South Asia

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Verification and Certification Report

of the Registered CDM Project

"Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal."

UNFCCC reference number: 4530

Monitoring Period # 1: 01/05/2011–30/04/2014.

Report No. 10246ME

15 April 2015

TÜV SÜD South Asia Pvt. Ltd.
Environmental Technology
Carbon Management Service
Solitaire, I.T.I. Road, Aundh
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South Asia

Date of first issue of this report	29/03/15
Revision No. of this report	02
Registered PDD (version/date)	Version 03 - 09/01/2011
Registration date	15/03/2011
Revised Monitoring Plan	Date of approval: 3 March 2015 (Temporary deviation)
Methodology (title; number; version)	AMS-II.G version 2 – Energy efficiency measures in thermal applications on non-renewable biomass.
Crediting period	01 May 2011 - 30 April 2021 (Fixed)
Published Monitoring Report (version/date)	Version 1, 29 December 2014
Final Monitoring Report (version/date)	Version 2, 13 April 2015
Scope	3
Technical Area	3.1
Location of the Project	The project is located in the foothills and plain areas in the Central Development Region of Nepal in the districts Bara, Parsa, Rautahat, Sarlahi, Mahottari and Dhanusa lying within 26º38'00"-27º30'00" north latitude and 84º22'00"-86º14'00" east longitude.
Project Participant (contractor)	Centre for Rural Technology, Nepal – Host country Egluro – Annex I country
Project Documentation Link	UNFCCC weblink: http://cdm.unfccc.int/Projects/DB/DNV-CUK1298888484.88/iProcess/TUEV-SUED1418881306.58/view

VERIFICATION AND CERTIFICATION CONCLUSION

TÜV SÜD South Asia Pvt. Ltd. has performed the periodic verification of the aforementioned CDM project activity. The verification is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC).

The management of Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the registered PDD, approved deviation, dated 3 March 2015 and the applied methodology, AMS-II.G version 2.

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the project design document approved by the EB;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;

- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring Report is as per the PDD and monitoring plan approved by the EB;
- the monitoring plan in the approved PDD is as per the applied methodology/ies;
- There is an audit trail that contains the evidence and records that validate the stated figures.

Based on the information we have seen and evaluated, we confirm that the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the project activity.

Verified emission reductions in this monitoring period: 39,672 t CO_{2e} (rounded down)

Baseline:	41,760 tCO_{2e}
Project emissions:	0 tCO_{2e}
Leakage:	2088 tCO_{2e}
Emission reductions:	39,672 tCO_{2e}

Pune, 15/04/2015

Milind Shende
Certification Body “Environment and Energy”
TÜV SÜD South Asia

Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO_{2e}	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organisation
PCP	Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
TÜV SÜD	TÜV SÜD South Asia Pvt. Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation And Verification Standard

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1 METHODOLOGY

1.1 Objective

TÜV SÜD has been commissioned by the aforementioined client to perform an independent verification assessment.
The objective of the verification work is to comply with the requirements of paragraph 62 of the CDM Modalities and Procedures. According to this assessment TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the registered PDD and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,
- ensure that the published MR and other supporting documents provided are complete, verifiable and in accordance with applicable CDM requirements,
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology,
- evaluate the data recorded and stored as per the applicable requirements.

1.2 Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Designated Operational Entity. The verification is based on the submitted monitoring report, the validated project design documents including its monitoring plan and validation report, previous verification reports (if any), the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.
Based on the requirements in the VVS, TÜV SÜD has applied a rule-based approach for the verication of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.
The verification considers both quantitative and qualitative information on emission reductions.
The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 Verification Process

The information provided by the project participants is assessed by applying the means of verification specified in the VVS and in the absence of specific means of verification specified in the VVS the standard auditing techniques are applied.
Once TÜV SÜD receives the Monitoring Report and a confirmation from any PP to upload, the MR is made publicly available through a dedicated interface on the UNFCCC CDM website.
A competent assessment team is selected priot to the start of the verificaiton. The team is selected to cover the technical area(s), sectoral scope(s) and relevant host country experience for evaluating the CDM project activity. Additionally a competent Technical Reviewer or Technical Reviewer Team is appointed to conduct checks on quality and completeness.

The verification team performs first a desk review, followed by an on-site visit, which results in the formation of a draft report and a list of findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the

verification report. This verification report and other supporting documents then undergo an internal quality control by the CB "Environment and energy" before submission to the CDM-EB.

1.4 Appointment of the Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a assessment team in accordance with the appointment rules of the TÜV SÜD Certification Body "Environment and Energy".
The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB of TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Verifier (V);
- Verifier Trainee (T);
- Technical Experts (TE);
- Country expert (CE);
- Technical reviewer (TR).

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology/ies and project have to be covered by the assessment team. Appointment certificates of the selected team members are attached to this report as Annex.

Assessment Team:

Name	Qualification	Scope	Technical Area	Host country experience	Onsite visit
Eswar Murty	ATL	☑	☑	☑	☑
Sharmistha Shome	V	☑	-	☑	☑

Technical Reviewer (s):

Name	Qualification	Scope	Technical area
Kumud Ranjan	TR	☑	☑ (All)

1.5 Review of Documents

Publication has been initiated before the verification activities started. Based on the published MR the assessment team performed a desk review to:

- verify the completeness of the data and the information presented in the MR[IRL#1],
- check the compliance of the MR[IRL#1] with respect to the monitoring plan depicted in the registered PDD[IRL#11] and approved temporary deviation [IRL#18] and verify that the applied methodology was carried out. Particular attention to the frequency of measurements, monitoring survey and the quality assurance and quality control procedures was paid,
- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is available in the Information Reference List (IRL) attached as Annex 2 to this report.

1.6 On-site Assessment and follow-up Interviews

During on-site visit (dates of on-site visit 19/01/2015 to 23/01/2015) TÜV SÜD performed a physical site inspection and interviewed project stakeholders to:

- confirm the implementation and operation of the project,
- review the data flow for generating, aggregating and reporting the monitoring parameters,
- confirm the correct implementation of procedures for operations and data collection,
- cross-check the information provided in the MR documentation with other sources,
- check the monitoring procedure against the requirements of the PDD, approved temporary deviation and the approved methodology, including quality control, maintenance, etc.,
- review the calculations and assumptions used to obtain the GHG data and ER,
- indentify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

A list of all persons interviewed is included in the IRL attached as Annex 2 to this report.

TUV SUD has done field visit to all the 6 districts of the project activity covering 21 households from sampled group and 8 from non-sampled households. The sample size of the field visit was determined as per the International Accreditation Forum (IAF): Guidanceon the Application of ISO/IECGuide 62:1996: 'General Requirements for Bodies OperatingAssessment andCertification/registration of Quality Systems' [IRL#13]. Inline with the mentioned IAF guidance, the sample size from the verification body should be square root of the total sample size. As per the registered PDD, the sample size is 68. Keeping in mind that two numbers of monitoring survey has been conducted, September 2012 and July 2014, 21 households from the sampled group has been visited by TUV SUD. Site visits to the non-sample households is not warrented by any requirements, either in PDD or International Accreditation Forum (IAF), however, TUV SUD has visited 8 non-sample household for the prupose of cross checking. It is confirmed from the visit to the non-sampled households that the project activity stoves were in operating conditions and are used on regular basis.

It has been verified during visits to the households that the project activity stoves are operating in good condition and are in use. It has also been confirmed through the interview of personnel from relevant households that surveys were conducted. No error has been observed in the survey results.

1.7 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the verification is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD`s conclusion on the achieved emission reductions. The CARs and CRs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the verification process, the concerns raised and responses that have been given are documented in detail in the List of Findings that is attached as Annex 1 to this report.

1.8 Internal Quality Control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the verification process is given by the final decision (Verification and Certification Conclusion) made by the CB "Environment and Energy".

2 REPORTING REQUIREMENTS

In the following sections, the results of the verification are stated. The verification results relate to the project performance as documented and described in the final PDD OR revised Monitoring Plan and final Monitoring Report. The verification findings for each verification subject are presented below.

2.1 FARs from Validation / Previous Verification

No FARs have been presented, neither in the validation report nor in the previous verification reports. All FARS presented in older verification reports, have been properly closed in the previous verification report.

2.2 Project Implementation in accordance with the registered Project Design Document

As part of the site visit TÜV SÜD was able to confirm that the project implementation is in accordance with the project description contained in approved PDD of 19 Januray 2011[IRL#11].The verification team confirmed through visual inspection and document review that all physical features of the proposed CDM project activity including data collection systems and storage systems have been implemented in accordance with the registred PDD. TÜV SÜD confirmed during the on-site visit that the CDM project is completely operational.

The proposed project activity involves the installation of improved cooking stoves by replacing the existing conventional cooking stoves in the households. The project activity is located in the six districts of Central Development Region of Nepal, namely Bara, Parsa, Rautahat, Sarlahi, Mahottari and Dhanusa, which lying within 84º22'00" to 86º14'00" east longitude and 26º38'00" to 27º30'00" north latitude.

The project activity includes 120 Village Development Committees (VDC) in six districts and has installed 14,820 improved cooking stoves. Two types of improved cooking stoves (ICS) would be used in the project activity, namely built-on-site and prefabricated model, also called as rocket stove. The total number of installed project activity cook stoves has been verified from the Master database [IRL#4]. This has also been cross-checked from the non-local material supplied to the promoters from CRT/N and ICS account reports, 2011 to 2014 [IRL#6] as well as from ER slips [IRL#7] available at the LPO and household level. It has been verified that 14,872 project activity stoves have been installed.

The management system for the project has been verified to be in place and found to be as per the registered PDD. The organization structure with the responsibilities, personnel competencies, monitoring procedure and monitoring management have been properly identified and put into operation as verified during the site visit. TÜV SÜD confirms that the responsibilities and authorities in the management and operational system for monitoring and reporting are in accordance with the responsibilities and authorities stated in the registered PDD and monitoring plan [IRL#11].

The DOE confirms that the project activity has been implemented and operated as stated in the registered PDD as per p. 250, 254, 262 and 272 of VVS v7.0.

2.3 Compliance of the Monitoring Plan with the Monitoring Methodology

The monitoring plan in the registered PDD is in accordance with the approved methodology applied by the project activity, i.e. AMS-II.G version 2 [IRL#14].

2.4 Compliance of the Monitoring with the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan and approved temporary deviation of the monitoring plan approved by CDM-EB on 3 March 2015 [IRL#18]. All parameters were monitored and determined as per the PDD and approved temporary deviation of monitoring plan. The applicable period of deviation is 01 May 2011 to 30 June 2011 and 01 October 2012 to 30 April 2013.

Parameters approved for temporary deviation:
In line with the registered PDD, dated 19 January 2011 [IRL#11], section B.7.1 (Data and parameters monitored) a sample survey of 68 project activity cook stove has to be conducted annually for the monitoring the following parameters:

- Efficiency of the fuel efficient appliance (η_{new})
- Stove emission (CO and PM 2.5).
- Percent of user households who are continuously using the stoves (U_Y)
- Cross-checking of "Type of stove displaced/dismantled" (D_n)

The parameter "stove emission (CO and PM 2.5) has been included in the monitoring plan as a part of requirement under Sustainability development matrix of Gold Standard certification and does not have any impact on the CER calculation. The data for parameter "*Type of stove displaced/dismantled* (D_n)" shall be maintained by the project proponent and cross-checked from the monitoring sample survey of 68 households that is to be done annually.

In line with the registered monitoring plan, the monitoring survey should have been conducted during the period of 2011-2012, 2012-2013, 2013-2014. It has been verified that the first field testing activity was conducted in September 2012 [IRL#2] and the second field testing activity was conducted in June 2014 [IRL#2]. Thus, the monitoring survey for the parameters *Efficiency of the fuel efficient appliance* (η_{new}), stove emission and *Percent of user households who are continuously using the stoves (*U_Y) and cross checking for *Type of stove displaced/dismantled* (D_n), has been less than annual. The assessment of the temporary deviation and data has been justifed and have been approved by CDM-EB on 3 March 2015.

The verification of the parameters required by the monitoring plan is provided as follows:

Data / Parameter:	V_n
Data unit:	Number
Description:	Project villages/ village development committee (VDC)
Source of data used:	Master User Database maintained by CRT/N [IRL#4]
Means of verification/Comments:	It has been verified from the userdata base that the number of VDCs covered by the project activity is 112.
Cross-check	---

Data / Parameter:	D_n
Data unit:	Number and type
Description:	Type of stove displaced/dismantled
Source of data used:	Master Userdatabase [IRL#4] maintained by CRT/N.
Means of verification/Comments:	It has been verified from the userdata base [IRL#4] that 12,418 old stoves have been dismantled as of 30 April 2014. The number of

	stoves dismantled is not directly related to the calculation of CERs. The new efficient stoves are built or installed only after the traditional stoves are displaced or dismantled. This is evident from stove database 2014 as maintained by CRT and Dismantling of old stove of Monitoring Survey Report October 2014, Apetec Consultancy [IRL#2] that 66.1% of household has dismantle the old cook-stove and 33.9% of old cook stoves, though not dismantled, are only used in special occasions. Thus, there is leakage due to transfer of old stove to another location.
Cross-check	Cross-checked from the monitoring sample survey report [IRL#2]

Data / Parameter:	N_y
Data unit:	Number and type
Description:	Total number of efficient operational stoves.
Source of data used:	Master Userdatabase [IRL#4] maintained by CRT/N.
Means of verification/Comments:	The number of project activity stove installation is reported to CRT/N through local partner organisation (LPO) and promoter. The total number of stoves installed, as verified from the user-database [IRL#4] is 14 872.
Cross-check	Cross-checked from the non-local material supplied to the promoters from CRT/N and ICS account reports, 2011 to 2014 [IRL#6].

Data / Parameter:	η_{new}
Data unit:	% heat utilized
Description:	Efficiency of the Fuel Efficient appliance replaced
Source of data used:	The efficiency data has been sourced from the efficincy test report from Kathmandu University, September 2012 [IRL#3] and APTEC Consulting Pvt. (Ltd), June 2014 [IRL#2]

Survey year	**Stove efficiency (η_{new})**
September 2012	27.94%
June 2014	28.33%

Means of verification/Comments:	The efficiency data has been verified from the efficiency test results [IRL#2][IRL#3]. The stoves samples of 2012 and 2014 are different. Furthermore, the efficiency test survey in 2012 has been conducted in the end of rainy season (end of August to mid of September) and 2014 efficiency test survey was conducted before the start of rainy season (mid June to mid July), thus, it is deemed reasonable that the moisture content in wood sample in 2012 is higher than that is in 2014 wood sample. As a result, the efficiency of stoves tested in 2012 is lower than that of stoves tested in 2014.
Cross-check	Cross checked with values adopted for baseline emissions

Data / Parameter:	U_Y
Data unit:	%
Description:	Percent of user households who are continuously using the stoves. Those who used the stoves 3 or less months in a year will be discarded from further calculation of emission reductions.

<table>
<tr><td>Source of data used:</td><td>The data has been sourced and verified from the monitoring survey report by APTEC Consulting Pvt. (Ltd), September 2012 and July 2014 [IRL#2].
<table>
<tr><th>Year</th><th>Percentage of user households who are continuously using fuel efficient stoves (U_y)</th></tr>
<tr><td>2012</td><td>100%</td></tr>
<tr><td>2014</td><td>97%</td></tr>
</table></td></tr>
<tr><td>Means of verification/Comments:</td><td>The data has been sourced and verified from the monitoring survey report by APTEC Consulting Pvt. (Ltd), September 2012 and July 2014 [IRL#2]. As per the PDD, those project activity households who used the stoves for 3 or less months in a year are discarded from calculation of emission reduction. It has been verified from the monitoring survey report, July 2014, that 2 numbers of households (2.9%) out of 68 sample houses were not using the project activity cookstove for 1 month.</td></tr>
<tr><td>Cross-check</td><td>This is has been cross checked during the site visit that project activity cook-stoves are used by the household on continuous basis.</td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>t_Y</td></tr>
<tr><td>Data unit:</td><td>Months</td></tr>
<tr><td>Description:</td><td>Operation time of the fuel efficient stoves</td></tr>
<tr><td>Source of data used:</td><td>The data has been sourced and verified from monitoring survey report by APTEC Consulting Pvt, September 2012 and July 2014 [IRL#2].</td></tr>
<tr><td>Means of verification/Comments:</td><td>The data for operating time period of the project activity stoves are maintained by CRT/N based on the spot-checks done by CRT/N, LPO and promoters. The data has been sourced from monitoring survey report by APTEC Consulting Pvt, September 2012 and July 2014 [IRL#2]. The survey result confirms the following:
<table>
<tr><td>September 2012 survey</td><td>100% of the household uses the project activity stove for 12 months</td></tr>
<tr><td>July 2014 Survey</td><td>97% of the household uses the project activity stove for 12 months.
2.9% of the household was not using the project activity stove for 1 month.</td></tr>
</table>
Thus, operating time of 12 months has been considered for the 100% project activity cook stoves till September 2012 and 97% from October 2012 to March 2014.</td></tr>
<tr><td>Cross-check</td><td>This is has been cross checked during the site visit that project activity cook-stoves are used by the household on continuous basis.</td></tr>
</table>

<table>
<tr><td>Data / Parameter:</td><td>L_y</td></tr>
<tr><td>Data unit:</td><td>Tonnes</td></tr>
<tr><td>Description:</td><td>Quantity of woody biomass used by non user households (in tonnes)</td></tr>
<tr><td>Source of data used:</td><td>The data has been sourced from monitoring survey report.</td></tr>
<tr><td>Means of verification/Comments:</td><td>The data has been verified from the APTEC Consulting Pvt sample survey report, September 2012 and July 2014 [IRL#2]</td></tr>
</table>

	It has been verified from the survey report that 2.590 Tonnes/year of wood biomass has been consumed by the non-user households for space heating and other purposes. It has been confirmed from the survey reports that none of the non-project households has shifted to non-renewable biomass for cooking.
Cross-check	--.

Parameters related to Gold Standard, which has been mentioned in the CDM-PDD monitoring plan:

Data / Parameter:	Stove Emissions (CO and $PM_{2.5}$)
Data unit:	ppm and $\mu g/m^3$
Description:	Carbon Monoxide (CO) and fine particulate matter ($PM_{2.5}$) emission from burning the fuel wood in fuel efficient stoves.
Source of data used:	The data has been sourced from stove emission testing report, September 2013, by APTEC consulting Pvt [IRL#22]. CO – 7.66 ppm $PM_{2.5}$ – 692.9 $\mu g/m^3$
Means of verification/Comments:	The data has been verified from stove emission testing report, September 2013, by APTEC consulting Pvt [IRL#22]. This is not used for emission reduction calculation. This is an additional parameter to fulfil Gold Standard requirement.
Cross-check	--.

Data / Parameter:	P_n
Data unit:	Number
Description:	Number of local people (LPO staff, ICS promoters, rocket stove manufacturers, ceramic manufacturers) trained. The number can be segregated by gender. This parameter gives information on quantitative employment and income generation in the community.
Source of data used:	The number peopled trained are sourced from the field training report [IRL#9].
Means of verification/Comments:	It has been verified from the training reports submitted by CRT/N and observation during site visit that as of 30/04/2014,people have been trained on related topics: Promoters training: Female – 231, Male – 139, Total – 370 LPO staff training: Female – 1, Male – 7, Total - 8 Ceramic chamber fabrication training: Female – 1, Male – 17, Total – 18. This is not used for emission reduction calculation. This is an additional parameter to fulfil Gold Standard requirement.
Cross-check	--

Data / Parameter:	T_n
Data unit:	Number
Description:	Number of technical training activities targeted to local people (LPO staff, ICS promoters, rocket stove manufacturers, ceramic manufacturers). This parameter gives information on quality of employment and technology transfer and technological self reliance.

Source of data used:	The number of training activities are sourced from the field training reports [IRL#9].
Means of verification/Comments:	It has been verified from the training reports and field interview that as of 30/04/2014 following number of training events have been conducted on related topics: Promoters training: 25 LPO staff training: 1 Ceramic chamber fabrication training: 2 This is not used for emission reduction calculation. This is an additional parameter to fulfil Gold Standard requirement.
Cross-check	--

Hence the DOE confirms that monitoring has been carried out in accordance with the monitoring plan and monitoring methodology, in line with p.278, 280 and 281 of VVS v7.0.

2.5 Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

All data has been available and all the parameters have been monitored in accordance with the registered monitoring plan [IRL#1] and approved post-registrating temporary deviation.

Baseline emissions
This has been calculated as per equation (1) of the applied methodology AMS-IIG, version 2, as mentioned in the registered PDD [IRL#11]. The calculation is based on the biomass saved by the project activity, fraction of non renewable biomass used, net calorific value of the non renewable biomass (woody biomass) and emission factor of the fossil fuel that would have replaced woody biomass in absence of the project activity.

$ER_m = B_m savings,_i * f_{NRB} * NCV_{biomass} * EF_{projected\ fossil\ fuel}$

Where,
ER_m: Emission reduction on monthly basis.
$B_m savings,_i = B_y * (1- \eta_{old} / \eta_{new})$: Quantity of woody biomass that is saved in tonnes by the project activity. To make the biomass quatity on monthly basis, the B_y has been divided by 12. Thus, $B_y/12 * (1- \eta_{old} / \eta_{new})$ has been considered for the emission redcution calculation excel sheet. [IRL#]

The quantity of woody biomass (B_y) used in the absence of project activity per household has been considered to be 2.7 tonnes/year per baseline cooking stoves as verified from the registered PDD [IRL#11]. As aforementioned in section 2.4, the number of project activity cook stoves installed is 14 872. The number of project activity stoves which are continuous in operation and operating period of the cooking stoves has been considered in the emission reduction calculation [IRL#10].

As per the registered PDD and monitoirng plan, project activity households who used the stoves for 3 or less months in a year are discarded from calculation of emission reduction. It has been verified from the monitoring survey report, July 2014 [IRL#2], that 2 numbers of households (2.9%) out of 68 sample house were not using the project activity cookstove for 1 month. On the basis of conservativeness, the following has been considered:

1 May 2011 to 30 September 2012	100% of the project activity stoves as continuous operation for 12 month/year
1 October 2012 to 30 April 2014	97% of the project activity stoves as continuous operation for 12 month/year

Furthermore, in line with ISO 2859-1 (Part 1): Sampling Inspection Procedures [IRL#12], if the survey sample size is of 68, it is considered that 0.4% of the total population can have the non-operative cook stoves. On the basis of conservativeness, over 1% of the total installed cook-stoves has been considered to be non- operating in addition to the aforementioned survey results. Efficiency of the baseline cooking stove has been considered to be 10% as per paragraph 6 of methodology AMS-IIG, version 2 and registered PDD [IRL#11]. As mentioned in section 2.4, the efficiency of the project activity cook-stoves as verified from the survey reports are:

Year	**Stove efficiency (η_{new})**
September 2012 [IRL#3]	27.94%
June 2014 [IRL#2]	28.33%
Ex-ante value [IRL#11]	28.72%

Inline to the registered monitoring plan, the ex-post monitoring value of stove efficiency is to be compared with the ex-ante value and the conservative value is to be used for CER calculation [IRL#10]. On the basis of conservativeness, ex-post monitoring value of 27.94% (September 2012 Survey) has been CER calculation for the verification period of 1 May 2011 to 31 March 2014.

f_{NRB} : Fraction of woody biomass saved by the project activity, established as non renewable biomass using survey methods and government data source. This has been fixed ex-ante and has been as 0.807 and verified from the registered PDD [IRL#11].

$NCV_{biomass}$: Net calorific value of non-renewable woody biomass that is substituted. This is fixed ex-ante as 15 MJ/kg wood (0.015 TJ/ton). This verified from the registered PDD [IRL#11] and IPCC default value [IRL#15].

$EF_{projected\ fossil\ fuel}$: Emission factor for the substitution of non-renewable woody biomass by similar consumers. This is fixed ex-ante. 71.5 TCO_2/TJ has been sourced and verified from the registered PDD.

Thus, the baseline emission reduction for the verification period 1 May 2011 to 30 April 2014 is 41 760 tCO_2e[IRL#10]

Leakage

It has been verified from stove databaseas maintained by CRT [IRL#4] and dismantling of old stove of Monitoring Survey Report 2014, Apetec Consultancy[IRL#2] that 66.1% of household has dismantle the old cook-stove and 33.9% of old cook stoves, though not dismantled, are only used in special occasions. Thus, there is no leakage due to transfer of old stove to another location.

As per the registered PDD [IRL#11], 5% of the total baseline emission reduction is to be considered as leakage based on conservativeness.

It has verified from the registered PDD that that the emission due to transportation and diversion of fuel wood for space heating in project, considering 2.674 tonnes/year of woody biomass, is 4.06 % of the total emission reduction by the project activity [IRL#11]. Inline with the ex-post monitoring survey, the non-renewable biomass consumed by non-user households is 2.590 Tonnes/year (less then estimated in the PDD [IRL#11].
Thus, based on the conservativeness, 5% of the baseline emission has been considered as leakage. The leakage for the verification period 1 May 2011 to 30 April 2014 is 2 088 tCOe [IRL#10].

Emission reductions
Therefore, the emission reduction [IRL#10] in this monitoring period is 39 672 tCO_2 (41,760 tCO_2 -2 012 tCO_2) .
The emission reduction, post 2012, for the period from 1 January 2013 to 30 April 2014 is 27 053 tCO_2.

Emission reduction till 2012 (tCO_2) for the present verification period	Emission reduction post 2012 (tCO_2)
12 619	27 053

As outlined above, the input data for calculating the emission reductions, the calculating process and the result are complete and transparent.

The verifier confirms that the methods and formulae used to obtained the baseline, project and leakage emissions are appropriate. The same has been done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology.

The verifier confirms that the monitoring report includes all parameters and the monitored data at the intervals as per the monitoring plan and approved post-registration temporary deviation.

The verifier confirms that all the assumptions, emission factors and default values (ex-ante values from PDD) have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

It has been verified that the estimated emission reduction as per the PDD is higher than the actual emission reduction obtained from the project activity during the current monitoring period. This is mainly due to the slow installation process of the project activity cook stoves.

Emission reductions for the considered period as per estimates in the PDD	Actual Emission Reduction for the monitoring period	Variation
83 219 tCO_2	39 672 tCO_2	(-) 52.32 %

No reporting risks have been identified for the data reported. Troubleshooting procedure, maintenance and calibration of monitoring equipments, monitoring measurements and reporting, record handling and maintenance, reviewing monitored data are available at the plant. All the monitored data are archived partially in electronic and paper form. The data will be kept for the whole crediting period and 2 years after the last crediting period thereby meeting the requirement of the monitoring plan.

The verification team confirms that the emission reductions are real and measurable. The verification team also confirms that there is no material misstatement in the calculation of reported emission reductions. The calculations of baseline emissions, project emissions and leakage as appropriate have been carried out in accordance with the formulae and methods described in the revised monitoring plan and the applied methodology document. (VVS v 7.0 p. 282).

Verified emission in this monitoring period:

Baseline:	41,760 tCO_{2e}
Project emissions:	0 tCO_{2e}
Leakage:	2088 tCO_{2e}
Emission reductions:	39,672 tCO_{2e}

South Asia

Annex 1
List of Findings

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Annex 1

List of Findings

Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Mismatch of data provided in monitoring report and supporting evidence.	IRL# 1
Requirement	The data provided in the monitoring report to be support with relent evidence (VVS, paragraph – 250 and 252)	
Corrective Action Request	**Corrective Action Request No.1** The monitoring report, in section A.1, mentions that the stove efficiency is 30% to 33.46%. This is not in line with the survey reports of 2012 and 2014.	
Response	The value of efficiency has been corrected in line with the monitoring survey report. Further, the reference is made to the relevant report.	
Assessment Means of validation / verification	The monitoring report has been revised as per the average stove efficiency mentioned in the Kathmandu University Test report, 2012, as 27.94% and 28.33% as per June 2014 test report. The test reports has been provided and verified. The issue is closed.	
Adjustment on pro-ject design OR Changes in the monitoring report or supporting annexes	MR	

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Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Inconsistency of information in the monitoring report.	IRL# 1
Requirement	Consistency of information in the monitoring report and general verification requirement as per para 9 of VVS, ver 6	
Corrective Action Request	**Corrective Action Request No.2** The start date of crediting period mention in section B.1 of monitoring report does not match with start date of crediting period as mentioned in UNFCCC website.	
Response	The start date of the crediting period has been corrected as mentioned in the UNFCCC web-site.	
Assessment Means of validation / verification	The start date of crediting period of the project activity has been corrected to 1 May 2011 as mentioned in the UNFCCC website. The CER has been calculated for the period of 1 May 2011 to 30 April 2014. The issue is closed	
Adjustment on pro-ject design OR Changes in the monitoring report or supporting annexes	MR	

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Inadequate completion of Monitoring report as per as per the “Guideline for completing the monitoring report form”.	IRL# 1
Requirement	Completion of monitoring report as per the “Guideline for completing the monitoring report form”; Project standard, ver 6 para 251	

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Corrective Action Requests by the assessment team		
Clarification Request	**Clarification Request No. 1** Temporary deviation in the monitoring plan has been mentioned under section B.2.2, correction. The monitoring report needs to be corrected accordingly.Temporary deviation in the monitoring report does not include all the parameters for which the deviation has been requested.	
Response	All the parameters requested for deviation have been included under the Temporary deviation in the monitoring plan as mentioned under section B.2.2, correction.	
Assessment Means of validation / verification	The monitoring report has been adequately updated to explain the details of temporary deviation are the correct section of the monitoring report. The temporary deviation has approved by UNFCCC and detailed in section B.2.1 of the revised monitoring report. The issue is closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	MR	

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Further evidences to be provided.	IRL #1 IRL#5
Requirement	Information to be supported with evidence, VVS version 6, paragraph 250.	
Clarification Request	**Clarification Request No. 2** The number of stoves installation has not been supported with the number of stove parts supplied by CRTN to the stove promoters. The relevant supporting data needs to be provided. Letter of appointment of APTEC Consultancy for the sample survey of 2012 and 2014 has not	

South Asia

Clarification Requests by the assessment team		
	been provided for verification. Supporting data and justification on the spot-check of 50%, as mentioned in the monitoring plan, of installed stoves has not been provided.	
Response	**a.** The confirmation of the use of non-local materials used in stove is reflected in the ER slip also (few scanned copies of actual ER slip is attached for reference). Copy of ER slips was also available with the Local Partner Organisations (LPOs) during verification field visit. All ER slips are available at CRT/N office in Kathmandu. **b.** The Regional Manager (Programme Manager) who was based in Regional office in Sarlahi to manage overall implementation of the project at field level identified the local supplier of iron parts and the ceramic parts in the districts and entered to a contractual agreement with them . The local traditional potters available in the districts supplied ceramic parts and local iron workshops supplied iron parts. There were different suppliers of these materials in different project districts. Please refer attachments: • Photographs attached for the type of non-local materials used in the stoves. • (Letter addressing to Mr. Shyam Rai Regional Manager, Lalbandi, Sarlahi for supplying of 1000 set of iron parts from Kathmandu by CRT/N central office and the transporter's bill of Rupees 1500 paid for transporting non-local materials to the site. • original bills paid for non local materials • The non-local materials stock as maintained by the CRT/N project staffs in different districts. • Excel worksheet submitted by the Regional Office to CRT/N central offie Records of all original bills with the vouchers are at CRT/N office. Supporting materials for spot check There is a standard monitoring format to be filled in by field staffs (CRT/N and Partner staffs). Few samples are attached herewith for your reference. The concept behind up to 50% spot check is to ensure quality of stove for desired efficiency. The spot checks were more than 50% of the installed stoves in the initial period as the trained promoters were still new in their job to install stoves. Once the Promoters become skilled and confident enough then there was less	

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Clarification Requests by the assessment team		
	need for frequent monitoring and therefore the percent of stoves spot check is reduced and is less than 50% in some districts. However the Regional Manager also spot- checked randomly in each district for quality assurance. Further the Carbon Expert and Team Leader from central office spot checked stoves randomly during project monitoring.	
Assessment Means of validation / verification	The total number of installed project activity cook stoves has been verified from the Master database. This has also been cross-checked from the non-local material supplied to the promoters from CRT/N and ICS account reports, 2011 and 2012. It has been verified that 14 820 project activity stoves have been installed. The agreement with APTEC consultancy for the monitoring survey of the project activity has been provided. The database for the spot-check has been provided. It has been verified during the site visit that the spot-checks are conducted by the promoter, Regional manager at regional level and as well as by CRT/N at regular intervals. The spot-checks are conducted to as a part of quality check on the operation of the project activity stoves. The issues are closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	MR	

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Inconsistency of information in the monitoring report.	IRL#1

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Clarification Requests by the assessment team		
Requirement	Consistency of information in the monitoring report and supporting evidence; paragraph 247, 252, VVS version 6.	IRL#10
Clarification Request	**Clarification Request No. 3** It has been observed during the site visit that all the stove installation and dismantling has not been photographed as mentioned in the monitoring report, vesion1. Necessary correction is needed in this regard in the monitoring report. Clarification is sort on the frequency of the stop-check and supporting evidence and records on the same. As per the PDD, "If the baseline stoves usage continues, monitoring shall ensure that the wood fuel consumption of those stoves is excluded from By, in equation 2". Justification for the old stoves which are not dismantled has not been addressed in the monitoring report in line with the registered PDD.	
Response	Some photographs are taken during monitoring visit by project staffs including partner staffs of the newly installed stove and the kitchen. However, all spot checked stoves are not photographed nor all dismantled stoves. Correction has been made in the monitoring report in this regard. The frequency of spot checks was monthly for project and partner staffs(please refer monitoring forms filled by staffs on monthly basis) and the target of up to 50% of installed stoves were to be monitored by project and partner staffs including Regional Manager and CRT central staffs to ensure quality of new stoves and dismantling of old stoves. This has been mentioned in the monitoring report. There are few households in each district who have not dismantled old stoves for social reasons and/ or for fulfilling the cooking needs during festival once or twice a year. Besides the traditional stove is also used for animal feed cooking by using agro-residues as reported by users during verification field visit and also mentioned in the survey report (APTEC 2012, 2014) As this baseline stove are not used for household cooking purpose and at the sametime the fuel-efficient stoves are used for cooking no deduction is made for the biomass consumption of	

South Asia

Clarification Requests by the assessment team		
	these stoves. This has been addressed in the monitoring report.	
Assessment Means of validation / verification	The monitoring report has been revised adequately to address that all the baseline cook stoves have not been dismantled. This is verified from stove database 2012 as maintained by CRT and Dismantling of old stove of Monitoring Survey Report October 2012, APTEC Consultancy that 66.1% of household has dismantle the old cook-stove and 33.9% of old cook stoves, though not dismantled, are only used in special occasions. Thus, there is leakage due to transfer of old stove to another location. The spot-check was conducted on monthly basis and the same has been mentioned in the revised monitoring report. This has been verified during the site visit interview and also from CRT/N database. The issues are closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	MR	

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Inconsistency in the designations in the management system of the project activity.	IRL #1
Requirement	Consistency of information in the monitoring report and supporting evidence; paragraph 252, VVS version 6.	
Clarification Request	**Clarification Request No. 4** It has been observed during the site visit that the designation of “Project manager” has been changed to “Team Leader” though there has been no change in the work profile. The monitoring report does not mention the correct designations as observed during the site visit.	

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Clarification Requests by the assessment team		
Response	Actually the **Regional Manager** based in the Regional Office Sarlahi district was the Project Manager who was responsible to look after the day to day project implementation, operation management and coordination in the project districts (please refer a memo in English and in Nepali attached in which it has been addressed the position as Reginoal Manager). So the designation of Project Manager has not been changed to other designation. Project Manager was named Regional Manager as this was a regional level project covering six districts. The Regional Manager (or Project Manager) was also supported by the Team Leader, Carbon expert, Technical Expert and Management Supervisor from CRT/N Central Office. The Team Leader at CRT central office coordinated at Central level and with Egluro, provided logistic support to the project and reported to Egluro and ensured database management etc. Actually the day to day management of the entire project was done by the Regional Manager based in the Regional office in Sarlahi district. The Team Leader only had the supporting role from centre but not the day to day implementation at field. So the Team leader is not actually the Project Manager but a Coordinator at CRT/N central level.	
Assessment Means of validation / verification	The monitoring report has been updated adequately to mention the correct designation as observed during the site visit. It has been confirmed during the site visit that there has been no change in the work profile as mentioned in the registered PDD. The issue is closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	MR	

Clarification Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Justification for the data assessment and conservativeness of the data used.	IRL #1
Requirement	Assessment of data and calculation of emission reduction, section 9.4.5, VVS version 6	

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Clarification Requests by the assessment team		
Clarification Request	**Clarification Request No. 5** The monitoring report version 1 does not clearly mention the data and parameters sourced from the survey reports of 2012 and 2014 separately. It has been verified from the survey reports that all the project activity cook stoves were in operation. In line with the registered PDD, sample size of 68 has been considered for both the surveys. Justification for not considering any factor, as mentioned in ISO 2859-1 (Part 1): Sampling Inspection Procedures, to address that certain portion of project activity stoves might not be in working condition which is not captured by both the surveys.	
Response	Data and parameters sourced from survey reports of 2012 and 2014 have been now clearly mentioned in the Monitoring report version 1. The survey report conducted by APTEC in 2012 and 2014 reported that 100% stoves are in operation. APTEC survey 2012 reported that 100% of stoves were in use throughout the year by all users whereas in 2014 survey only 97% percent users were found to be using the stoves throughout the year and the rest 3 % used stoves only for 11 months. Although as per monitoring procedure, stoves that were used more than 9 months on average per year would be eligible for emission reduction calculation. Since the project staffs were continuously and intensively monitoring project activity until December 2012 and there has been no reporting of non-operation of stoves from project staffs. Further the random sample survey, conducted by APTEC Consultancy an independent third party has reported 100 percent stoves operational. The total number of project activity stoves operating from October 2013 to March 2014 has been adjusted by the actual survey value of 97% for the emission reduction calculation. In addition 1% of the project stove has been considered as non-functioning stoves for the entire crediting period and has been deducted in the CER calculations.	
Assessment Means of validation / verification	In line with ISO 2859-1 (Part 1): Sampling Inspection Procedures, it can be considered that more than 0.4% of the population can have non-operating stoves which are not captured by the survey sample size of 68 households. The project proponent, on conservativeness, has considered 1% of the population, in addition to the survey result, having non-operating project ac-	

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Clarification Requests by the assessment team		
	tivity cook-stoves. This issue is closed.	
Adjustment on project design OR Changes in the monitoring report or supporting annexes	MR	

South Asia

Annex 2
Information Reference List

Annex 2

Information Reference List

Project title: Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal

Interviewed Persons during onsite assessment:

Name	Function	Company
Mr. Ganesh Rau Shresthe	Excutive Director	CRT/N
Mr. Hari Gopal Gorkheli	Director	CRT/N
Mr. Rajan Thapa	Egluro representative	Egluro
Mr. Subarna Kapali	Project implemtation and operation	CRT/N
MR. Gyanendra Raj Sharma	Project implemtation and operation	CRT/N
Ms. Uma Simkhada	Local Partner Organisation	Sahid Samj Smriti Club
Muna Kharel	Local Partner Organisation	Sahid Samj Smriti Club
Thaneshor Paudel	Local Partner Organisation	Sahid Samj Smriti Club
Metra Narayan Choudhary	Local Partner Organisation	Sahid Samj Smriti Club
Tara Lame	Promoter	Promoter
Bhupendra Khudra	Local Partner Organisation	Friends Nepal
Arbind Kumar	Local Partner Organisation	Local Partner Organisation
Nagdev Yadav	Chair person	Community Development and Advocacy Forum
Laxmi Bhujel	Community Development and Advocacy Forum	Community Development and Advocacy Forum
Padam Bdr. Rokaya	Community Development and Advocacy Forum	Community Development and Advocacy Forum
Arun Kumar Mahato	Himalaya Yuba Club	Himalaya Yuba Club

S.NO	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
1.	Centre for Rural Technology, Nepal and Egluro	Monitoring report of ”Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal”, version 2	13 April 2015	
2.	APTEC Consulting Pvt. (Ltd)	Monitoring survey report, dated September 2012 (without efficiency test) and July 2014 (all parameters inclusive of stove efficiency test)	September 2012 and July 2014	
3.	Kathmandu University	Stove efficiency test report: Technical monitoring of stoves promoted under “Efficient fuelwood cooking stoves in foothills and plains of central region of nepal” project, 24 Septembr 2012	24 Septembr 2012	
4.	Centre for Rural Technology, Nepal	Stove installation and dismantle database 2012 Master User-database of the project activity from 1 May 2011 to 30 April 2014	2011 - 2014	
5.	APTEC Consulting Pvt. (Ltd) and CRT/N	Contract agreement between APTEC Consulting Pvt. (Ltd) and CRT/N for conducting monitoring survey and stove technical testing	10 July 2012 and 5 June 2014	
6.	CRT/N	Pre-financial ICS (Improved cooking stove) account reports, 2011 to 2014	2011 to 2014	
7.	CRT/N	ER slip: This is signed by the household, promoter and CRT/N	1 May 2011 to 30 April 2014	
8.	CRT/N, Egluro	Training materials for manufacturers, LPOs and promoter		
9.	CRT/N	Training records of ceramic manufacturers, LPOs and promoters Review meeting report with LPOs		

S.NO	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
10.	Egluro/CRT/N	Emission reduction excel sheet, version 2	30 March 2015	
11.	Centre for Rural Technology, Nepal and Egluro	Registered PDD of ”Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal”	19 January 2011	
12.	ISO	ISO 2859-1: Sampling procedures for inspection by attributes — Part 1:Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection		
13.	International Accreditation Forum	International Accreditation Forum: Guidanceon the Application of ISO/IECGuide 62:1996: ‘General Requirements for Bodies OperatingAssessment andCertification/registration of Quality Systems’: IAF GD 2:2005		
14.	CDM-EB	AMS-II.G ver.2 – Energy efficiency measures in thermal applications on non-renewable biomass		
15.	IPCC	IPCC 2006 default values: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf		
16.	DNV	Validation report: http://cdm.unfccc.int/Projects/DB/DNV-CUK1298888484.88/view		
17.	UNFCCC	UNFCCC: E-mail confirmation for the monitoring report webhosting, dated 15 December 2014	15 December 2014	
18.	TUV SUD	Post-registration change: Temporary deviation	Approved on 3 March 2015	
19.	CDM Executive Board	*Clean Development Mechanism Validation and Verification Standard,* version 07.0		

S.NO	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
20.	CDM Executive Board	CDM Executive Board: *Clean Development Mechanism Project Standard,* version 07.0		
21.	CDM Executive Board	CDM Executive Board: *Clean Development Mechanism Project Cycle Procedure,* version 07.0	11 April 2014	
22.	APTEC consulting Pvt	Stove emission testing report, September 2013, by APTEC consulting Pvt	September 2013	

South Asia

Annex 3
Appointment Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD South Asia

CERTIFICATE OF APPOINTMENT

Mr. Murty, Eswar fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	☒	☒	☒	☒	☐

Qualification as						
Status	Validator ☒	Verifier ☒	ATL ☒	Technical Reviewer ☒	Financial Expert ☒	Technical Expert ☒
TA (s)	1.2, 3.1, 6.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries						

Technical Area
1.2_Renewables
3.1_Energy demand
6.1_Construction
13.1_Solid waste and wastewaterl

This appointment is valid until 31.01.2016 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0031/006.

Date	Signature
01/01/2015	

TÜV SÜD South Asia ● Solitaire, 4th Floor ● ITI Road, Aundh ● Pune – 411007 ● Tel.: +91 20 6684 1200 ● Fax: +91 20 6684 1261

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

South Asia

CERTIFICATE OF APPOINTMENT

Mrs. Shome, Sharmistha fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	☒	☒	☒	☐	☐

Qualification as						
Status	Validator ☒	Verifier ☒	ATL ☐	Technical Reviewer ☐	Financial Expert ☐	Technical Expert ☒
TA (s)	1.2					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries						

Technical Area
1.2_Renewables

This appointment is valid until 31.01.2016 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0095/002.

Date	Signature
01/01/2015	

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
South Asia

CERTIFICATE OF APPOINTMENT

Mr. Ranjan, Kumud fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	☒	☒	☒	☒	☐

Qualification as						
Status	Validator ☒	Verifier ☒	ATL ☒	Technical Reviewer ☒	Financial Expert ☒	Technical Expert ☒
TA (s)	1.2, 3.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries						

Technical Area
1.2_Renewables
3.1_Energy demand
13.1_Solid waste and wastewater

This appointment is valid until 31.01.2016 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0037/006.

Date	Signature
01/01/2015	

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