



Voluntary Carbon Standard Version 2007 Verification Report Template

19 November 2007

Verification Report: Thailand-VER- 2364695-2010 version 01

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Report Title:	Approved by:
Fuel-Wood Saving with Improved Cook stoves in Cambodia	Antonio Daraya
Client:	Project Title:
GERES (Groupe Energies Renouvelables et Environnement)	Fuel-Wood Saving with Improved Cook stoves in Cambodia
Summary:	
Bureau Veritas Certification has made the verification of the Fuel-Wood Saving with Improved Cook stoves in Cambodia Project. The verification scope is defined as a periodic independent and objective review and an ex-post determination of the monitored reductions in GHG emissions during defined verification period and consisted of the following three phases: i) desk review of the project design, baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The first output of the verification process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in the Verification Protocol. There are 5 CARs and 5 CLs opened and closed during the fifth verification. Taking into account this output, the project proponent revised its Monitoring Report Document and other related document. In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology :Improved Efficiency in Use of Non-Renewable Biomass Reference: Climate Care Trust, derived from proposed methodology SSC.II.G., amended by the Joanneum Institute and approved by the community of practice (HEDON, Stove and Carbon Special Interest Group) and meets the relevant VCS requirements and local legislation. Based on the information we have seen and evaluated, we confirm the following statement: Reporting period: 01/01/2010 to 31/12/2010 Emission reductions: 345,676 tCO₂e	
Work carried out by:	Number of pages:
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1. Introduction

GERES (Groupe Energies Renouvelables et Environnement) has commissioned Bureau Veritas Certification to verify the emission reductions of its VCS “Fuel-Wood Saving with Improved Cook stoves in Cambodia Project”/2/.

This report summarizes the findings of the fifth periodic verification of the project, performed on the basis of VCS – Voluntary Carbon Standard version 2007.1/6/ criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

Verification is the periodic independent review and ex post determination of the monitored reductions in GHG emissions during defined verification period. The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; further more, the periodic verification evaluates the GHG emission reductions data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission data is free of material misstatements; and verifies that the reported GHG emission reductions data is sufficiently supported by evidences, i.e. monitoring records. The verification shall consider both quantitative and qualitative information on emission reductions. Quantitative data comprises the monitoring reports submitted to the verifier by the project entity. Qualitative data comprises information on internal management controls, calculation procedures and procedures for transfer, frequency of emissions reports, review and internal audit of calculations/data transfers. The verification is based on criteria set by VCS – Voluntary Carbon Standard version 2007.1.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against VCS – Voluntary Carbon Standard version 2007.1./6/ The verification is not meant to provide any consulting towards the Client.

However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

According to the VCS, the verification also includes an independent third party assessment of the project design. In particular, the project baseline, monitoring plan and the project compliance with relevant applicable criteria of the GHG programme recognized by the VCS (e.g UNFCCC CDM baseline and monitoring methodologies) are to be validated in order to confirm that the project design, as documented, is sound and reasonable and meets the applicable criteria. While the verification of the emission reductions reported for the period 1 January to 31 December 2010 were carried out in accordance with the VCS 2007.1, the validation of the project, in particular the assessment of the baseline and monitoring methodology applied by the

project and the evaluation of the project's eligibility for the VCS, was performed according version 1 of the VCS. The validation was performed in connection to the first verification period. The project validated under version 1 of VCS can thus be grandfathered into VCS 2007.

1.3 VCS project Description

Title of project activity: Fuel-Wood Saving with Improved Cook Stoves in Cambodia
Project Participants: Project Developer: Groupe Energies Renouvelables, Environnement et Solidarités (GERES) - Cambodia
Project partner: WENETCAM (Wood Energy Network of Cambodia) and DATE (Development and Appropriate Technology)
Location of the project activity: The project is located at 9 provinces: Kandal, Kompong Speu, Prey Veng, Takeo, Siem Reap, Battambang, Kampong Cham and Kompong Chhnang, Cambodia and 1 city : Phnom Penh

The project was initiated as part of the Cambodian Fuel-wood Saving Project (CFSP), which was created to reduce the wood consumption in Cambodia in order to protect its forest resources. There are three phases of the project.

Phase I of the project began in 1997 and ended in 2001. This phase was primarily a set up phase which elaborated stove design, trained producers and developed a distribution network for the New Lao Stove (NLS).

Phase II of the project started in 2002 and was completed in January 2007. Phase II focused on developing the commercialized distribution of the stove design.

Phase III (current) phase involves scaling-up of the project to achieve large-scale dissemination, and is distinguished from the first two phases by its funding source; carbon finance. The project had been co-financed by the EU and, following the end of start-up funding, additional capital was sought in the form of carbon financing to not only complete the financing of the first two phases but also increase market penetration.

The ultimate goal of the project is to facilitate a nationwide shift from inefficient exploitation of fuel wood to sustainable and efficient biomass use.

Apart from avoiding GHG emissions by reduced wood and charcoal combustion, the project also contributes to improvements in a number of areas: Avoidance of overexploitation of the forests reduction of airborne particles emission and associated respiratory diseases; time saving in firewood collection, reduction of purchased fuel costs, and transfer of technology to indigenous people and creation of employment opportunities.

1.4 Level of assurance

The project activity is saving energy and reducing green house gases emission due to use of less wood and charcoal with Improved New Laos Stoves (NLS);

The New Lao Stove (NLS) is more efficient than the Traditional Lao Stove (TLS) because of the following advantages;

- The low pot rests to prevent heat loss characterize the NLS. In addition, the pot rests are slanted at an incline to accommodate many sizes of pots.
- The NLS grating has 37 air holes, which are good for air circulation and induce more efficient fuel-burn. The grate thickness has also been improved for more durability.
- The NLS has an improved combustion chamber, which is higher than traditional cookstove and consumes less fuel wood.
- The NLS has improved insulation and a refractory liner to prevent heat loss.
- The NLS has a metal sheet body cover for durability.

With basis in the assessment of this project, a validation statement expressing a high level of assurance is expressed because the project is materially correct and is a fair representation of the GHG data and was prepared in accordance with the related VCS Standard on GHG quantification, monitoring and reporting.

2. Methodology

Findings established during the verification may be that:

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

A corrective action requests (CAR) may be issued, where:

- i) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- ii) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii) Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants

A clarification request (CL) may be issued, where:

information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A forward action requests (FAR) may be issued, where:

The monitoring and reporting require attention and/or adjustment for the next verification period.

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures. The Verification Report shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria.

The methodologies used are:

- Voluntary Emission Reductions methodology: “Improved efficiency in use of non-renewable biomass” July 2006, Climate Care Trust./7/

Duration of verification

Preparations:	March 7-8, 2011
On-site verification:	March 16-18, 2011
Verification of subsequent records:	January 1 st December 31 st 2010
Draft report:	April 8, 2011
Final Report:	May 13, 2011

2.1 Review of project documentation

The basis for the verification has been the monitoring report from the project for the period January 1 – December 31, 2010, dated April 11, 2011 /1/ and monitoring records for the same period; version 6 of VCS-PD dated April 25, 2007 /2/ and the applied methodology for the project, Voluntary Emissions Reductions: “Improved Efficiency in Use of Non-Renewable Biomass”, July 2006 /7/. The project operator has in addition supplied the verification team with instructions from its management system as well as detailed raw data needed for verification of the required emission factors used for the verification period. The main changes during the 4th - 5th verification are as follows:

FAR 1: It was found that Retailer stove name “ Leng Chuo” located in the Kampong Cham, the monitoring activity of labelling stove number was not accordance with monitoring plan, Retailer has not recorded the numbering label sold, but the recorded base on serial number they have prepared, this activity will potential influence for deciding life time of stove.

The project proponent responded by explanation that the forms (Sellers’ Book) are not part of the monitoring plan in VCS-PD. they are part of a new, additional system introduced in October 2009 to try and capture a sample of stoves’ movements from producer to use and the part of the monitoring system has nothing to do with stove lifetime and therefore cannot have any influence on stove lifetime (stove lifetime is determined in the National User Survey). Failure of some retailers to properly fill out the form does not detract from the accuracy or effectiveness of the system because All forms can be cross checked with forms from the “Buyers’ Book” . In addition, they have developed a small instruction sheet that is provided along with the Sellers’ Books in order to encourage accurate completion of the forms details as below.

Instructions

- Complete the form when a stove is sold to an end-user
- Do not complete any part of the form before selling the stove
- As a minimum, please try to record the phone number, label number and date of sale

Therefore, the FAR is closed.

2.2 Site Visit

Detailed verification of all operational data leading up to the date of the site audit was performed during a visit at GERES Cambodia on 16-18 March 2011. During the site visit, the following personnel were interviewed or assisted the verification team:

Name	Position of GERES Cambodia
Mr. Iwan BASKORO	Country Director
Mr. HEP Sokhannaro	NLS project manger
Mr. HOEUNG Chuntheng	Technical advisor
Ms. Kimberley BUSS	CDM Analyst
Mr .CHHENG Ngov Veng	Junior CDM Analyst
Mr. SANN Saly	Monitoring Team Leader
Mr. Srey Makara	QC Team Leader
Mr. CHHEANG Tol	Testing Team Leader

These people were also present at the opening and closing meeting of the audit.

2.2.1 Audit Program

The site visit had the following program:

March 16, 2011

Team 1

Time	Activities
08:00-12:00	Opening meeting & introductory meeting Reviewing document data in GERES office in Phnom Penh
13:00-17:30	Site visit Stove producers in KampongChhnang (Vann Tola, Khoem Tim, Long Ty)
17:30-18.00	Conclusion Meeting Day I

Team 2

Time	Activities
08:00-12.00	Opening meeting & introductory meeting Reviewing document data in GERES office in Phnom Penh

13:00-18:00	Site visit Stove producers in Battambang (Leng Sophat, Khin Pum, Nhek Sakun)
17:30-18.00	Conclusion Meeting Day I

March 17, 2011**Team 1**

Time	Activities
07:00-12.00	Site visit Stove producers in Kampong Chhnang (Sun Tha, Phon Somen, Phon Sopha, Keo Chanthea, Phun Sopha, DATe, Sim Sour, Sim Seth, Ris Sarath, Dul Sam Oun, Sim Mom, Mom Samean, Kong Sophear)
13:00-18:00	Site visit Distributors, Retailers and endusers in Kampong Chhnang
17:30-18.00	Conclusion Meeting Day 2

Team 2

Time	Activities
07:00-12.00	Site visit Stove producers in Battambang (Sor Phy, Khin Sokchenda)
13:00-18:00	Site visit Distributors, Retailers and endusers in Battambang
17:30-18.00	Conclusion Meeting Day 2

March 18 , 2011**Team 1,2**

Time	Activities
08:00 -12:00	Site visit Stove producers in Phnom Penh
13:00-14:00	Reviewing document data in GERES office in Phnom Penh
14:00-15:00	Further Data checking
15:00-16.00	Conclusion Meeting

The site visit program selected 17 main producers from total 33 producers because geography barrier and logistic problems, producer sites scatter across area in Cambodia and difficultly access to all producer sites located in frontier area. However, 17 mian producers are 90.6 % of total stoves produced in 2010 representatives. In addition, stove technology is not complicated therefore wherever is same technology. Finally to ensure that all producers still produce stoves, verification team verifies production and sale records (Logbook) of all producers in GERES office and checked unit of stoves sold by producers compared with unit of stoves sold in emission calculation sheet. Including fuel receipts from financial unit for transport emission checking.

2.2.2 Review of monitoring results and verification of the correct application of monitoring methodologies

Parameter	Monitoring
Quantity of Stoves sold (Unit)	This data is collected by the monitoring staff and in turn keyed into the spreadsheet for calculation.
Traditional Fuel Consumption (Kg)	This data refer from In 2007 and 2009 a national user survey was conducted to

	analyze the fuel mix used in traditional stoves
Wood to charcoal ration (Kg/Kg)	This data uses IPCC default value for wood to charcoal conversion
Fuel Saving (%)	Household Cooking Test results demonstrate fuel savings of using a New Lao Stove by monitor mass of biomass used before and after installation of the efficiency devices
Equipment Ratio	Equipment ratio refers to the number of stoves used per family which collected from the national user survey in 2007 and 2009
Stove Shelf life (Day)	The period between the production and the usage of the NLS is determined, the Point of Sale Time (POST). This data Using the figures of the QC labels .
Stove lifetime (Month)	Data collected during the national user survey showed that of stoves users who were no longer using their first stoves
NCV biomass (MJ/Kg)	This data uses Net Calorific Value (NCV) stipulated in the IPCC guidelines 2006.
EF Biomass (tCO ₂ /TJ)	This data uses Emissions Factors stipulated in the IPCC guidelines 2006

2.2.3 Determination of the reductions in GHG emissions

Parameter	Reported Value	Verified Value
Quantity of Stoves sold (Unit)	324,418	324,418
Emission reductions: (tCO ₂ e)	345,676	345,676
Traditional Fuel Consumption (Kg/month)	Wood 37.56	Wood 37.56
	Charcoal 32.12	Charcoal 32.12
Wood to charcoal ration (Kg/Kg)	6	6
Fuel Saving (%)	Wood 20.89	Wood 20.89
	Charcoal 21.2	Charcoal 21.2
Equipment Ratio	1.6	1.6
Stove Shelf life (Day)	53.4	53.4
Stove lifetime (Year)	2.5	2.5
NCV biomass (MJ/Kg)	15.6	15.6
EF Biomass (tCO ₂ /TJ)	112	112

2.2.4 Review of additional data from other sources if appropriate.

Additional data use

Net calorific value (NCV) of biomass, wood fuel : 15.615.6 MJ/Kg from Intergovernmental Panel Climate Change (IPCC)

Emission factor of Biomass: 112 tCO₂/TJ from Intergovernmental Panel Climate Change (IPCC)

Wood to charcoal ration: 6 kg wood / kg charcoal from Intergovernmental Panel Climate Change (IPCC)

3. Verification Findings

In the following sections, the findings of the verification are stated. The verification findings for each verification subject are presented as follows.

3.1 Remaining issues, including any material discrepancy from previous verification

This is the Fifth Periodic Verification of the project.

The data presented in the monitoring report and monitoring and operational records for the entire verification period were assessed in detail by review of the detailed project documentation and production records, interviews with personnel of GERES Cambodia, relevant NLS producers, retailers and end users, collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring system. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results and verify the correct application of the monitoring methodology.

Following the site visit and submission of additional information, monitoring and operational records for the entire verification period were assessed for the period 1st January– 31st December 2010. Reconsolidation of all reported data was performed, based on a final assessment of monitoring and operational records from the period subsequent to the audit.

The previous verification raised Forward Action Requests and closing details as below

It was found that Retailer stove name “ Leng Chuo” located in the Kampong Cham, the monitoring activity of labelling stove number was not accordance with monitoring plan, Retailer has not recorded the numbering label sold, but the recorded base on serial number they have prepared, this activity will potential influence for deciding life time of stove.

The project proponent responded by explanation that the forms (Sellers’ Book) are not part of the monitoring plan in VCS-PD. they are part of a new, additional system

introduced in October 2009 to try and capture a sample of stoves' movements from producer to use and the part of the monitoring system has nothing to do with stove lifetime and therefore cannot have any influence on stove lifetime (stove lifetime is determined in the National User Survey). Failure of some retailers to properly fill out the form does not detract from the accuracy or effectiveness of the system because All forms can be cross checked with forms from the "Buyers' Book" . In addition, they have developed a small instruction sheet that is provided along with the Sellers' Books in order to encourage accurate completion of the forms details as below.

Instructions

- Complete the form when a stove is sold to an end-user
- Do not complete any part of the form before selling the stove
- As a minimum, please try to record the phone number, label number and date of sale

Therefore, the FAR is closed.

3.1.1 Factors used for project emission reduction calculations

All reported factors required by monitoring methodology of "Improved Efficiency in Use of Non-Renewable Biomass", July 2006,/7/ the parameters required for monitoring given in the VCS-PD as well as necessary management system issues were also assessed during the site visit. This included the following:

Ex-ante parameters:

- a. Fuel saving test (laboratory and actual testing);
- b. Wood to charcoal conversion;
- c. NCV of biomass;
- d. EFCO₂, biomass;

Ex-post parameters:

- a. Sales of New Lao Stoves to distributors;
- b. Stoves produced by respective producers;
- c. Stove lifespan
- d. Equipment ratio per family.

3.1.2 Monitored data for project emissions within the project boundary

The following data reported in the monitoring report from the project has been assessed in detail. When nothing else is stated, the numbers reported are found to be correctly reported.

3.1.2 .1. Quantity of New Loa Stoves sold

This amount is reported on a routine basis when complete NLS is produced. The specification is 7 types of NLS (A00, A0, A1, A2, A3, A4 and A5). The total quantity of each stove type (7 types) produced is summed-up on a monthly basis. This data is collected by the monitoring staff and in turn keyed into the spreadsheet for calculation.

During site observation, verifiers found quantity of New Loa Stoves sold in calculation of emission is not complied with buyers' book details as below

CAR 3: Found total stove sold in December 2010 (27,596) of NLS database 1st Jan-31st Dec 2010 version 03 is not complied with buyers' book in December 2010 (27,886).

However, project owner responded with details below

The correct stove sale for December 2010 is 27,886. The confusion occurred because GERES calculated the emissions reductions before all the data from December 2010 was entered into the stove producer database. GERES have now updated the database, the emissions reduction calculation spreadsheet and the Monitoring Report

Therefore verifiers checked revised Monitoring report and revised NLS database Jan 1st - Dec 31st 2010 and found that complied with stove sales logbooks for December 2010. (CAR 3 is closed)

3.1.2.2 Quantity of New Loa Stove replaced (NLS lifespan)

As part of the National User Survey (2009), the project has selected a 2.5 years as replacement of a NLS based on the disposal rate. It is conservative that the calculation of VERs is based on the latest survey of 2.5 years same as the previous verification. It is conservative that the calculation of VERs is based on the latest survey of 2.5 years. The next National user survey will conduct on 2011 which is specified in VCS-PDD

3.1.2.3 Quantity of stoves in use

The second verification a project owner used the figures of the QC labels and analyses the available data and concludes that Point of Sale Time (POST) is 53.4 days. In the interest of maintaining a conservative estimate a period of 53.4 days is adopted for the fifth verification period.

3.1.2.4 Quality of New Loa Stoves sold

From Quality control manual and Monitoring Report: Fuel Wood Saving with Improved Cook stoves in Cambodia,; 1 January – 31 December 2010 dated April 11, 2011 /1/ found main activities have been implemented and comply with Monitoring report and QC manual. However, there are some activities needed to clarify as below

CL 2 : What is the final approved process for new producers who will participate with this project ?

The client response that by setting a new log sheet in order to mark the final approval for accreditation of new NLS producers. The logsheet records including three important parts (Tracking of BPS achieved during the 5-stage QC process, Achievement of BPS of 65% or more and Issuance of certificate and date of issuance) for controlling final approved process.

Verifiers checked the new log sheet and found that it is clearly understand and reasonable to control final approved process therefore CL 2 is closed.

CL 3: How many point new producerws must score in 5 stage of quality control to pass standard before participation in the project

The client response that the Batch Production Score (BPS) of 65% or more is required to pass the QC requirements for newly trained producers. The QCM Procedures Manual has been updated to include this information

Verifiers checked the reivised QCM Procedures Manual and found that it is clearly specified standard score in document and reasonable to control quality of new producer therefore CL 3 is closed.

3.2 Project Implementation

The project is implemented and has been in operation since May 10, 2003, when the commercial manufacturing, distribution and sales of NLS commenced. The project started the management and monitoring of quantity produced by the producers and the quantity of NLS sold to the distributors as input to a Voluntary Carbon Standard project since May 10, 2003. All project activities have been implemented as per the VCS-PD version 06 date 25 April 2007. However, there are some qustions such as

CL 5 When verifiers checked number of provinces in monitoring report page 5 found that there are 9 provinces but in tabel 13 page 18 there are 10 provinces which one is correct ?

The client response that the correct number is 9 provinces and 1 city (Phnom Penh). The Monitoring Report has been updated

Verifiers checked the revised monitoring report and found that information has been corrected. Therefore CL 5 is closed.

3.3 Completeness of Monitoring

The monitoring of the project is comprehensive and in accordance with the approved monitoring methodology. Most of activities have been implemented however, there are one activity which has not been completed such as

CAR 1: Did not find evidences which new producers did dimension checking of all 20 NLS units that are not complied with NLS: Project QCM prodedure Manaul- version 3 January 2011

The client response by explaining as below

The QCM Procedures manual was unclear. From the batch of 20 stoves requested from the producers at each of the 5 stages, only 5 samples are randomly selected for dimension testing. This is because, if we requested the producers to make a set number of stoves and then checked all the stoves, the producers would ensure that the stoves produced were perfect; if they don't know which stoves we're going to randomly select for dimension checking, we're more likely to detect any complacency or technical problems from the producers. The manual has now been updated to clarify this issue

Verifiers checked the revised QCM procedure manual and found that the 5 random sampling for dimension testing is reasonable to control quality of new stove producers. The record of 5 samples for dimension testing were kept at GERES office which provided during site observation. Therefore CAR 1 is closed.

Therefore all the parameters needed for emission reduction calculations were sufficiently monitored and conservative calculations.

3.4 Accuracy of Emission Reduction Calculations

The formula used for the emission reduction calculations was found to be accurate. The following assumptions were made/implied in the calculations, and they have been substantiated with evidence from the project proponent to confirm that the assumptions made in the calculations are fair and conservative.

The following parameters (*ex-ante*) have been reviewed and revised to ensure conservativeness of assumptions:

a. Quantity of NLS sold

Emission reductions from this project activity are calculated through monitoring the monthly sales of stoves sold by producers. However, the NLS purchased by distributors are not necessarily immediately being sold to end users. It can be assumed that once the stoves reach the end users; they are utilized and emission reductions can accrue. However, emissions reductions will not accrue during the time that stoves take to reach the end user. Two points in the supply chain can affect the length of this period. Firstly, during distribution from producers to retailers, sometimes via middlemen. Secondly, the number of stove shelf days (SSD), the length of time stoves are held by the retailer before their eventual sale to the end user. To estimate the total time lapse between the moment of stove production and the point of sale GERES introduced a NLS labeling system. These labels serve as quality control but also contain a unique number. By recording the moment of which the labels are obtained by the producers and by recording the moment the stove is sold to the user, the period between the production and the usage of the NLS is determined, the Point of Sale Time (POST).

During the fifth verification period the Point of Sales Time (POST), the time between stoves being sold by the producer and utilized by end users, was used 53.4 days.

b. Fuel saving test (laboratory and actual testing)

The test was carried out both in the laboratory and in the field. The laboratory test involved the "water boiling test" in laboratory utilizing both the traditional and new Laos

stoves to verify the efficiency gained in the NLS that defined in Quality Control & Monitoring procedure manual (QCM procedure manual) /4/

c. Wood to charcoal conversion

Wood to charcoal conversion will be maintained by using the IPCC default value of 6 kg of wood per kg of charcoal.

d. NCV biomass and EFCO₂, biomass

The earlier calculation has utilized default values of IPCC 2006, i.e. NCV biomass and EFCO₂, biomass. The values has been maintained and used in its emission reduction calculations and relevant spreadsheets have been reviewed and deemed satisfactory.

Ex-post parameters:

a. Sales of New Lao Stoves to distributors

The average POST is 53.4 days, which is same assumed previously. In the interest of maintaining a conservative estimate a period of 53.4 days is maintained for the fifth verification period.

b. Stoves produced by respective producers

The quantity of stoves produced by each producer is monitored to check on the overall movement of NLS in the market.

c. Stove lifespan

According to the national user survey 2009 it is shown that the average disposable rate of the NLS is 29 months. Therefore the project has selected a 2.5 years as replacement of a NLS based on the disposal rate. It is conservative that the calculation of VERs is based on the latest survey of 2.5 years.

d. The assumption of equipment ratio per family in version 6 of VCS-PD was 1.6 which based on the recent survey.

The formula utilized for the emission reductions calculation:

For this verification the annual emission reduction (ER) is calculated as

$$ER = BE - \text{leakage}$$

$$= BE - 15\% \text{ of } BE$$

Where ;

ER = Emission Reduction in year y (t CO₂e/yr)

BE = Baseline emissions in year y (t CO₂e/yr)

After the Second verification transport emissions (tCO₂e/yr) were deducted from Emission reduction for conservative calculation.

Therefore, the annual emission reduction is

$$ER = BE - 15\% \text{ of } BE - \text{Transport Emissions}$$

Baseline emissions is calculated through the estimate total biomass that would be consumed in the absence of the project activity multiplied by the NCV biomass multiplied by the EF of biomass adopted. The approach used for the emission reduction calculation was considered to be in accordance with the applied methodology.

For Accuracy of Emission Reduction Calculations, verifier found that 3 point of Emission Reduction Calculations need to be corrected including emissions reduction adjusted for leakage and transportation emission calculation as below

CAR 2 : According to Monitoring report 1st Jan-31st Dec 2010 : date 3 rd March 2011 , Emission reduction adjusted for leakage (tCO₂e/month) of November 2010 (30,677) and December 2010 (30,804) are not inline with NLS database 1st Jan-31st Dec 2010 version 03, found that November 2010 (30,674) and December 2010 (30,790)

Client response that it was a simple copy-paste error from the emissions reduction calculation spreadsheet into the Monitoring Report. The mistake has been corrected

Verifiers found that the revised Monitoring report is in line with the NLS database Jan 1st - Dec 31st 2010. Therefore response to CAR 2 is satisfactory and the same is closed.

Finally, Transport emission calculation from project activities have 2 points need to be corrected as below

CAR 4: According to Plan for quality control and monitoring plan in January 2010 found that GERES staffs did many activities by using cars and motorcycles but there is no transportation emission report in table 23 page 35 of NLS monitoring report 1st Jan - 31st Dec 2010

The client response that In 2010, NLS QCM staff did monitoring and quality control for other GERES stove projects – not just the NLS project. It is likely that the lack of data in January has occurred because the QCM team's travel in January was attributed to a different GERES stove project that the team was working on during the same trip taken in the same vehicle. To maintain a conservative approach, the month with the highest transport emissions was identified (September) and the quantity of CO₂ emissions for that month was applied to January.

Verifiers checked that In January 2010, there are activities of NLS staff that are difficult to clarify the different GERES stove project activities therefore the highest transport emissions was identified (September) and the quantity of CO₂ emissions for that month was applied to January for maintaining conservative approach is accepted therefore response to CAR 4 is satisfactory and the same is closed

CAR 5: Found fuel price used to calculate transportation emission are not in line with reference data from Cambodia's Leading Independent Development Policy Research Institute (CDRI) for example in monitoring report November 2010 : Gasoline price (4041 Riel/liter) Deisel price (4495 Riel/liter) , December 2010 : Gasoline price (4041 Riel/liter) Deisel price (4495 Riel/liter) but in CDRI November 2010 : Gasoline price (4495 Riel/liter) Deisel price (4041 Riel/liter) , December 2010 : Gasoline price (4611 Riel/liter) Deisel price (4118 Riel/liter)

The client response that the prices for gasoline and diesel were mixed up (gasoline prices were used in diesel calculations and diesel prices were used in gasoline calculations). Furthermore, at the time of the calculation, data for December 2010 fuel prices was not available; however, this data is available now and was applied in the updated calculations In addition, fuel consumption data for January was not available, most likely because the

transport was attributed to another GERES project that the QCM team was working on during while conducting field visits for the NLS. Therefore, to maintain a conservative approach, the month with the highest transport emissions was identified (September) and the quantity of CO₂ emissions for that month was applied to January.

Verifiers checked the revised gasoline and diesel prices found that to they are in line with reference data (CDRI). The transportation emission calculation was checked and found that it is consistent with corrected gasoline and diesel prices therefore response to CAR 5 is satisfactory and the same is closed

3.5 Quality of Evidence to Determine Emission Reductions

All necessary documentations are collected, referenced and aggregated and are easily accessible in hard-copy or electronic format which are identified in QCM procedure manual /4/. However, there is one point need to be clarified as below

CL 4: Where handwriting document , 5 stage scoring sheet of new procedure, and fuel receipt for monitoring activities are kept and Who are in charge of these document ?

The client response that the filing procedure in the QCM Procedures Manual (Table 7) has been updated to include the location of these documents and the staff in charge of these documents

Verifier found that the important documents relevant with project as request in CL 4 are included in a revised QCM procedure manual therefore response to CL 4 is satisfactory and the same is closed.

Therefore, all points were verified in the course of this verification. The quality data and evidences to emission reductions were cross-checked and found that they are correctly and accurately applied in calculating the total emission reductions and the emission reduction calculation is accurate and conservative.

3.6 Management and Operational System

The project owner has applied some management system to the fire wood and charcoal saving project. Relevant monitoring and measurement procedures have been documented and relevant employees have been trained to ensure stipulated procedures are adhered to. The quality assurance of data management has been improved with sufficient checking after each entry on a monthly basis and approved data will be password protected to prevent any unintended edition. However, there is one question about training courses of new staff . CL 1 : Which training courses should train for new staffs of project (testing and monitoring staff) and which evidences to be confirm that staffs will have the skills or knowledge before conducting the field visits ?

The client response that currently, new QCM staff undergo training in one of 3 areas, depending on their position: 1. Performance QC, 2. Physical QC, 3. Monitoring.

The training for each of the 3 fields includes both a classroom component and a field component. The classroom components consist of power point presentations and the field component involves the new staff practicing their new skills in the field under the supervision of their Team Leader. The QCM Procedures Manual has been updated to include staff training. In addition, attendance sheets have been introduced to prove that the new staff attend the classroom and field trainings relevant to their position

Verifier checked the revised QCM manual and found that the training system including training records forms for new staff had clearly stated and ensured staffs will have skills or knowledge before conduction the field visits. Therefore the response to CL 1 is satisfactory and the same is closed.

4. Verification conclusion

Bureau Veritas Certification has made the fifth periodic verification of the VCS Fuel-Wood Saving with Improved Cook stoves in Cambodia, GERES (Groupe Energies Renouvelables et Environnement) The verification was performed on the basis of VCS 2007.1 criteria, Monitoring Methodology is Improved Efficiency in Use of Non-Renewable Biomass Reference: Climate Care Trust, derived from proposed methodology SSC.II.G., amended by the Joanneum Institute and approved by the community of practice (HEDON, Stove and Carbon Special Interest Group), host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting. The management of GERES (Groupe Energies Renouvelables et Environnement) is responsible for the preparation of the GHG emission reductions data and the reported GHG emission reductions of the project, on the basis set out within the project Monitoring and Verification Plan, indicated in the final VCS-PD version 6, 25 April 2007. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the project. Appropriate procedures for maintaining the confidentiality and safe custody of the validation or verification documentation and for retaining them for a period sufficient to meet the need of the clients, the responsible parties, the GHG programmes to which they subscribe, and in accordance with legal and professional requirements of record retention have been established.

Bureau Veritas Certification verified the VCS Monitoring Report dated on 11/04/2011 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as planned and described in the VCS-PD. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately The monitoring system is in place and the project is generating GHG emission reductions (VCUs).

Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emission reductions, reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 01/01/2010 to 31/12/2010.

Verification emission in the above reporting period:

Baseline Emissions: 406,686 tCO₂e
Project Emissions: 7.14 tCO₂e
Leakage: 61,003 tCO₂e
Emission Reductions: 345,676 tCO₂e (VCUs)

May 13, 2011



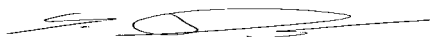
Antonio Daraya
Internal Technical Reviewer



Hoang Tran
Team Leader & Lead verifier



Nattapat Teeranantani
Team member



Pongsakorn Sa-ngapon
Team member

REFERENCES

Documents provided by the project participants that relate directly to the project:

- /1/ Monitoring Report: Fuel Wood Saving with Improved Cook stoves in Cambodia,
: 1 January- 31 December 2010 Dated : April 11, 2011
- /2/ VCS Project Description (VCS-PD): Fuel Wood Saving with Improved Cook stoves in Cambodia, version 6.0 of 25 April 2007.
- /3/ Additional data: Project Spreadsheet (NLS database January 1st -December 31st 2010. V4.xlsx), Producers' production and sales data, transport emissions spreadsheet and Other supporting documents (Training attendance form, Training evaluation form).
- /4/ Quality Control & Monitoring procedure manual version 3: March 2011 (QCM procedure manual)

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

- /5/ Voluntary Carbon Standard, version 1, March 2006.
- /6/ Voluntary Carbon Standard, 2007.1, 18 November 2008.
- /7/ Voluntary Emission Reductions methodology: "Improved efficiency in use of non renewable biomass" July 2006, Climate Care Trust.
<http://cdm.unfccc.int/UserManagement/FileStorage/RX9G3AESH7GO0QVR07CI0DV0AJ02VY>
- /8/ Production and Sales Reports Log books (daily), 1 January -31 December 2009.
- /9/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>.
- /10/ Monitoring Report: Fuel Wood Saving with Improved Cook stoves in Cambodia, version 3 : 1/1/2009 - 31/12/20 09 dated 22 April 2010
- /11/ Verification and Certification report , Fuel wood saving with improved cookstoves in Cambodia , May 10, 2003 -January 9,2007 , Det Norske Veritas, report No.2007-1017 revision no.00
- /12/ Verification and Certification report , Fuel wood saving with improved cookstoves in Cambodia , January 10,2007-January 9,2008, Det Norske Veritas, report No.2008-1011 revision no.01
- /13/ Verification and Certification report , Fuel wood saving with improved cookstoves in Cambodia , 10/1/2008- 31/12/2008, Bureau Veritas Certification Holding SAS.
- /14/ Verification and Certification report , Fuel wood saving with improved cookstoves in Cambodia , 1/1/2009- 31/12/2009, Bureau Veritas Certification Holding SAS.

Appendix 1

Verification Protocol

Verification Protocol

TABLE 1 TABLE 1 VERIFICATION REQUIREMENTS BASED ON THE VOLUNTARY CARBON STANDARD 2007.1

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project design document			
a Are all physical features of the proposed VCS project activity, proposed in the registered PD, in place?	Yes, They are. All activities and physical features in registered PD in places, Verifieres conducted the site observation on 16 th – 18 th March 2011. We found that stove producer activities , quality control system and type of stoves are inline with registered PD and Monitoring report 1 st Jan-31 st Dec 2010 including (1) The specification of NLS (7 types: A00, A0, A1, A2, A3, A4 and A5). 33 producers produce NLS. There are 6 new producers have participated in the activities in year 2010. (2) The areas where the NLS have been disseminated (10 different regions/states/provinces/city): Phnom Penh, Kandal, Kampot, Pursat , Prey Veng, Takeo, Siem Reap, Battambang, Kampong Cham and Kompong Chhnang. (3) QCM unit consists of three mains activities : Physical QC, Performance QC& Test and Monitoring.	OK	OK
b Have the project participants operated the proposed VCS project activity as per the registered PD?	Yes. All activities have operated by Groupe Energies Renouvelables, Environment et Solidarites (GERES)-Cambodia is project participant who registered	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	VCS-PD. Stove producers have operated production activities and GERES ' QCM staffs have monitored quality and quantity of NLS closely. Verification teams visited GERES office for checking document and records control system including emission reduction calculation . We conducted the site observation to stove producers for checking production activities , buyer 's books and checked stove dimension found that they are in line with VCS-PD and Monitoring report.		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
c Was an on-site visit conducted?	Yes, during March 16 th – 18 th , 2011	OK	OK
d If not, justify the rationale of the decision.	NA	-	-
e Does the implementation or operation of VCS project conform with the description contained in the registered PD?	Yes. Regarding to Site Visit during March 16 th – 18 th , 2011. All producers from sample regions/states/provinces (Kampong Chhnang and Battambang) which produced more than 90% of stove sales in year 2010 and found that they are still producing the NLS and sale to retailer / end user. The quantity of stoves sold is still recording in Stove Selling Logbooks and summarized into IT system by Geres staffs every month. The quality of stoves which Monitoring by monitotng staff for stove efficiency every four months. Data management procedure	OK	OK
f If not, justify the rationale of the decision.	Not applicable	-	-
2 Compliance of the monitoring plan with the monitoring methodology			
a Is the validated monitoring plan in accordance with the approved methodology applied by the proposed VCS project activity?	Yes. Refer to monitoring report 1 st Jan – 31 st Dec 2010 and National Cookstove User Survey 2009 that consistently relevant to the monitoring requirement in the PDD.	OK	OK
b Are there any monitoring aspects of the project activity that are not specified in the methodology, particularly in the case of small-scale methodologies (e.g. additional monitoring parameters, monitoring frequency and calibration frequency)?	No.	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
3 Compliance of monitoring with the monitoring plan			
a Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	Yes. Regarding to Monitoring Report 1st Jan – 31st Dec 2010, National Cookstove User Survey (2009) and Site Visit during March 16th – 18th, 2011, most of monitoring plan had been implemented and followed by the project participants both Ex-Ante and Ex-Post such as Quantity of Stoves sold record, Traditional Fuel Consumption, Fuel Saving, Equipment Ratio, Stove Shelf Life and Leakage. -However, verifiers did not find evidences which new producers did dimension checking of all 20 NLS units that are not complied with NLS : Project QCM prodedure Manual- version 3 january 2011 CAR 1 is satisfactory and the same is closed. Please see details in tabel 2	CAR 1	OK
b Have all parameters stated in the monitoring plan, the applied methodology and relevant VCS Executive Board decisions been sufficiently monitored and updated as applicable, including:	-	-	-
i Project emission parameters?	Verification teams checked buyers ' book of all producers during site observation found that producers completely		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	recorded information required by VCS-PD and Monitoring report. However, when we compared information from producers with emission reduction calculation data at GERES 's office verifiers found that -Accorrding to Monitoring report 1st Jan-31st Dec 2010 : date 3 rd March 2011 , Emission reduction adjusted for leakage (tCO2e/month) of November 2010 (30,677) and December 2010 (30,804) are not inline with NLS database 1st Jan-31st Dec 2010 version 03, found that November 2010 (30,674) and December 2010 (30,790) CAR 2 is satisfactory and the same is closed. Please see details in tabel 2 -Found total stove sold in December 2010 (27,596) of NLS database 1st Jan-31st Dec 2010 version 03 is not complied with buyers' book in December 2010 (27,886) CAR 3 is satisfactory and the same is closed. Please see details in tabel 2	CAR 2 CAR 3	OK OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
ii Baseline emission parameters?	Same as CAR 2&3	Refer to CAR 2&3	OK
iii Leakage parameters?	Regarding to Monitoring Report 1st Jan – 31st Dec 2010, leakage deduction was 15% refer to the proposed methodology. F = Factor to convert litres of fuel to tonnes of fuel (diesel= 1,185 litres/ tonne , gasoline = 1,350 litres/ tonne) which complied with IEA/ OECD, 2004, <i>Energy Statistics Manual</i>. NCV = Net Calorific Value in TJ/t (diesel = 0.0434 TJ/t , gasoline = 0.0448 TJ/t) which complied with IEA/ OECD, 2004, <i>Energy Statistics Manual</i>. EF = Emissions Factor in t/TJ (diesel = 69.3 TJ/t , gasoline = 74.1 TJ/t) which complied with IPCC, 2006, <i>2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 3: Mobile Combustion</i> For transport emission was proposed base on actual fuel consumption in year 2010 in term of cars & motorcycles usage for NLS project monitoring activities. Verifier found that -According to Plan for quality control and monitoring plan in January 2010 found that GERES staffs did many activities by using cars and motorcycles but there is no transportation emission report in table 23 page 35 of NLS monitoring report 1st Jan - 31st Dec 2010 CAR 4 is satisfactory and the same is closed. Please see details in tabel 2	CAR 4	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	From diesel and gasoline's prices sampling on November and December, 2010 found that -Found fuel price used to calculate transportation emission are not in line with reference data from Cambodia's Leading Independent Development Policy Research Institute (CDRI) for example in monitoring report November 2010 : Gasoline price (4041 Riel/litter) Deisel price (4495 Riel/litter) , December 2010 : Gasoline price (4041 Riel/litter) Deisel price (4495 Riel/litter) but in CDRI November 2010 : Gasoline price (4495 Riel/litter) Deisel price (4041 Riel/litter) , December 2010 : Gasoline price (4611 Riel/litter) Deisel price (4118 Riel/litter) CAR 5 is satisfactory and the same is closed. Please see details in tabel 2	CAR 5	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	Yes. Refer to section D.5 of the VCS- PD that defined responsibilities and authorities and structure and activities of the QCM unit in Monitoring report . There are three activities in QCM unit : 1.Physical QC 2. Performace QC& Test and Monitoring. Verifier teams interviewed with QCM staffs found that they are understand in quality control process. In addition, we checked qulifications of QC, Monitoring and testing staff (Mr. Neang Vanna, Mr. Ly Math, Mr. Kem Tim and Vann Thin) with their CV found that are complied with Job description. However, when we checked training materials and details of curriculum for new staffs found that there is no details in procedure therefore, Which training courses should train for new staffs of project (testing and monitoring staff) and which evidences to be confirm that staffs will have the skills or knowledge before conducting the field visits. CL 1 is satisfactory and the same is closed. Please see details in tabel 2	CL 1	OK
c Are equipment controlled and calibrated in accordance with the monitoring plan?	NA	-	-
d. Are monitoring results consistently recorded as per approved frequency?	Yes, they are. During site observation March 16th – 18th, 2011, verifiers checked document and records of monitoring results and found that Frequency of stove dimension tests is once every four months for each producer.	OK	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	Frequency of Shrinkage factor test is once per year, according to when producers change their clay supply Frequency of adapted water boiling tests (AWBT) is once every four months for each producer. Frequency of household fuel consumption tests (HFCT) is twice per year (once in rainy season and once in dry season). Frequency of data collection and collation on stove sales and movement of stoves through the supply chain (monitoring) is once per month (every accredited NLS producer at the end of the month). All activities above are in line with Quality control and monitoring procedure manual		

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
e. Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	Yes, they have. Regarding to Site Visit during March 16th – 18th, 2011, verifiers checked the Geres's records showed as all quality assurance and quality control procedures been applied in accordance with the monitoring plan such as Stove dimension tests, Shrinkage factor test, Adapted water boiling tests (AWBT) , Household fuel consumption tests (HFCT) and Data collection and collation on stove sales and movement of stoves through the supply chain (monitoring). However, the details for final approved process and score of 5 stage in quality control for new producers is not clear therefore verifier issued CL as below - What is the final approved process for new producers who will participate with this project ? CL 2 is satisfactory and the same is closed. Please see details in tabel 2 - How many point new producerws must score in 5 stage of quality control to pass standard before participation in the project ? CL 3 is satisfactory and the same is closed. Please see details in tabel 2	CL 2 CL 3	OK OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
4 Assessment of data and calculation of greenhouse gas emission reductions			
a Is a complete set of data for the specified monitoring period available? (If no, i.e., only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the validator shall make the most conservative assumption theoretically possible in finalizing the verification report).	Yes, a complete set of data for the monitoring period 1st Jan-31st 2010 is available for example - Stove producers' log book - Monitoring activities records - Quality control testing results (HFCT,AWBT) - Fuel receipts and fuel prices reference source Other data such as types of cookstove use , life time of cookstove and cookstove user's satisfaction refer to National Cookstove User Survey (2009) because of next national cookstove user survey will conduct on the end of year 2011 as specified in VCS-PD.	OK	
b Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	Yes, during March 16th – 18th 2011, verifiers did the cross checking with producer records (production quantity for each kind of stove, selling quantity), quality control records (recorded by quality control staff that including stove production control parameter such as diameter, number of holes), Adapted Water Boiling Test, Household Cooking Test and fuel receipt found that information has provided and could be cross-checked with reference sources however , some document and records will not to be list in document control system so verifiers raise CL : Where handwriting document ,5 stage scoring sheet of new procedure, and fuel receipt for monitoring activities are kept	CL 4	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
	and Who are incharge of these document ? CL 4 is satisfactory and the same is closed. Please see details in tabel 2 In addition, when verifiers checked number of provinces in monitoring report page 5 found that there are 9 provinces but in tabel 13 page 18 there are 10 provinces which one is correct ? CL 5 is satisfactory and the same is closed. Please see details in tabel 2	CL 5	OK

CHECKLIST QUESTION	COMMENTS	Draft Concl	Final Concl
c Have calculations of baseline emissions, proposed VCS project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	No. the calculation of baseline emission and leakage are not in line with reference data as identify in CAR 2,3,4,5 CAR 2,3,4, 5 are satisfactory and the same are closed. Please see details in tabel 2	Refer to CAR 2,3,4,5	OK
d Have any assumptions used in emission calculations been justified?	Yes. All assumptions used in emission calculation have been justified such as Household cooking Test ,The post of sale time (POST) , Equipment raito, Stove lifetime, NCV biomass, EF biomass and quality of stoves or stove efficiency which are in line with official reference data source.	OK	OK
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	All emission factors IPCC default values and other reference values have been checked and found that are correctly applied.	OK	OK

Table 2 Resolution of Corrective Action / Forward Action / Clarification Requests.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CAR 1: Did not find evidences which new producers did dimension checking of all 20 NLS units that are not complied with NLS : Project QCM prodedure Manual- version 3 january 2011	3-a	The QCM Procedures manual was unclear. From the batch of 20 stoves requested from the producers at each of the 5 stages, only 5 samples are randomly selected for dimension testing. This is because, if we requested the producers to make a set number of stoves and then checked all the stoves, the producers would ensure that the stoves produced were perfect; if they don't know which stoves we're going to randomly select for dimension checking, we're more likely to detect any complacency or technical problems from the producers. The manual has now been updated to clarify this issue (see attached document "QCM Procedures_v04_March 2011" section A2.4).	The revised QCM procedure manual was checked and found that the 5 random sampling for dimension testing is reasonable to control quality of new stove producers. The 5 record samples for dimension testing were kept at GERES office which provided during site obbervation. Response to CAR 1 is satisfactory and the same is closed.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CAR 2 : According to Monitoring report 1st Jan-31st Dec 2010 : date 3 rd March 2011 , Emission reduction adjusted for leakage (tCO ₂ e/month) of November 2010 (30,677) and December 2010 (30,804) are not inline with NLS database 1st Jan-31st Dec 2010 version 03, found that November 2010 (30,674) and December 2010 (30,790)	3-b-i	This was a simple copy-paste error from the emissions reduction calculation spreadsheet into the Monitoring Report. The mistake has been corrected (please see attached document "KBS_11Apr11_Monitoringreport_V8" Appendix 1).	The revised Monitoring report have checked and found that is in line with the NLS database Jan 1st - Dec 31st 2010 Response to CAR 2 is satisfactory and the same is closed.
CAR 3 : Found total stove sold in December 2010 (27,596) of NLS database 1st Jan-31st Dec 2010 version 03 is not complied with buyers' book in December 2010 (27,886)	3-b-i	The correct stove sales for December 2010 is 27,886. The confusion occurred because we calculated the emissions reductions before all the data from December 2010 was entered into the stove producer database. We have now updated the database, the emissions reduction calculation spreadsheet and the Monitoring Report (please see attached documents "KBS_11Apr11_Monitoringreport_V8" and "NLS database Jan 1st - Dec 31st 2010.v4").	The revised Monitoring report and revised NLS database Jan 1st - Dec 31st 2010 were checked and found that complied with stove sales logbooks for December 2010 . Response to CAR 3 is satisfactory and the same is closed.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CAR 4: According to Plan for quality control and monitoring plan in January 2010 found that GERES staffs did many activities by using cars and motorcycles but there is no transportation emission report in table 23 page 35 of NLS monitoring report 1st Jan - 31st Dec 2010	3-b-iii	In 2010, NLS QCM staff did monitoring and quality control for other GERES stove projects – not just the NLS project. It is likely that the lack of data in January has occurred because the QCM team's travel in January was attributed to a different GERES stove project that the team was working on during the same trip taken in the same vehicle. To maintain a conservative approach, the month with the highest transport emissions was identified (September) and the quantity of CO2 emissions for that month was applied to January.	In January 2010, there are activities of NLS staff that are difficult to clarify the different GERES stove project activities therefore the highest transport emissions was identified (September) and the quantity of CO2 emissions for that month was applied to January for maintaining conservative approach is accepted Response to CAR 4 is satisfactory and the same is closed.
CAR 5: Found fuel price used to calculate transportation emission are not in line with reference data from Cambodia's Leading Independent Development Policy Research Institute (CDRI) for example in monitoring report November 2010 : Gasoline price (4041 Riel/liter) Diesel price (4495 Riel/liter)	3-b-iii	The prices for gasoline and diesel were mixed up (gasoline prices were used in diesel calculations and diesel prices were used in gasoline calculations). Furthermore, at	The gasoline and diesel prices were corrected to in line with reference data (CDRI) . The transportation emission calculation was checked and found that it is consistent with corrected gasoline and diesel prices.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
, December 2010 : Gasoline price (4041 Riel/litter) Deisel price (4495 Riel/litter) but in CDRI November 2010 : Gasoline price (4495 Riel/litter) Deisel price (4041 Riel/litter) , December 2010 : Gasoline price (4611 Riel/litter) Deisel price (4118 Riel/litter)		the time of the calculation, data for December 2010 fuel prices was not available; however, this data is available now and was applied in the updated calculations In addition, fuel consumption data for January was not available, most likely because the transport was attributed to another GERES project that the QCM team was working on during while conducting field visits for the NLS. Therefore, to maintain a conservative approach, the month with the highest transport emissions was identified (September) and the quantity of CO2 emissions for that month was applied to January (see response to CAR 4 and attached documents "VENG_11Mar23_Transport emisisions by NLS project in 2010_v2" and "NLS database Jan 1st - Dec 31st 2010.v4").	Response to CAR 5 is satisfactory and the same is closed

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
CL 1: Which training courses should train for new staffs of project (testing and monitoring staff) and which evidences to be confirm that staffs will have the skills or knowledge before conducting the field visits ?	3-b-iv	Currently, new QCM staff undergo training in one of 3 areas, depending on their position: 1. Performance QC, 2. Physical QC, 3. Monitoring. The training for each of the 3 fields includes both a classroom component and a field component. The classroom components consist of power point presentations (provided to BV during the field visit) and the field component involves the new staff practicing their new skills in the field under the supervision of their Team Leader. The QCM Procedures Manual has been updated to include staff training (see attached document "QCM Procedures_v04_March 2011" section D) Attendance sheets have been introduced to prove that the new	The revised QCM manual was checked and found that the training system including training records forms for new staff had clearly stated and ensured staffs will have skills or knowledge before conduction the field visits. Response to CL 1 is satisfactory and the same is closed.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
		staff attend the classroom and field trainings relevant to their position (see attached files" KBS_2011Mar23_Attendance sheet -- new staff training_Monitoring_classroom.v1", "KBS_2011Mar23_Attendance sheet -- new staff training_Monitoring_field.v1", "KBS_2011Mar23_Attendance sheet -- new staff training_performance QC classroom.v1", "KBS_2011Mar23_Attendance sheet -- new staff training_performance QC field.v1", "KBS_2011Mar23_Attendance sheet -- new staff training_physical QC classroom.v1" and "KBS_2011Mar23_Attendance sheet -- new staff training_physical QC field.v1").	

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
		Evaluation forms have been introduced to allow Team Leaders to assess new staff's capabilities before allowing them to conduct field visits autonomously (see attached documents "KBS_2011Mar23_Evaluation sheet -- new staff training_Monitoring.v1", "KBS_2011Mar23_Evaluation sheet -- new staff training_Performance QC.v1" and "KBS_2011Mar23_Evaluation sheet -- new staff training_Physical QC.v1").	
CL 2 : What is the final approved process for new producers who will participate with this project ?	3-c-ii	A new log sheet (see attached document "KBS_2011March23_Approval sheet_5-stage QC for new producers.v1") has been introduced in order to mark the	The revised QCM manual and a new log sheet were checked and found that they are suitable for final approved process for new producers. Response to CL 2 is satisfactory and the same is closed.

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
		final approval for accreditation of new NLS producers. The logsheet records the following: • Tracking of BPS achieved during the 5-stage QC process • Achievement of BPS of 65% or more • Issuance of certificate and date of issuance	
CL 3 : How many point new producerws must score in 5 stage of quality control to pass standard before participation in the project	3-c-ii	A Batch Production Score (BPS) of 65% or more is required to pass the QC requirements for newly trained producers. The QCM Procedures Manual has been updated to include this information (see attached document "QCM Procedures_v04_March 2011" section A2.4).	The batch production score (BPS) is clearly indentified in the revised QCM procedure. Response to CL 3 is satisfactory and the same is closed.
CL 4: Where handwriting document ,5 stage scoring sheet of new procedure, and fuel receipt for monitoring activities are kept and	4-b	The filing procedures in the QCM Procedures Manual (Table	The important documents relevent with project as request in CL 4 are included in a revised QCM

Draft report clarifications and corrective action requests by verification team	Reference to checklist question in Periodic Verification Checklist	Summary of project owner response	Verification team conclusion
Who are incharge of these document ?		7) has been updated to include the location of these documents and the staff in charge of these documents (see attached document "QCM Procedures_v04_March 2011" section C2).	procedure manual Response to CL 4 is satisfactory and the same is closed.
CL 5: When verifiers checked number of provinces in monitoring report page 5 found that there are 9 provinces but in tabel 13 page 18 there are 10 provinces which one is correct ?	4-b	The correct number is 9 provinces and 1 city (Phnom Penh). The Monitoring Report has been updated (see attached document "KBS_11Apr11_Monitoringreport_V8" section B).	The revised monitoring report was checked and found that information had been updated correctly. Response to CL 5 is satisfactory and the same is closed.

Appendix 2- Competence of the Verification Team

Mr. Antonio Daraya – Bureau Veritas Certification Internal Technical Reviewer - is graduated in Chemical Engineering with a very large experience in Industrial and Environmental management in several industrial fields. He is ISO 9001:2000, ISO 14001:2004 and OHSAS 18001 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Antonio is qualified as Lead Verifier GHG – Green House Gases.

Mr. Hoang Tran – Bureau Veritas Certification Team Leader - Bachelor degree in Environmental Engineering and management, He has experiences in Quality, and environmental Management system auditing, He has 1 years chemistry of in Paint manufacturing factories, and 3 years ISO of in automotive manufacturing factories , He has received the training and obtained the certificates of EMS ISO14001QMS 9001 lead auditor , Greenhouse Gas Accounting Based on ISO14064 and CDM lead verifier and He has involved in 15 CDM project validation/verification activities.

Mr.Nattapat Teeranantanid - Bureau Veritas Certification Team member. Bachelor degree in Environment Engineering (Honor and rank 1st in class) - He has 9 years of environmental consultant and engineering experience such as Wastewater treatment plants design and operating, Hazardous waste treatment design, Air pollution control, Environmental Impact Assessment study, Pollution control management study, Energy saving projects and others. He has received the training and obtained the certificates of EMS ISO14000 lead auditor , CDM lead verifier , Greenhouse Gas Accounting Based on ISO14064:2006 course and Energy Management Systems (EN 16001 & ISO 50001) courses . He has involved in 8 CDM/VCS project validation/verification activities.

Mr.Pongsakorn Sa-ngapon - Bureau Veritas Certification Team member - Bachelor degree in Industrial Chemistry, Master degree in Environmental Science and Master degree in Business Administration. He has 3 years of QA/QC in manufacturing factories, 4 years of Environmental Impact Assessment (EIA) in consultant firms and 5 years of Environmental Management in 2 x 700 MW Coal Fired Power Plant. He has received the training and obtained the certificates of EMS ISO14001:2004 lead auditor and CDM lead verifier, Greenhouse Gas Accounting Based on ISO14064:2006 course and Energy Management Systems (EN 16001 & ISO 50001) courses. in validation and verification process of 6 CDM and 1 VCS projects.