i>QA/QC procedures</i> <p><i>are appropriately described and in compliance with the requirements of the methodology..</i></p> | <p>The estimated/assumed values for the parameters to be monitored in section B.7.1 in the PDD are missing. CAR B6 has been raised in this regard. The means of monitoring for the parameters is the annual monitoring survey to be conducted by the PP. CL B6 has been raised in this regard.</p> <p><i>Justification of evidences:</i></p> <p>The PDD was verified, along with the baseline survey. The monitoring survey will be based on the lines of the survey questionnaires used in the baseline study.</p> <p><i>Conclusion:</i></p> <p>The means of monitoring of parameters is the annual monitoring survey, which is a feasible method.</p> <p>Nevertheless, CAR B6, CL B6 and CL B7 have been raised.</p> | <p>/BASELINE/ /AMS.I.E/ /AMS.III. R/</p> | <p>B6 CL-B6 CL-B7</p> | |
| <p>B.6.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology?</p> <p>(EB 55 Annex 1, §§ 123(b), 124)</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante</i></p> | <p><i>Description:</i></p> <p>There is no difference between equations for ex-post emission reduction calculations and ex-ante emission reduction calculations.</p> <p><i>Justification of evidences:</i></p> <p>The parameters and equations as given in the PDD are found to be in agreement with the applicable methodologies.</p> | <p>/PDD1/ /AMS.I.E/ /AMS.III. R/</p> | <p>OK</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <i>calculations might be different.</i> <i>Please consider that additional equations might be necessary to calculate auxiliary parameters.</i> | Conclusion: All equations are in line with the applicable methodologies. | | | |
| B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity? (EB 55 Annex 1, § 124(c)) <i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i> | Description: The monitoring depends on the surveys to be conducted annually by SKG Sangha. SKG Sangha is experienced in undertaking surveys in the field, and have a qualified team at the Village levels, Taluk levels and the District levels. Dedicated personnel who reside in the villages are available round the clock to ensure proper functioning of the units. The roles and responsibilities are well defined and document flow is traceable. The top management will regularly, monthly intervals check the data collected and recorded by the teams. Justification of evidences: The same was verified during the site visit, and by inspecting the baseline survey documents. Conclusion: The monitoring arrangements described in the PDD can properly be implemented in the context of the project activity. Nevertheless, CAR B6 and CLs B6 and CL B7 have been raised. FAR B1 has been raised to cross check the use of firewood in larger HHs where the biogas may not be sufficient. | /PDD1/ /IM01/ /IM02/ /BASELI NE/ | CAR B6 CL B6 CL B7 FAR B1 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
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| <p>B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activit can be reported ex-post and verified?</p> <p>(EB 55 Annex 1, § 124(b)) <i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p> | <p>Yes, please refer B.6.4</p> | | | |
| <p>B.6.6. Are procedures identified for data management?</p> <p>(EB 55 Annex 1, § 124(b)) <i>Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation</i></p> <p><i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i></p> | <p><i>Please refer B.6.4</i></p> | | | |
| <p>C. Duration of the Project/ Crediting Period</p> <p><i>It is assessed whether the temporary boundaries of the project are clearly defined.</i></p> | | | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|---|---------------|-------------------------|-------------------------|
| <p>C.1. Is the project's starting date clearly defined and evidenced?</p> <p>(EB 55 Annex 1, § 99)</p> <p><i>Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of CDM terms".</i></p> | <p><i>Description:</i></p> <p>The start date of the project is clearly defined. It is the expected date of implementation of the units, i.e. 2011-06-01 at the time of webhosting of PDD.</p> <p><i>Justification of evidences:</i></p> <p>The PDD was verified in this regard.</p> <p><i>Conclusion:</i></p> <p>CL C1 was raised for PDD version 3 ^{/PDD2/} The start date of the project is clearly defined, it is expected to occur post the registration of the project, i.e. 2013-01-01</p> | <p>/PDD1/</p> | <p>CL C1</p> | <p>OK</p> |
| <p>C.2. Is the project's operational lifetime clearly defined and evidenced?</p> <p><i>Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).</i></p> <p><i>Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable.</i></p> | <p><i>Description:</i></p> <p>The operational lifetime of 20 years has been chosen.</p> <p><i>Justification of evidences:</i></p> <p>The PDD has been checked. Evidence to be submitted.</p> <p><i>Conclusion:</i></p> <p>CL C1 has been raised.</p> | <p>/PDD1/</p> | <p>CL C1</p> | <p>OK</p> |
| <p>C.3. Is the start of the crediting period clearly defined and reasonable?</p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed</i></p> | <p><i>Description:</i></p> <p>The start date of the crediting period has been chosen as 2012-07-01.</p> <p><i>Justification of evidences:</i></p> | <p>/PDD1/</p> | <p>OK</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|---|-----------------|-----------------|-----------------|
| <i>for validation and registration.</i> | The published PDD has been checked for the same. <i>Conclusion:</i> The start date of the crediting period is reasonable. | | | |
| 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 DOE.</i> | | | | |
| D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? (EB 55 Annex 1, §§ 131–133) <i>Check the host party regulations, regarding EIA.</i> | <i>Description:</i> No, there are no Host Country requirements as it is a small scale project. <i>Justification of evidences:</i> This is in line with the EIA notification of the Ministry of Environment and Forests, GOI, 2006. <i>Conclusion:</i> There are no Host Country requirements for an EIA. | /eia/ /PDD1/ | OK | OK |
| D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved? (EB 55 Annex 1, §§ 131–133) <i>Check the EIA and its approval, if applicable.</i> | <i>Refer D.1.1</i> | | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|---|--|-------------|-------------------------|-------------------------|
| <p>D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation?</p> <p>(EB 55 Annex 1, §§ 130–132) <i>Check the PDD (section D). Check whether the project will create any adverse environmental effects.</i> <i>Check the relevant national environmental legislation.</i></p> | <p><i>Refer D.1.1</i></p> | | | |
| <p>D.1.4. Are transboundary environmental impacts considered in the analysis?</p> <p>(EB 55 Annex 1, §§ 131–133) <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i></p> | <p><i>Refer D.1.1</i></p> | | | |
| <p>E. Stakeholder Comments</p> <p><i>The DOE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i></p> | | | | |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|---|------------------------------------|-------------------------|-------------------------|
| <p>E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?</p> <p>(EB 55 Annex 1, § 128)</p> <p><i>Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.</i></p> | <p><i>Description:</i> The relevant stakeholders to the project were identified and consulted prior to publication of the PDD, i.e. on 2009-10-06 in Channapatna Taluk, Ramanagara District. The stakeholders included village communities, elected members of the village organizations, Panchayat members, and SKGS staff.</p> <p><i>Justification of evidences:</i> Stakeholder meeting documents including sample feedback forms and photos have been verified.</p> <p><i>Conclusion:</i> Relevant stakeholders were invited to the meet.</p> | <p>/PDD1/ /MIN/ /FORM/</p> | <p>OK</p> | <p>OK</p> |



| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (justification and substantiation of information, data and evidences) | Ref. | Draft Concl. | Final Concl. |
|--|---|------------------------------------|-------------------------|-------------------------|
| <p>E.2. Can the local stakeholder consultation process be assessed as adequate?</p> <p>(EB 55 Annex 1, § 129(a)–(c))</p> <p><i>Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.</i></p> <p><i>Please consider the following requirements in this context:</i></p> <p><i>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</i></p> <p><i>(b) The summary of the comments received as provided in the PDD is complete;</i></p> <p><i>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</i></p> | <p><i>Description:</i></p> <p>The stakeholder meeting can be considered adequate. There were no negative comments received. All clarifications raised were answered. A blind sustainability matrix was conducted to determine the benefits from the project.</p> <p><i>Justification of evidences:</i></p> <p>Documents relating to the stakeholder meeting were verified.</p> <p><i>Conclusion:</i></p> <p>The stakeholder meeting can be considered adequate.</p> | <p>/PDD1/ /MIN/ /FORM/</p> | <p>OK</p> | <p>OK</p> |

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

| | |
|-------------------------------------|----------------------------------|
| <input type="checkbox"/> | Baseline is not identified |
| <input checked="" type="checkbox"/> | Assessment of baseline see below |

| Baseline identified | Alternatives | Inline with the Methodology? | Eliminated | Reasons for elimination / non-elimination from list of alternatives | Evidence used | DOE Assessment | |
|---------------------|--------------|------------------------------|------------|---|---------------|--------------------------------|---|
| | | | | | | Appropriateness of elimination | Assessment of validation team (results and means of assessment) |

| | | | | | | |
|--------------------------------|-----|-----|---|--|---|--|
| Kerosene for all cooking needs | yes | yes | Non availability of kerosene and high running costs | <ol style="list-style-type: none"> Annex 5 reference 7 in the PDD. http://www.hedon.info/BP4_2_EnvironmentalImplicationsOfTheEnergyLadderInRuralIndia&highlight=EnvironmentalImplicationsOfTheEnergyLadderInRuralIndia | ☒ | <p>The baseline survey and “Energy Ladder...” by Preeti Malhotra shows that fire wood usage is more prevalent in rural areas in India. The high cost of kerosene makes it unaffordable to the rural poor. The subsidized kerosene supplied through the Public Distribution System is most often used for lighting purposes.</p> <p>Non-renewable biomass is used for purposes of cooking and heating of water.</p> <p>The survey conducted by the PP in the project area shows that only 13.87 l/year of kerosene is the average usage in the project areas.</p> <p>Hence use of kerosene was eliminated as the baseline scenario.</p> |
| LPG for all cooking needs | yes | yes | Non availability of LPG and high running costs | <ol style="list-style-type: none"> Annex 5 reference 7 in the PDD. Annex 5 reference 6 in the PDD. | ☒ | <p>The baseline survey and “Energy Ladder...” by Preeti Malhotra shows that fire wood usage is more prevalent in rural areas in India. LPG being unaffordable by the rural poor, and the lack of infrastructural requirements for regular availability of LPG cylinders is a deterrent for the use of LPG for cooking purposes. The survey of 600 HHs shows that the LPG is used in barely 10 HHs. Therefore LPG is eliminated as the baseline.</p> |

| | | | | | |
|---|-----|---------------------------------------|---|--|---|
| Using renewable biomass for cooking needs | yes | No, chosen as the baseline for the PA | Non availability of biomass and high incidence of respiratory problems associated with cooking on biomass based cook stoves | <ol style="list-style-type: none"> Annex 5 reference 1 in the PDD. Annex 5 reference 4 in the PDD. | <input checked="" type="checkbox"/> <p>From the survey conducted by the PP, and the published literature (/REF02/, /REF03/, /REF04/) The studies on NRB and biomass trends are sourced from the biomass statistics from the Forest Survey of India report. The surveys are conducted by the Forest Dept., Govt. of India in all states, and the published report reflects the current forest statistics and scenario in the country. For the State of Karnataka, where the project is located, the FSI report provides data on the demand and supply of fuel wood. NRB fraction of 0.9553 has thus been calculated. The report has been verified and data in Annex 3 NRB calculation in the PDD and ER sheet found to be consistent.</p> <p>9.1 Other supporting publications throw light on the socio economic conditions in the region. The high prices of kerosene and LPG make them unaffordable to the rural poor. The baseline survey shows that firewood is the most common fuel used. The average annual consumption of firewood is 3.543 t and 1.772 t for cooking and water heating purposes. Hence, the baseline scenario is the “use of non renewable biomass” which reflects the socio-economic trends in the project area. Sufficient and appropriate evidence supporting the baseline scenario was provided by the PP.</p> |
|---|-----|---------------------------------------|---|--|---|



| | | | | | | |
|------------------------------|-----|-----|--------------------------------------|--|-------------------------------------|---|
| | | | | | | The calculation of fraction of NRB from FSI report of 2011, as the project units are not yet under construction, and the trend of increasing distances and time spent in collecting of NRB, yearly. The NRB fraction of 0.9553 is deemed as appropriate for calculation of baseline emissions for the NRB component of the project activity |
| Project activity without CDM | yes | yes | High Investment for the project unit | | <input checked="" type="checkbox"/> | For the project activity to continue without CDM is not an option due to the investment barrier faced. The cost of a biogas unit (INR 22,493) is more the average annual income of INR 21,714 in the project areas. |

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters (EB 55 Annex 1, §§ 111, 112, 114/ in case financial parameters stem from FSR §113,)

| <input checked="" type="checkbox"/> | No financial parameters are used for additionality justification | | | | | |
|-------------------------------------|--|------|--|-----------|------------------------------|---------|
| <input type="checkbox"/> | Assessment of all financial parameters see below | | | | | |
| Parameter | Value applied | Unit | Source of Information (please indicate document and page) | Reference | DOE ASSESSMENT | |
| | | | | | Correctness of value applied | Comment |

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis (EB 55 Annex 1, §118)

| <input checked="" type="checkbox"/> | | No barrier parameters are used for additionality justification | | |
|--|------------------------|--|---|-----------------------------|
| <input type="checkbox"/> | | Assessment of barriers see below | | |
| Kind of Barrier (invest , tech, other) | Description of Barrier | Evidence used | Assessment of validation team | |
| | | | Appropriat eness of information source | Explanation of final result |

ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process

(§§ 40-42, VVM Version 1.2)


| <input type="checkbox"/> | No comments were received during the global stakeholder consultation period | | | | | |
|-------------------------------------|--|--------------|-----------------|--|--|---|
| <input checked="" type="checkbox"/> | Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below: | | | | | |
| Comment No.: | Comment by: | Inserted on: | Subject | Comment ^{*)} | Action taken by the validation team to take due account on the comment ^{*)} | Conclusion (incl. CARs CLs or FARs) |
| 1. | Karthikeyan, carthik2010@gmail.com | 2011-09-03 | Biomass as fuel | This project throws a new light on the biomass power projects, which the DOEs have been webhosting, validating and getting registered. PDD states, "The demand for fuel wood is much higher than the regeneration of the woody biomass so there is a severe shortage of fuel wood and forest resources are depleting. 78% of the collected fuel wood is non-renewable" (p.18). This biomass, not only in Karnataka, but in other States also is used for power generation which claims that they are renewable. If this statement given in the project is true, then biomass based power projects based on such fuel | Further clarification has not been requested from the entity providing the comment because the comment has no relevance to the biogas project. The project is not a not a biomass powered project. The fuel used in both cases is not similar in nature. | The comment is not relevant to the project. |



| | | | | | | |
|----|---------------------------------------|------------|---------------------|--|---|---|
| | | | | should not be registered. | | |
| 2. | Karthikeyan, carthik2010@gmail.com | 2011-09-03 | Kerosene as fuel | PDD states that the rural households use 19.88 litres per year for cooking purposes (p.18). This does not seem to be supported by National Sample Survey report. As per NSS, per capita consumption of kerosene in rural areas of Karnataka is 0.597 litres. The household is defined as 4 persons. Therefore kerosene consumption per household per annum will be 28.65 litres. If 19.88 litres is used for cooking, what is left for lighting is only 8.77 litres. PDD also states that the families get 3 litres per month at subsidised rate of which 1.5 litres is used for lighting purposes. Consumption of kerosene considered, therefore, cannot be correct. The sample, sampling methodology adopted and the standard error of the sample should be checked. | As per the survey conducted by the PP for the project, the number of people in a household varies, and in a lot of cases the number is more than four. The sampling method used by the PP is in line with the UNFCCC sampling guidelines, with a 95% confidence level. The survey conducted by PP shows that kerosene is not affordable by all. In some households, the only kerosene used is the subsidised amount of 3 litres available to them. Therefore in such cases, it is highly unlikely that 8.77 litres of kerosene is used for purposes of lighting. This was verified during the site visit interviews. | The comment is no longer relevant as the AMS I.C component has been removed by the PP. The survey proves that kerosene is not the most widely used fuel in the project area. |

¹⁾ In case clarifications have been requested by the validation team corresponding rows shall be added

ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter


| SCHEME | STATUS | VALID UNTIL |
|--------|--|-------------|
| CDM | Senior Assessor (Validation, Verification) Technical Reviewer | 2014-06-30 |
| VCS | Senior Assessor (Validation, Verification) Technical Reviewer | 2014-06-30 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA | TR SUBCATEGORIES |
|------|-----------------------------|---|
| 1.1 | Thermal energy generation | 1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal |
| 1.2 | Renewable Energy | |
| 2.2 | Heat distribution | |
| 3.1 | Energy demand | |
| 13.1 | Waste handling and disposal | 13.1.1 Waste management 13.1.2 Waste water management |
| 13.2 | Animal waste management | |
| 15.2 | Animal waste management | |

163 – Rev. 2, Date: 2011-08-10

163_S01-F003_2011-08-10_rev2 S01-F003 rev1 / 2011-08-02



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Kunal Rami


| SCHEME | STATUS | VALID UNTIL |
|--------|--|-------------|
| CDM | Lead Assessor (Validation, Verification) Technical Review | 2015-01-19 |
| VCS | Lead Assessor Technical Review | 2015-01-19 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA | TR INCLUDE SUB-AREAS |
|------|-----------------------------|---|
| 1.2 | Renewable Energies | 1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal |
| 6.1 | Construction | |
| 13.1 | Waste handling and disposal | 13.1.1 Waste management 13.1.2 Waste water management |

244 – Rev. 3, Date: 2012-01-20

224_S01-F003_2012-01-20_rev3.doc S01-F003 rev0 / 2010-04-19



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Ma Paa Puratchikkanal

| SCHEME | STATUS | VALID UNTIL |
|--------|-----------------|-------------|
| CDM | Senior Assessor | 2013-09-09 |
| VCS | Senior Assessor | 2013-09-09 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|---|
| 1.2 | Energy generation from renewable energy sources |
| 3.1 | Energy demand |
| 6.1 | Construction |
| 13.1 | Waste handling and disposal |

079 – Rev. 0, Date: 2011-06-27

079_S01-F003_2011-06-27_rev0 S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Ms. Manjari Chandra

| SCHEME | STATUS | VALID UNTIL |
|--------|---|-------------|
| CDM | Lead Assessor (Validation, Verification) | 2015-01-10 |
| VCS | Lead Assessor | 2015-01-10 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

092 – Rev. 2, Date: 2012-01-11

092_S01-F003_2012-01-11_rev2.doc

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Ms. C. A. Sahana

| SCHEME | STATUS | VALID UNTIL |
|--------|---|-------------|
| CDM | Lead Assessor (Validation, Verification) | 2015-01-03 |
| VCS | Lead Assessor | 2015-01-03 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |
| 14.1 | Forestry |
| 15.1 | Agriculture |

121 – Rev. 4, Date: 2012-01-04

121_S01-F003_2012-01-04_rev4.doc

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Nikesh Ravandur Satish

| SCHEME | STATUS | VALID UNTIL |
|---------------------------------|---------------|-------------|
| CDM Validation, Verification | Lead Assessor | 2013-10-18 |
| VCS | Lead Assessor | 2013-10-18 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|-----------------------------|
| 1.2 | Renewable Energies |
| 13.1 | Waste Handling and Disposal |

236 – Rev. 1, Date: 2011-06-28

236_S01-F003_2011-06-28_rev1

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Lokesh Chandra Dube

| SCHEME | STATUS | VALID UNTIL |
|-------------------|---|-------------|
| CDM | Lead Assessor (Validation, Verification) | 2015-06-03 |
| VCS / ISO 14064-2 | Lead Assessor | 2015-06-03 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|-----------------------------|
| 1.2 | Renewable Energies |
| 3.1 | Energy Demand |
| 13.1 | Waste Handling and Disposal |
| 13.2 | Animal Waste Management |
| 14.1 | Forestry |
| 15.1 | Agriculture |
| 15.2 | Animal Waste Management |

155 – Rev. 2, Date: 2012-06-04