GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Final

"Gyapa Improved Stoves in Ghana"
in
Ghana

Monitoring period: 01/01/2012 to 31/05/2013

Report N°2013DG12MD

Revision N°2.3 Aa

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Project Title:	Country:	Estimated VERs (tCO2e):
Gyapa Improved Stoves in Ghana	Ghana	354,340
GS Registration Reference N°:	**Monitoring period:**	**Certified VERs (tCO2e):**
GS No. 407	01/01/2012 – 31/05/2013	339,585
Client:	**Client contact:**	
RELIEF INTERNATIONAL	Ann KOONTZ	
Report No.:	**Revision:**	**Date of this report:**
2013DG12MD	2.3 Aa	15/04/2014
Approved by (Final Report – Authorized officer signing for the DOE):		**Date of approval:**
Laura Severino		15/04/2014

Methodology

Number:	Version:	Title:	Scale	SS(s):
GS Meth	V.01	Improved Cook-Stoves and Kitchen Regimes	Large	3

RINA Services S.p.A. (RINA), commissioned by RELIEF INTERNATIONAL, has verified the greenhouse gas emission reductions reported for the project activity "Gyapa Improved Stoves in Ghana" in Ghana, GS Registration Reference N° 407, for the period 01/01/2012 to 31/05/2013, with regard to the relevant requirements for GS activities. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable GS VER requirements, which refer to GS rules, in order to be certified.

The project was validated by TUV Rheinland (validation report No. 2009-9229 revision 03) and it was registered on 15/06/2010 under the GS registration reference N°4 07.

The GHG emission reductions were calculated on the basis of the approved Gold Standard methodology version 01 Improved Cook-Stoves and Kitchen Regimes and the monitoring plan included in the registered Project Design Document, version 4 of 10/06/2010.

In conclusion, it is RINA's opinion that the project activity "Gyapa Improved Stoves in Ghana", in "Ghana", as described in the Monitoring Report version 09 of 02/04/2014, meets all relevant requirements for GS/CDM activities and all relevant host Party criteria and correctly applies the GS baseline and monitoring methodology Improved Cook-Stoves and Kitchen Regimes version 01. Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/01/2012 to 31/05/2013 amount to 339,585tCO_{2e}.

Baseline Emissions	1,825,730 tCO_{2e}
Project Emissions	1,486,144 tCO_{2e}
Leakage	0 tCO_{2e}
Net GHG emission reductions/removal	339,585 tCO_{2e}

Work carried out by:
Rita VALOROSO
Luca CIDONIO

☒ No distribution without permission from the Client or organizational unit responsible
☐ Strictly confidential
☐ Unrestricted distribution

Work verified by (Final Report)
Laura Severino

Keywords:
Climate Change, Kyoto Protocol, Verification, Gold Standard

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CDM-PCP	Clean Development Mechanism Project Cycle Procedure
CDM-PS	Clean Development Mechanism Project Standard
CDM-VVS	Clean Development Mechanism Validation and Verification Standard
CH_4	Methane
CR	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
GHG(s)	Greenhouse gas(es)
GS	Gold Standard
GWP	Global Warming Potential
KS	Kitchen Survey
KT	Kitchen Test
IPCC	Intergovernmental Panel on Climate Change
LSC	Large scale
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NA	Not Applicable
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SDI	Sustainable Development Indicator
SS(s)	Sectoral Scope(s)
SSC	Small Scale
UNFCCC	United Nations Framework Convention on Climate Change
VERs	Verified Emission Reduction(s)

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Table of Contents Page

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

1 INTRODUCTION

RELIEF INTERNATIONAL has commissioned RINA to carry out the verification and certification of emission reductions reported for the registered “Gyapa Improved Stoves in Ghana” project in Ghana, GS Registration Reference N° 407, for the period 01 /01/2012 to 31/05/2013.

This report summarizes the findings of the verification of the project, performed on the basis of GS VER requirements, which refer to CDM rules, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the verification is to have an independent review ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered GS project activity during a defined monitoring period and to monitor the impact of project activity on sustainable development, throughout the monitoring of the non-neutral Sustainable Development Indicators and moreover to monitor all the mitigation and compensation measures put in place. Certification is the written assurance by the DOE that, during a specific time period, a proposed GS project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified and that all the defined Sustainable Development Indicators to be monitored have been monitored according to the sustainability monitoring plan and that all the mitigation measures forecast have been correctly and effectively implemented.

The objective of this verification/certification was to verify and certify emission reductions and effective implementation of the monitoring of sustainable development indicators and mitigation measures, reported for the “Gyapa Improved Stoves in Ghana” project in Ghana for the period 01/01/2012 to 31/05/2013.

1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence;
- to evaluate whether all the mitigation measures have been effectively put in place according to the monitoring plan and that all the sustainable development indicators have been correctly monitored.

Verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable GS VER requirements which refer to CDM rules, in order to be certified.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

The GS criteria refer to GS requirements, GS Toolkit and supporting annexes.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

2 METHODOLOGY

Verification was conducted using RINA procedures in line with the requirements specified in the GS Requirements, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

The verification consisted of the following three phases:

- Desk review;
- On-site assessment:
- The resolution of outstanding issues and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.1 Desk Review

The monitoring report, version 09 of 02/04/2014 /02/, the emission reduction calculations provided in the form of a spreadsheet, SalesERs-Gyapa-2012+Q1-13_Confidential-140205_2.24.14.xls of 25/02/2014 /18/, were assessed as part of the verification. In addition, the Project Design Document (PDD) /01/, in particular as regards the baseline estimations and the monitoring plan, the previous verification reports revision 04 of 15/06/2011 /08/ and verification report revision 04 of 19/09/2012 /09/ and the validation report, revision No. 2009-9229 revision 03 of 27/04/2010 /20/ for the project, were reviewed.

The following table lists the documentation that was reviewed during the verification.

/01/	ClimateCare Limited: CDM-PDD for project activity Gyapa Improved Stoves in Ghana, version 4 of 10/06/2010
/02/	ClimateCare Limited: Monitoring report for project activity Gyapa Improved Stoves in Ghana, version 01 of 15/07/2013, version 02 of 15/08/2013, version 03 of 15/08/2013, version 04 of 20/09/2013, version 06 of 28/10/2013 version 08 of 24/02/2014 and latest version 09 of 02/04/2014, related to the monitoring period 01/01/2012 to 31/05/2013.
/03/	The Gold Standard: Gold Standard Requirements, version 01
/04/	The Gold Standard: Gold Standard Voluntary emission reductions (VERs) Manual for project developers, version 5 of May 2006
/05/	The Gold Standard: Gold Standard Validation & Verification Manual for CDM Projects, of December 2006
/06/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard, version 3.0 of 23/11/2012
/07/	Gold Standard: Indicative programme, baseline, and monitoring methodology for improved cook-stoves and kitchen regimes, version 01
/08/	Bureau Veritas Certification: Verification Report No. GHANA-VER/GHG/10/01 version 04 of 12/10/2011 – 1st monitoring period 17/06/2008 to 30/06/2010
/09/	Bureau Veritas Certification: Verification Report No. GHANA-VER/GHG/12/006 version 04 of 29/01/2013 – 2nd monitoring period 01/07/2010 to 31/12/2011
/10/	ClimateCare Limited: Determination of NRB_Ghana_130910.xlsx of 20/09/2013 and versions Determination of NRB_Ghana.xlsx, of 15/07/2013 Determination of NRB_Ghana_130806.xlsx
/11/	ClimateCare Limited: Kitchen Test Report – Kitchen Test and Fuel Saving for Gyapa Cook Stoves in Ghana (17-23/06/2013 and 01-08/07/2013).
/12/	ClimateCare Limited: KitchenTest Analysis KT_Accra_&Kumasi_Analysis_140211-Updated_140401 (latest version), version KT_Accra_&Kumasi_Analysis_130713.xlsx of 13/07/2013 and version KT_Accra_&Kumasi_Analysis_130806.xlsx
/13/	Wilhelmina Quaye (PhD) from Food Research Institute of Council for Science and Industrial Research (CSIR) – Gyapa Kitchen Survey Monitoring Report Quarter 1, 2013 of 30/04/2013
/14/	Wilhelmina Quaye (PhD) from Food Research Institute of Council for Science and Industrial Research (CSIR) – Gyapa Kitchen Survey Monitoring Report Quarter 1, 2012 (no date is available)
/15/	Wilhelmina Quaye (PhD) from Food Research Institute of Council for Science and Industrial Research (CSIR) – Gyapa Kitchen Survey Monitoring Report Quarter 2, 2012 (no date is

	available)
/16/	Wilhelmina Quaye (PhD) from Food Research Institute of Council for Science and Industrial Research (CSIR) – Gyapa Kitchen Survey Monitoring Report Quarter 3, 2012 (no date is available)
/17/	Wilhelmina Quaye (PhD) from Food Research Institute of Council for Science and Industrial Research (CSIR) – Gyapa Kitchen Survey Monitoring Report Quarter 4, 2012 (no date is available)
/18/	ClimateCare Limited: Emission Reductions calculation SalesERs-Gyapa-2012+Q1-13_Confidential-140402 (latest version), version SalesERs-Gyapa-2012+Q1-13_Confidential-130712.xls of 13/07/2013, version SalesERs-Gyapa-2012+Q1-13_Confidential-130813.xls, and version SalesERs-Gyapa-2012+Q1-13_Confidential-140205_2.24.14.xls of 24/02/2014
/19/	Markit – Registry Project No. 407 http://mer.markit.com/br-reg/public/index.jsp?q=gyapa&s=cp English Language Accessed on 16/07/2013
/20/	TUV Rheinland: Validation protocol No. 2009-9229 revision 03 of 27/04/2010
/21/	CDM Executive Board: Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states, EB67 Annex 22 version 01.0 of 11/05/2012.
/22/	UNFCCC Website – projects registered in Ghana http://cdm.unfccc.int/Projects/projsearch.html English language – accessed on 17/07/2013.
/23/	FAO: Forest Resource Assessment 2010 Main Report, of 2010
/24/	IPCC Guidelines: Good Practice Guidance for Land Use, Land-Use Change and Forestry of 2003
/25/	Gyapa Enterprises Ventures: Gyapa Network_Producers database_July 2103.xlsx of 29/07/2013
/26/	Gyapa Enterprises Ventures: Gyapa Retailer_list_July 2013.xlsx of 29/07/2013
/27/	Gyapa Enterprises Ventures: Producer Records Notes of 29/07/2013
/28/	Gyapa Enterprises Ventures: Gyapa Production sales data 2012/2013 - Gyapa Liner Sales MASTER_Q1_Q4 2012_5.5.13.xlsx of 05/05/2013, updated version Gyapa Liner Sales MASTER_Q1_Q4 2012_2.24.14.xlsx of 24/02/2014
/29/	Gyapa Enterprises Ventures: Gyapa Production sales data 2012/2013 - Gyapa _May_7.9.13.xlsx of 29/07/2013
/30/	Gyapa Enterprises Ventures: Gyapa Production sales data 2012/2013 - Gyapa sales_manufactures to retailers_Q1_Q4_2012 Master _5.5.13.xlsx of 05/05/2013
/31/	Gyapa Enterprises Ventures: Production data 2012
/32/	Gyapa Enterprises Ventures: Production data 2013
/33/	Gyapa Enterprises Ventures: Training Meeting Records of 23/01/2013, 03/07/2013, 24/04/2012, 13/08/2012, 05/09/2012
/34/	CDM-SSC WG: Information note Default values of fraction of non renewable for Parties with 10 or less registered CDM project activities as of 31/12/2010 – 37 Meeting Report Annex 14 of 20/07/2012.
/35/	Forestry Department Food and Agriculture Organization of the United Nations: Global Forest Resources Assessment 2010 Country Report Ghana, of 2010.
/36/	FAO: Global forest land-use chage 1990/2005 of 2012
/37/	FAO: Global forest resources assessment 2000 Main report of 2001
/38/	FAO: Global forest resources assessment 2010 Key findings of 2010
/39/	FAO: FRA2010 Global Tables.xls

/40/	Gyapa Enterprises Ventures: Organizational Chart of July 2013
/41/	Gyapa Enterprises Ventures: Manual for Users (no date is available)
/42/	Amako Ent Gyapa Stove: Invoices n. 17501 of10/05/2012, 17502 of 10/05/2012, 17506 of 18/05/2012, 17522 of 13/07/2012, 17531 of 01/08/2013,
/43/	Ekem Art Pottery Limited: Invoices n. 9302 of 10/05/2013, 2223 of 21/03/2013, 2222 of 21/03/2013, 2255 of 13/08/2012, 2254 of 16/07/2012, 2226 of 25/06/2012, 2229 of 02/10/2012, 2235 of 04/01/2013, 2241 of 13/05/2013, 4655 of 26/06/2012, 4657 of 25/10/2012, 9766 of 02/10/2012, 9762 of 26/06/2012, 9767 of 26/09/2012, 9773 of 16/01/2013,
/44/	Yoyili Enterprise: Invoices n. 71 of 22/09/2012, 187 of 04/02/2013
/45/	Gyapa Enterprises Ventures: Monthly liner supplies data collection sheet for the year 2012 and 2013
/46/	Gyapa Enterprises Ventures: Monthly stove supplies data collection sheet for the year 2012 and 2013
/47/	Relief International contracts with new manufacturers: Contract Jackson Davis signed on 16/06/2012 (ceramist), Samuel Martey signed on 16/06/2012 (ceramist), Ismaila Bukari signed on 16/06/2012 (ceramist).
/48/	Novation Agreement of 17/02/2010 between Enterprise Works/VITA, Relief International and J.P Morgan Ventures Energy Corporation.
/49/	CDM Executive Board: Methodological Tool for the demonstration and assessment of additionality, version 5.2
/50/	Kitchen Test Monitoring The Emission Reductions of Gyapa Stoves in Ghana GS407: July – August 2011
/51/	Journal of geophysical research – Emissions of greenhouse gases and other airbone pollutants from charcoal making in Kenya and Brazil, of 27/10/2001.

2.2 On-site assessment

On 22-26/07/2013, RINA visited ceramists, metal manufacturers and retailers as detailed in the below table located in different areas of Accra Region, Ashanti Region and Western Region (Accra, Kumasi and Takoradi). All the locations visited were accessible and there was no hindrance to perform the visit. A sample of end users have been also visited and interviewed. During the on-site assessment of the project, RINA assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel to confirm the data collection procedures, cross-checked between information provided in the monitoring report and sales data, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters, checked the correct and effective implementation of the mitigation measures foreseen in the sustainability monitoring plan, to prevent violation or the risk of violating a safeguarding principle of the “Do No Harm” Assessment or to “neutralize” a Sustainable Development Indicator.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	22/07/2013 – 26/07/2013	MacKenzie Dove Regional Enterprise Development Director	Relief International	History and background of the project activity Operational and management structure
/b/		Ann Koontz Technical Assistance	Relief International	Technology employed Actual implementation and operation status of the

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

		Department Director		project activity
/c/		Tom Owino Consultant	ClimateCare Limited	Comparison between recroded data and calculation spreadsheet
/d/		Atsu Titiati Gyapa Program Advisor	Gyapa Enterprise Ventures	Monitored parameters ex post
/e/		Amavi Bada	Gyapa Enterprise	Sustainable indicators
/f/		Regional Social Enterprise Development Manager	Ventures	Quality control and quality assurance procedures
/g/	22/07/2013	Sammy Dzata Technical Manager	Gyapa Enterprise Ventures	On-site inspection to Ekem Pottery
/h/		Richard Ekem Ceramist	Ekem Pottery	On-site inspection liners production– Winneba
/i/	23/07/2013	Micah Prempeh Marketing Officer	Gyapa Enterprise Ventures	On-site inspection to manufacturer Peter Amoa Atta
/j/		Peter Amoa Atta Metal Manufacturer	Ownwer	On-site inspection metal production - Achimota
/k/		Geroge Asiamah Marketing Officer	Gyapa Enterprise Ventures	On-site inspection to Kokompee Manufacturering site and Ashiaman Manufacturering site
/l/		Ibrahim Lucky Dowda Leader Manufacturer	Kokompee Manufacturing site	On-site inspection metal production - Kokompee
/m/		Labaran Issaka Leader Manufacturer	Ashiaman Manufacturing site	On-site inspection Ashiaman Manufacturering site
/n/	24/07/2013	Adolph Osei Marketing Manager	Gyapa Enterprise Ventures	On-site inspection to Toured Roman Hill Manufaturing site and liner producers in Kumasi
/o/		Francis Sales Agent		
/p/		K. Badu Leader Manufacturer	Toured Roman Hill Manufaturing site - Kumasi	On-site inspection Toured Roman Hill Manufaturing site
/q/	25/07/2013	Samson Azaraco Ceramist	Owner	On-site inspection liners production– Kumasi
/r/		Kwame Poku Ceramist	Owner	On-site inspection liners production– Kumasi
/s/	26/07/2013	Kojo Probe Metal Manufacturer	Onwer	On-site inspection Kokompee mamnufacturing site – Takoradi
/t/		Joe Dadson Marketing Officer	Gyapa Enterprise Ventures	

2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the monitoring report and emission reductions.

To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three tables; the different columns in these tables are described in the figure below (see Figure 1).The completed verification protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

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

A clarification request (CR) is raised if information is insufficient or not clear enough to determine whether the applicable GS VER requirements, which refer to CDM rules, have been met.

CARs, CRs identified are included in the verification protocol in Appendix A of this report.

Figure 1 Gold Standard Verification protocol tables

Verification Protocol, Table 1 - Requirement checklist				
Checklist Question	Ref.	MoV	Comments	Conclusion
Checklist questions organized in five different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	For CAR and CR see the definitions above. OK is used if the information and evidence provided is adequate to demonstrate compliance with GS VER/CDC requirements which refer to CDM rules.

Verification Protocol, Table 2: Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	Reference to Table 1	Response by project participants	Verification Conclusion
The CAR and/or CRs raised in table 1 are repeated here.	Reference to the checklist question number in Table 1 where the CAR or CR is explained.	The responses given by the project participants to address the CARs and/or CRs.	The verification team's assessment and final conclusion of the CARs and/or CRs.

Verification Protocol, Table 3 - Forward Action Requests		
Forward action request	Reference to Table 1	Response by project participants Verification Conclusion
The FAR raised in table 1 is repeated here.	Reference to the checklist question number in Table 1 where the FAR is explained.	Response by the project participants on how forward action request will be addressed.

2.4 Internal quality control

All the revisions of the verification report, before being submitted to the client, were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM/GS validation and verification.

2.5 Verification team and the technical reviewer(s)

The verification team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name	Type of involvement*					
			DR	SV	REP	TE	TR	TER
Team Leader GS Verifier	VALOROSO	Rita	X	X	X			
Technical Expert SS 1 and 3	CIDONIO	Luca				X		
Technical Reviewer SS1 and 3	AROKIASAMY A.	Cyril Augustus					X	X

*DR: Document Review; SV: Site Visit/Interview; REP: Reporting; TE: Technical Expert in Technical Area; TR: Technical Review; TER: Technical Expert in Technical Area for Technical Review.

3 VERIFICATION FINDINGS

The findings of the verification related to the monitoring period from 01/01/2012 to 31/05/2013 as documented and described in the monitoring report version 09 of 02/04/2014 and previous versions /02/ are stated in the following sections.

The verification requirements, the means of verification and the results from verifying the identified criteria are documented in more detail in the verification protocol in Appendix A.

3.1 Description of the project activity

The main information of the project is summarized in the table below.

Project Participant(s)	RELIEF INTERNATIONAL		
Project Title	Gyapa Improved Stoves in Ghana		
Location of the project	Ghana including the following regions: Greater Accra, Central, Western, Ashanti, Eastern, Volta, Brong-Ahafo, Northern, Upper West, Upper East		
Methodology(ies)	Gold Standard Methodology: Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes – version 01.		
Sectoral Scope(s)	1 - 3	RINA's Technical Area(s)	NA

Registered PDD	Revision 4 of 10/06/2010		
Date of registration	15/06/2010	GS Registration Reference N°	407
Starting date of the crediting period	17/06/2008		
Project's crediting period	17/06/2008 – 16/06/2015		
Monitoring period	01/01/2012 to 31/05/2013		
Project documentation link	http://mer.markit.com/br-reg/public/project.jsp?project_id=103000000002509		

According to the registered PDD /01/ the purpose of the project is the replacement of traditional charcoal stoves with very low efficiencies with an improved stove known as the Gyapa. Three sized of charcoal-burning Gyapa are distributed by the project: small (mostly for domestic use), medium (commonly used for both domestic and non-domestic use) and large (exclusively used in non-domestic applications). The project started with the dissemination of improved charcoal stoves primarily in Accra and Kumasi cities and plans to expand sales throughout the country covering the following regions: Greater Accra, Central, Western, Ashanti, Eastern, Volta, Brong-Ahafo, Northern, Upper West and Upper East. The project expects in the first crediting period 477,000 cook-stoves sold and 1,376,021 of tonnes of wood saved. The stove will not operate for more than 3 years.

3.2 Remaining issues (FARs) from previous validation or verification

Based on the review of the previous verification report for the 2nd monitoring period /09/, no FARs were raised.

During the GS 2-week issuance review period, a FAR was raised: *the PP shall conduct the Kitchen Test for medium and large scale commercial stoves prior to next verification*. The Kitchen Test was carried out on 17-23/06/2013 and 01-08/07/2013 including in the medium and large scale commercial stoves /11/.

3.3 Monitoring Report

The Monitoring Report for the project activity "Gyapa Improved Stoves in Ghana", in "Ghana", version 08 of 24/02/2014 and previous versions /02/ submitted by the ClimateCare Limited and Relief International have been the basis for the verification process.

The Monitoring Report version 01 didn't follow the UNFCCC template therefore the revised version 09 of 02/04/2014 has been implemented using the guide of UNFCCC template.

3.4 Project implementation

Actual implementation of the registered project activity

According the monitoring report /02/ the project is implemented across Ghana with region wise expansion. The expansion is based on stove availability and market demand. The four main regions covered by the project are: Greater Accra, Ashanti, Central and Western Region. Ashanti and Greater Accra cover the 94% of total sales volume. During 2012 134,234 cook-stoves have been manufactured and 134,234 have been sold while in 2013 (January to May) 58,399 have been manufactured and 55,898 have been sold. Actually the project is implemented in Accra, Kumasi, and Takoradi as confirmed by the list of Gyapa Retailers /26/ and the list of Gyapa producers /25/ provided by the PP .

The stove which have achieved three years operational life are not included in the calculation of emission reductions even if a significant proportion of the stoves are still in operation. From the

emission reductions calculation it is confirmed the date when the cook-stove is sold and thus the age is determined according to that date. All the cook stove with more than 3 years have been not accounted /18/. The data used are coming from the production sales records spreadsheet /28-30/.

EnterpriseWorks Vita, the PP mentioned in the registered PDD /01/ merged with Relief International in 2009 /48/, thus the actual PP is Relief International, while the contractual obligation with J.P, Morgan Ventures Energy Corporation came to an end.

Post registration changes

No change in the registered PDD /01/ have been occurred during the monitoring period of 01/01/2012 to 31/05/2013.

Based on the on-site inspection and checking the above documents, RINA confirms that the project activity has been implemented and it is in operation as described above in accordance with the project activity in the registered PDD /01/.

3.5 Methodology for determining Emission Reductions.

According to the applied Gold Standard methodology Indicative Programme, Baseline and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes /07/, the emission reductions have been calculated based on the following formula:

$ER_y = BE_y – PE_y – LE_y$

BE_y : baseline emissions
PE_y: project emissions
LE_y: leakage

According the monitoring report /02/ the ER are calculated as:

$ER = Q_d * EF_{nrb} * Days * F * (1-U) * (1-L)$

ER	emission reductions
Q_d	quantity of stoves of each type/cluster sold on date d
EF_{nrb}	emission of CO_2e net of non-renewability fraction of the biomass fuel saved (the value has been combined to determine the EF from fuel use which includes the charcoal production, consumption and adjusted with the NRB for Ghana.
Days	number of days of operation in the period considered
F	fuel saved per stove per day
U	percentage of stoves dropping out of use
L	percentage of emission reductions lost due to leakages

3.5.1 Compliance of the monitoring plan with the monitoring methodology and applicable methodological tools

The registered project activity applied the approved Gold Standard methodology Indicative programme, baseline, and monitoring methodology for improved cook-stoves and kitchen regimes, version 01 /07/. RINA confirms that the monitoring plan in the registered PDD /01/ comply with the applied methodology /07/. All the parameters included in the applied methodology have been considered in the monitoring plan.

3.5.2 Deviation in GHG emission reduction

Additionality assessment has been performed according to the Methodological Tool for the demonstration and assessment of addionality approved by UNFCCC /49/ in the registered PDD /01/.

The baseline scenario and the calculation of emission reductions have been carried out in a conservative manner. The approved Gold Standard methodology Indicative programme, baseline, and monitoring methodology for improved cook-stoves and kitchen regimes, version 01 /07/ has been applied in order to determine the baseline scenario and calculate emission reductions.

3.5.3 Compliance of monitoring with monitoring plan

The monitoring plan in the monitoring report /02/ comply with the monitoring plan in the registered PDD /01/. All the parameters included in the registered PDD have been monitored for the monitoring period for which the monitoring report has provided. The project activity is validated /20/ under the Gold Standard Requirements version 1 /03/. The sustainable development indicators monitored during the monitoring period 01/01/2012 to 31/05/2013 are: air quality, lively-hood of the poor, employment, access to energy services, product quality, exclusive usage, human and institutional capacity, technological self-reliance.

The following parameters have been monitored in accordance with the monitoring plan in the registered PDD /01/ and the monitoring report /02/.

3.5.3.1 Data and parameters fixed ex-ante or at renewal crediting period

The registered PDD /01/ does not have values fixed ex ante. All the values are to be monitored during the crediting period.

3.5.3.2 Data and parameters monitored ex-post

<table>
<tr><th>Data/Parameter</th><th>Assessment</th></tr>
<tr><td>Data Unit</td><td>Stove Sales / Market Penetration</td></tr>
<tr><td>Description</td><td>Number of stoves by type, size and region.</td></tr>
<tr><td>Source of data to be used</td><td>Project sales records</td></tr>
<tr><td>Value of monitored parameter for the monitoring period</td><td>The stove sales is calculated and the data is derived from the project sales records /28-30/ for which the recording frequency is daily. Monthly report are collected by the PP from the liners, stove production and retailers /45/ /46/ and reconciled to ensure that there is no double-counting. During the monitoring period 01/01/2012 to 31/05/2013 the following sales:
<table>
<tr><th>Gyapa type/application</th><th>2012</th><th>Q1 - 2013</th></tr>
<tr><td></td><td>Num</td><td>Num</td></tr>
<tr><td></td><td>sold</td><td>sold</td></tr>
<tr><td>Small domestic</td><td>13,659</td><td>3,635</td></tr>
<tr><td>Medium domestic</td><td>119,140</td><td>54,344</td></tr>
<tr><td>Medium commercial</td><td></td><td></td></tr>
<tr><td>Large</td><td>1,435</td><td>420</td></tr>
<tr><td>Total</td><td>134,234</td><td>58,399</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>No measurement equipment are involved in the monitoring of the project activity.</td></tr>
<tr><td>Accuracy of the monitoring equipment</td><td>The accuracy of the data is established as per the registered PDD as 100%.</td></tr>
<tr><td>Measuring/Reading/Recording frequency</td><td>Daily</td></tr>
<tr><td>Calculation method (if applicable)</td><td>The datasheet contains figures for total sales broken down by region and size.</td></tr>
<tr><td>Calibration</td><td></td></tr>
<tr><td>Calibration frequency/interval
Is the calibration interval in line with the monitoring plan of the PDD?</td><td>NA</td></tr>
<tr><td>Does the calibration cover the monitoring period?
Has the calibration frequency been respected?</td><td>NA</td></tr>
<tr><td>Calibration certificates</td><td>NA</td></tr>
</table>

.

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Project fuel consumption/**
Description	Mass fuel per year - Amount of fuel saved by stove
Source of data to be used	Kitchen Test Report
Value of monitored parameter for the monitoring period	Fuel consumption is measured every two years through the Kitchen Test. The Kitchen Test Report /11/ was carried out in the period between 17-23/06/2013 in Accra and 01-08/07/2013 in Kumasi by the Climate Care Limited. It was conducted in the above regions where the total stoves sold stand at 94%. The KT monitored charcoal consumption by customers who had bought medium stoves and large stoves for domestic and commercial use and where found the following values: - 0.367 tonnes/year per stove per day for medium domestic stove - 0.565 tonnes/year per stove per day for medium non-domestic stove - 2.547 tonnes/year per stove per day for large non-domestic stove.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	The values were calculated and the lower limit of 90% confidence interval was used to provide a more conservative calculation.
Measuring/Reading/Recording frequency	Every two years
Calcualtion method (if applicable)	The test was carried out three days with baseline stove and three days with Gyapa stove; 135 customers were surveyed in Accra and 88 in Kumasi /11/. For small size Gyapa stoves the value from the previous KT of July/August 2011 /50/ has been applied, it is still valid since it falls within the two year period.
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Clustering definitions**
Description	Clusters as per the stove use
Source of data to be used	Kitchen Survey.
Value of monitored parameter for the monitoring period	Four KS were carried out during 2012 and one in 2013. The KS for Q12012 (first quarter in the year 2012) was conducted in Kumasi (Ashanti Region) /14/. The relevant cluster definitions are small domestic, medium domestic, medium commercial and large commercial. The KS captured 6% of small domestic, 74% medium domestic and 20% medium commercial stoves. The KS for Q22012 (second quarter in the year 2012) was conducted in Takoradi (Western Region) in August 2012 /15/. The KS captured 10% of small domestic, 70% medium domestic, 12% medium commercial and 8% large size stoves. The KS for Q32012 (third quarter in the year 2012) was conducted in Accra (Greater Accra Region) in October 2012 /16/. The KS captured 6% small domestic, 88% medium domestic and 6% large size stoves. The KS for Q42012 (fourth quarter in the year 2012) was conducted in Kumasi (Ashanti Region) /17/ in January 2013. The KS captured 33.3% small domestic, 51.1% medium domestic, 15% medium commercial stoves. The KS for Q12013 (first quarter in the year 2013) was conducted in Accra (Greater Accra Region) in April 2013 /13/. The KS captured 30% small domestic, 43% medium domestic, 12% small commercial and 15% medium commercial stoves. The methods used for data collection include one-on-one interviews, participant observation and focused group discussions in situation where more than one person operated the kitchen. The cluster definition in the registered PDD /01/ is confirmed by the quarterly KS /13-17/ carried out during the monitoring period
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Quarterly
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Usage Factor**
Description	% operational - Usage rate of the Gyapa stoves
Source of data to be used	Kitchen Test Report
Value of monitored parameter for the monitoring period	For the monitoring period the KT carried out in June 2013 /12/ is used for determining the drop rate. All the households who participated in the KT were asked if they still use stove from the time they bought or whether they stopped using it. All of them they never stopped using it unless the Gyapa stove is damages due to old age. As per the monitoring report /02/ the drop rate for small and medium size was less than 5% for age 1 and less than 10% for age 2 and 3. In order to be conservative the 5% and 10% and 17% for large size was used for the emission reduction calculation. As per the Emission Reductions calculation /18/ the drop off rates used are based on the rates applied in the registered PDD /01/ which have been based on the KT available at that time /50/. As per the KT 2013 /12/ the users still use their stove from the time they bought unless stove is damages due to old age or due to quality issues, thus most of stoves in use are more than 3 years old as established in the KT.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every two years.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Age Factor**
Description	Stove-age – Mass fuel per year
Source of data to be used	Kitchen Test Report
Value of monitored parameter for the monitoring period	0 kg of charcoal per year. For the monitoring period the KT carried out in June 2013 /12/ is used for measuring the age factor. According the monitoring report /02/ during the KT several stoves were found to be in used which where more than 3 years and they were in good condition, but according the registered PDD these stoves stop being used in calculation of the emission reductions. The age factor is controlled through the production sale records /28-30/. It is calculated from the sale date and after three years the specific cook-stoves is no longer considered for the purpose of the emission reductions calculation /18/.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every two years.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**New stove performance**
Description	Performance of new stove in terms of fuel savings – mass fuel per year
Source of data to be used	Kitchen Test Report
Value of monitored parameter for the monitoring period	The parameters is measured through the KT /11/ and for the actual monitoring period no new stove models or sizes have been added as confirmed through the on-site inspection to the ceramists and manufacturers.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every two years.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Market development**
Description	Sales trends, expenditure and number of activities on sensitisation and promotion
Source of data to be used	Company report and quarterly report.
Value of monitored parameter for the monitoring period	The parameter market development is estimated based on quarterly data from sales data /30/ and number of activities on sensitisation and promotions. During the site visit the PP informed that they organize activities on sensitisation and promotions in the villages and in the cities; as evidence photos have been shown.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Quarterly
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Non-renewable biomass fraction/Fraction**
Description	% Fraction of Non-renewable Biomass for Ghana
Source of data to be used	Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states /21/.
Value of monitored parameter for the monitoring period	99.130% - 0.99 (used for the ER calculation as default values provided by UNFCCC /34/). For the calculation of the NRB the Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states /21/ is used. This methodology is applicable to both the LDC and to Parties with 10 or fewer registered CDM project activities as of 31/12/2010 /22/. The f_{NRB}% (fraction of non-renewable biomass) is calculated as per the equation 1 of the EB67 Annex 22 guideline /21/ and accounts to 99.130%. The parameters and the relevant data sources used for the NRB calculation are shown in the Determination of NRB_Ghana spreadsheet /10/ and are the following: • NRB (t/yr) non-renewable biomass – 38,183,410. Proportion of Total Annual Biomass Removals (R) that is not demonstrably renewable. It is calculated as per the equation 2 of the EB67 Annex 22 /21/. • DRB (t/yr) demonstrably renewable biomass – 194,790. Calculated as equivalent to the total annual biomass growth in protected areas, as per the equation 5 of the EB67 Annex 22 /21/. • R (t/yr) total annual biomass removals – 38,378,200. Used as a national level proxy for B_y. Accounts for all removals which is equivalent to the sum of Mean Annual Increment of biomass growth and the Annual change in living forest biomass. It is calculated as per the equation 3 of the EB67 Annex 22 /21/. • MAI (t/yr) Mean Annual Increment in biomass growth – 22,378,200. Country-specific MAI calculated from extent of forest and its growth rate as per the equation 4 of the EB67 Annex 22 /21/. • ΔF (t/yr) Annual change in living forest -16,000,000. Calculated by converting the Annual Change in Carbon Stock in Living Forest Biomass 2005-2010 (t-carbon/yr) to Annual Change in Living Forest Biomass 2005-2010 (t/yr). FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 11 /23/ for the Annual Change in Carbon Stock in Living Forest Biomass and 2003 IPCC Guidelines: Good Practice Guidance for Land Use, Land-Use Change and Forestry /24/ for Annual Change in Living Forest Biomass. • F (ha) extent of forest 4,940,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 2 /23/. • GR (t/ha-yr) annual growth rate of biomass 4.53. FAO Forest Resource Assessment /23/ and IPCC Guidelines /24/ . • PA (ha) protected area extent of forest – 43,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 6 /23/. • Annual change in carbon stocks in living forest biomass

	(2005-2010) (t/y) – 8,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 11 /23/. • Carbon stock biomass conversion rate – 0.5. Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states, EB67 Annex 22 /21/
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every two years.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Baseline fuel consumption**
Description	Mass fuel per year - Amount of fuel consumed by baseline stove
Source of data to be used	Kitchen Test Report
Value of monitored parameter for the monitoring period	Fuel consumption is measured every two years through the Kitchen Test. The Kitchen Test Report /11/ was carried out in the period between 17-23/06/2013 in Accra and 01-08/07/2013 in Kumasi by the Climate Care Limited. It was conducted in the above regions where the total stoves sold stand at 94%. The KT monitored charcoal consumption by customers who had bought medium stoves and large stoves for domestic and commercial use and where found the following values: - 0.367 tonnes/year per stove per day for medium domestic stove - 0.565 tonnes/year per stove per day for medium non-domestic stove - 2.547 tonnes/year per stove per day for large non-domestic stove.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	The values were calculated and the lower limit of 90% confidence interval was used to provide a more conservative calculation.
Measuring/Reading/Recording frequency	Every two years
Calcualtion method (if applicable)	The test was carried out three days with baseline stove and three days with Gyapa stove; 135 customers were surveyed in Accra and 88 in Kumasi /11/. Households were provided with charcoal for use over the six days they were involved in the exercises, in addition, all the households were provided with traditional coalpots for use over the three days. The data collected was then used for anlaysis and determination of fuel saving for domestic and commercial Gyapa stoves /11/. For small size Gyapa stoves the value from the previous KT of July/August 2011 /50/ has been applied, it is still valid since it falls within the two year period. The KT /11/ explains the Methodology applied for sample. Commercial stoves constitute 0.65% of the total sales volume spread across the country; the KT team managed to get 15 participants. For domestic stoves a random sample was done and customers were selected to participate in the KT. The KT was divided into four zones in Accra and four zones in Kumasi.
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Tonnes of CO_2e per tonne of charcoal**
Description	**Emission factor charcoal production**
Source of data to be used	IPCC Guideline
Value of monitored parameter for the monitoring period	0.00629tCO_2/kg_ch The value has been combined to determine the emission factor from fuel use which included the charcoal production /51/, consumption and adjusted with NRB for Ghana /10/.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every year.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**Double counting**
Description	Double counting of stoves – Creditied ICS
Source of data to be used	Production and sales database
Value of monitored parameter for the monitoring period	The parameters is monitored every year through the database production and sales maintained by the PP /28-30/. The same database is used for the emission reduction calculation. The PP for avoiding any mistake provide to cross check each month with the previous month and the previous years. As stated by the PP and confirmed through the on-site visit all the manufacturers have brand stickers for identifying the Gyapa stove. There is no risk of double counting even if the stove has not the brank stickers before to be placed in the market. The PP reconciled the data from ceramic production /28/ and stove manufacture /31/ /32/.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Every year.
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

Data/Parameter	Assessment
Data Unit	**All leakage risks**
Description	Leakage occasioned by the project activity.
Source of data to be used	Kitchen Survey
Value of monitored parameter for the monitoring period	The parameter is estimated through the quarterly KS. During the monitoring period five KS were carried out and no leakage was found /13-17/.
Monitoring equipment	No measurement equipment are involved in the monitoring of the project activity.
Accuracy of the monitoring equipment	NA
Measuring/Reading/Recording frequency	Quarterly
Calcualtion method (if applicable)	NA
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	NA
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	NA
Calibration certificates	NA

3.5.3.3 Gold Standard sustainability monitored parameters

Data variable	Source of Data	Reported value for the project period
Air Quality	Kitchen Survey	/
Assessment		
The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS when using Gyapa stove was better as compared to the traditional coal-pot. Application of Gyapa reduces exposure to heat in the cooking area, less risk with cut from sharp edges and less ask spread. Smoke emission and irritation of the eyes during cooking are reduced drastically. This is confirmed through the on-site inspection carried out to end-users (families)and interviewing them.		

Data variable	Source of Data	Reported value for the project period
Lively-hood of the poor	Kitchen Survey	/
Assessment		
The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS, during the monitoring period, on the average, Gyapa usage save from 37% to 53% of daily fuel expenditure per household/domestic user, depending in the Region where the user is located. Charcoal is easily accessible and available to 98% of users but the relevant issue is the increasing cost. The payback period vary from 6 days to 30 depending on the stove size and use (domestic, non-domestic). Although slightly expensive than other stove options like the traditional coal-pot, it make economic sense to use Gyapa due to the benefits from fuel savings and considering the low levels of household incomes cash savings on charcoal consumption are very much appreciated. This is also confirmed through the on-site inspection and interview to end-users.		

Data variable	Source of Data	Reported value for the project period
Employment	Kitchen Survey	/
Assessment		
Stove manufacturers are not employed by the PP directly, but they have their own company and they sign contracts/agreement with the PP for the project scope. In general, from the beginning of the project implementation, the ceramist, the stove manufacturers and the retailers increased even if during the latest monitoring period they decreased, but at the same time the project created new indirect employment during the monitoring period as confirmed by the contracts that Relief International signed with manufacturers (Gyapa cook-stove producer contract) /47/.. Actually 6 ceramists, 300 stove manufacturers /25/ and 500 retailers /26/ are working for producing Gyapa stoves.		

Data variable	Source of Data	Reported value for the project period
Access to energy services	Kitchen Survey	/
Assessment		
Access to energy services means the number of users. The parameter is calculated through the monthly sales records /28/ / 29/ and through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS, during the monitoring period the access to energy services has improved with the introduction of Gyapa on the Ghanaian market because of the easily access to Gyapa stove. The number of Gyapa users is increasing during the monitoring period to 511,994 stoves (domestic and commercial) and thus this number has improved access to energy services.		

Data variable	Source of Data	Reported value for the project period
Product quality	Kitchen Survey	/
Assessment		
The product quality is monitored at least one per year per line manufacturer. The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS the general outlook of Gyapa observed were rated good. The PP staff checks the quality of the liners before they are purchased. This is also confirmed through the on-site inspection by the Relief International people. Sometimes they receive complaint from the end users but this is due because of incorrect used of the cook stove and sometimes from bad manufacturing. A Manual for users is provided with the cook stove in order to maintain the product quality of the cook-stove /41/. During the on-site visit, it was possible to confirm that for each new stove a copy of the Manual for Users was available to the retailers . As stated in section 2.2 of this report during the site visit the DOE visited both liner manufacturers and cladding shops (please refer to table of key personnel interviewed) moreover the records about the product quality have been checked through the result available from by KS carried out during the monitoring /13-17/. The KS are prepared from a third party and thus considered an acceptable and reliable source .		

Data variable	Source of Data	Reported value for the project period
Exclusive usage	Kitchen Survey	/
Assessment		
The extent to which customers continue to use an inefficient stove alongside the ICS is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. In the KS there was a question on whether the household still keeps the baseline stove in their possession and also, if yes, how often do they use it. Based on the result of the KS from 32% to 78% of the sample interviewed used other stoves (traditional coalpot, LPG stove, wood stove) in addition to Gyapa in the same kitchen. This is also confirmed through the on-site inspection and interview to end-users.		

Data variable	Source of Data	Reported value for the project period
Human and institutional capacity,	Kitchen Survey	/
Assessment		
The human and institutional capacity is assured by conducting training and meeting carried out by the PP to stove manufacturers (metal workers and ceramists), market distributors and retailers as confirmed by the training meeting record of 23/01/2013, 03/07/2013, 24/04/2012. 13/08/2012 and 05/09/2012 /33/.		

Data variable	Source of Data	Reported value for the project period
Technological self-reliance	Kitchen Survey	
Assessment		
The technological self reliance is assured by conducting training and meeting carried out by the PP to stove manufacturers (metal workers and ceramists), as confirmed by the training meeting record of 23/01/2013, 03/07/2013, 24/04/2012. 13/08/2012 and 05/09/2012 /33/. According the interview with the PP during the site visit, he declares that improvements have been made through working with ceramists to improve kiln quality as well as skills training have targeted metal workers and ceramists for improved Gyapa stove production.		

3.5.4 Assessment of data and calculation of emission reductions

Availability of the data

No significant reporting risks have been identified for the data reported. All the data were available, aggregated and transferred to the SalesERs-Gyapa-2012+Q1-13_Confidential-140205_2.24.14.xls /18/ which have been used for emission reduction calculations. To select participants for the KT simple random sampling was used using the the Gyapa Sales Database /29/. The list of customers was grouped by location first; having zoned the zones and grouped the customers based who where residing in these zones, a random sample was then used to select households to participate in KT.

Cross-check reported data

The readings recorded and picked from Sales Database /30/, kitchen surveys /13/ /14/ /15/ /16/ /17/ and kitchen test report /11/ have been correctly transposed into the excel sheet /18/ which has been verified to be correct. RINA is able to confirm that appropriate methods and formulae for calculating baseline emissions and project emissions have been followed and the same was verified. RINA is of the opinion that the assumptions, emission factor and default values that have been applied in the calculations are conservative and justified.

3.5.5 Accuracy of emission reduction calculations

The emission reduction calculations provided in the spreadsheet /18/ have been verified to be correct and in line with the registered PDD /01/.
The emission reductions from the project for the monitoring period as reported in the monitoring report version 09 of 02/04/2014 /02/ is equivalent to 339,585 tCO_2e. The reported emission reductions are about 1% less than the estimated emission reductions of 354,340 tCO_2e for the period as per the registered PDD /01/. The difference in emission reductions is because the number of stoves keep on increasing and the numbers have passed those projected in the PDD.
The data in presented in the monitoring report /02/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices. Sufficient evidence was presented and verified by RINA for the reported emission reductions as listed in the above Section 3.5.3.2 .

3.5.6 Accuracy of the GS indicators of sustainable development

All the documented evidences to sustainable monitored parameters such as Kitchen Survey Monitoring Reports /13/ /14/ /15/ /16/ /17/, the training meeting records /33/, the manual for users /41/, the contracts signed between the PP and the manufacturers /47/, the network producers database /25/ and the Gyapa retailer list /26/ are provided as objective evidences.

3.5.7 Management system and quality control

The data management and quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified. As stated by the PP the 100% of the accuracy of data used in the emission reductions calculation is guarenteed through multiple cross checks reviewing Gyapa Liner Sales /28/, Gyapa Sales Database /29/, Gyapa sales_manufactures to retailers /30/, Production data /31/ /32/, Monthly liner supplies data collection sheet /45/ and the Monthly stove supplies data collection sheet /46/.

4 VERIFICATION AND CERTIFICATION OPINION

RINA Services S.p.A. (RINA) has performed verification of the emission reductions reported for the project activity "Gyapa Improved Stoves in Ghana" in Ghana, GS Registration Reference N° 407, for the period 01/01/2012 to 31/05/2013, with regard to the relevant requirements for GS activities.

The project participants of the "Gyapa Improved Stoves in Ghana" project are responsible for:

- the preparation of greenhouse gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered Project Design Document version 4 of 10/06/2010
- the development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project

It is the responsibility of RINA to express an independent verification opinion about the project's conformity with the requirements of paragraph 62 of the CDM modalities and procedures, GS requirements and on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment RINA can confirm that:

- the project has been implemented and operated as per the registered PDD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable CDM and GS VER requirements;
- monitoring is in place as per the applied baseline and monitoring methodology;
- monitoring complies with the monitoring plan in the registered PDD;
- the monitoring plan in the registered PDD is as per the applied baseline and monitoring methodology.

It is RINA's opinion that the GHG emission reductions stated in the monitoring report version 09 of 02/04/2014 for the "Gyapa Improved Stoves in Ghana" project in Ghana for the period 01/01/2012 to 31/05/2013 are fairly stated. The GHG emission reductions were calculated correctly, the sustainability development indicators were correctly monitored, on the basis of the approved GS VER methodology "Indicative Programme, Baseline and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes" version 01 and the monitoring plan contained in the registered PDD.

Hence, RINA is able to certify that the emission reductions from the project during the monitoring period 01/01/2012 to 31/05/2012 amount to 339,585 tCO_2e.

Year	Period	tCO_2e
2012	01/01/2012 – 31/12/2012	238,176
2013	01/01/2013 – 31/05/2013	101,409
Net GHG emission reductions or removals		339,585

Milan, 15/04/2014

Rita VALOROSO
GS Team Leader
RINA Services S.p.A.

Genova, 15/04/2014

Laura Severino
Authorized officer signing for the DOE
RINA Services S.p.A.

GOLD STANDARD VERIFICATION/CERTIFICATION REPORT

APPENDIX A

GOLD STANDARD VERIFICATION PROTOCOL

TABLE 1 REQUIREMENTS CHECKLIST

Checklist Question		Reference	MoV[1]	Comments	Conclusion
A	**Description of Project Activity**				
A.1	Title of the project activity, revision number and date of Monitoring Report	/02/ /19/	DR	The title of the project activity in the monitoring report /02/ is Gyapa Improved Stoves Ghana and it is in line with the title available in the Markit Registry /19/. The Monitoring Report has version 01 and it is dated 15/07/2013. *The project title in the Monitoring Report version 01 is not consistent with the project title in the registered PDD version 4. Moreover the GS project ID in the Monitoring Report is not consistent with the project ID available in the GS Registry website.*	~~**CAR8**~~ **OK**
A.2	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered PDD?	/01/ /02/ /18/ /25/ /26/ /28/ /29/ /30/	DR I CC	**Registered project activity**. According the registered PDD /01/ the purpose of the project is the replacement of traditional charcoal stoves with very low efficiencies with an improved stove known as the Gyapa. Three sized of charcoal-burning Gyapa are distributed by the project: small (mostly for domestic use), medium (commonly used for both domestic and non-domestic use) and large (exclusively used in non-domestic applications). The project started with the dissemination of improved charcoal stoves primarily in Accra and Kumasi cities and plans to expand sales throughout the country covering the following regions: Greater Accra, Central, Western, Ashanti, Eastern, Volta, Brong-Ahafo, Northern, Upper West and Upper East. The project expects in the first crediting period 477,000 cook-stoves sold and 1,376,021 of tonnes of wood saved. The stove will not operate for more than 3 years. **Actual implementation**.	

[1] MoV: DR document review, I interview, CC cross checking

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				According the monitoring report /02/ the project is implemented across Ghana with region wise expansion. The expansion is based on stove availability and market demand. The four main regions covered by the project are: Greater Accra, Ashanti, Central and Western Region. Ashanti and Greater Accra cover the 94% of total sales volume. During 2012 134,250 cook-stoves have been manufactured and 134,234 have been sold while in 2013 (January to May) 58,433 have been manufactured and 53,398 have been sold. Actually the project is implemented in Accra, Kumasi, Sunyany and Takoradi as confirmed by the list of Gyapa Retailers /26/ and the list of Gyapa producers /25/ provided by the PP . The stove which have achieved three years operational life are not included in the calculation of emission reductions even if a significant proportion of the stoves are still in operation. From the emission reductions calculation it is confirmed the date when the cook-stove is sold and thus the age is determined according to that date. All the cook stove with more than 3 years have been not accounted /18/. The data used are coming from the production sales records spreadsheet /28-30/. EnterpriseWorks Vita (the PP mentioned in the registered PDD /01/ merged with Relief International in 2009 /48/, thus the actual PP is Relief International. *The monitoring report version 01 of 15/07/2013 does not contain the following information:* - *Purpose of the project activity* - *Brief description of the installed technology/equipment* - *Location of the project activity* - *Reference to applied methodology* - *Parties and PPs involved.* - *Implementation of sampling approach if any* - *Sample calculations for all formulae used for baseline and project emissions*	~~**CAR1**~~ **OK**

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				- *Summary of calculation of Emission Reductions.* - *Data and parameters determined ex ante and not monitored during the crediting period if any.* - *Actual emission reductions during the first commitment period and the period from 01/01/2012.* *The emission reductions comparison available in the monitoring report version 01 of 15/07/2013 should be available only between the monitoring period and the same period estimated in the registered PDD.* *The values of stoves manufactured and sold during the monitoring period in the Monitoring Report are not consistent with the ER sold-damages sheet.*	~~**CR1**~~ **OK**
A.3	Methodology applied for the registered project activity	/01/ /02/ /07/	DR	The applied methodology /07/ as per the registered PDD /01/ and Monitoring Report /02/ is the Gold Standard methodology Indicative programme, baseline, and monitoring methodology for improved cook-stoves and kitchen regimes, version 01.	**OK**
B	**Monitoring**				
B.1	**Monitoring plan**				
B.1.1	Does the monitoring plan included in the registered GS project activity comply with the applied methodology?	/01/ /02/ /07/	DR	The monitoring plan in the registered PDD /01/ comply with the applied methodology /07/. All the parameters included in the applied methodology have been considered in the monitoring plan.	**OK**
B.1.2	Does the monitoring comply with the monitoring plan in the registered PDD?	/01/ /02/ /07/	DR	The monitoring plan in the monitoring report /02/ comply with the monitoring plan in the registered PDD /01/. All the parameters included in the registered PDD have been monitored for the monitoring period for which the monitoring report has provided.	**OK**
B.1.3	Do the sustainability indicators included in the monitoring report comply with the minimum contents specified in paragraph 4.1 of the GS toolkit?	/02/ /03/ /20/	DR	The project activity is validated /20/ under the Gold Standard Requirements version 1 /03/. The sustainable development indicators monitored during the monitoring period 01/01/2012 to 31/05/2013 are: air quality, lively-hood of the poor, employment, access to energy	**OK**

<table>
<tr><th colspan="2">Checklist Question</th><th>Reference</th><th>MoV[1]</th><th>Comments</th><th>Conclusion</th></tr>
<tr><td></td><td></td><td></td><td></td><td>services, product quality, exclusive usage, human and institutional capacity, technological self-reliance.</td><td></td></tr>
<tr><td>B.1.4</td><td>Have any changes been made to the key sustainable development indicators?</td><td>/02/
/03/
/20/</td><td>DR</td><td>No changes have been occurred during the monitoring period 01/01/2012 to 31/05/2013. .</td><td>OK</td></tr>
<tr><td colspan="6">B.2 Data and parameters that are available at validation and that are not monitored</td></tr>
<tr><td>B.2.1</td><td>Which parameters were available at validation and how were they verified?</td><td>/01/
/02/
/07/</td><td>DR</td><td>According the information available in the registered PDD /01/ it is not clear if there are parameter fixed ex ante that not need to be monitored during the crediting period.</td><td><s>CR2</s>
OK</td></tr>
<tr><td colspan="6">B.3 Data and parameters monitored</td></tr>
<tr><td>B.3.1</td><td>Data/Parameter monitored / Data unit / Description / Source of data to be used / Value data for the monitoring period</td><td>/02/
/10/
/11/
/12/
/13/
/14/
/15/
/16/
/17/
/18/
/21/
/22/
/23/
/24/
/28/
/29/
/30/
/34/</td><td>DR
I
CC</td><td>Stove sales/market penetration.
The stove sales is calculated and the data is derived from the project sales records /28-30/ for which the recording frequency is daily. The datasheet contains figures for total sales broken down by region and size. During the monitoring period 01/01/2012 to 31/05/2013 the following sales:

<table>
<tr><td>Gyapa type/applic</td><td>2012</td><td>Q1 - 2013</td></tr>
<tr><td></td><td>Num</td><td>Num</td></tr>
<tr><td></td><td>sold</td><td>sold</td></tr>
<tr><td>Small domestic</td><td>13,659</td><td>3,635</td></tr>
<tr><td>Medium domestic</td><td>119,140</td><td>54,343</td></tr>
<tr><td>Medium commercial</td><td></td><td></td></tr>
<tr><td>Large</td><td>1,435</td><td>420</td></tr>
<tr><td>Total</td><td>134,234</td><td>58,398</td></tr>
</table></td><td></td></tr>
</table>

Checklist Question	Reference	MoV[1]	Comments	Conclusion
			Project and baseline fuel consumption. Fuel consumption is measured every two years through the Kitchen Test. The Kitchen Test Report /11/ was carried out in the period between 17-23/06/2013 in Accra and 01-08/07/2013 in Kumasi by the Climate Care Limited. It was conducted in the above regions where the total stoves sold stand at 94%. The KT monitored charcoal consumption by customers who had bought medium stoves and large stoves for domestic and commercial use and where found the following values: - 0.411 tonnes/year per stove per day for medium domestic stove - 0.893 tonnes/year per stove per day for medium non-domestic stove - 2.596 tonnes/year per stove per day for large non-domestic stove. The test was carried out three days with baseline stove and three days with Gyapa stove; 135 customers were surveyed in Accra and 88 in Kumasi /11/. *The data of fuel saving mentioned in the KT are not in accordance with the data in the monitoring report and in the Test Analysis KT_Accra_&Kumasi_Analysis spreadsheet.* *The monitoring report does not contain explanation on why the KT on small size was not carried out and for the purpose of the emission reductions calculation was taken into account the previous KT carried out on 2011.* **Cluster definitions**. Cluster is estimated quarterly through the Kitchen Survey. Four KS were carried out during 2012 and one in 2013. The KS for Q12012 (first quarter in the year 2012) was conducted in Kumasi (Ashanti Region) /14/. The relevant cluster definitions are small domestic, medium domestic, medium commercial and large commercial. The KS captured 6% of small domestic,	~~**CAR2**~~ **OK** ~~**CR3**~~ **OK**

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				74% medium domestic and 20% medium commercial stoves. The KS for Q22012 (second quarter in the year 2012) was conducted in Takoradi (Western Region) in August 2012 /15/. The KS captured 10% of small domestic, 70% medium domestic, 12% medium commercial and 8% large size stoves. The KS for Q32012 (third quarter in the year 2012) was conducted in Accra (Greater Accra Region) in October 2012 /16/. The KS captured 6% small domestic, 88% medium domestic and 6% large size stoves. The KS for Q42012 (fourth quarter in the year 2012) was conducted in Kumasi (Ashanti Region) /17/ in January 2013. The KS captured 33.3% small domestic, 51.1% medium domestic, 15% medium commercial stoves. The KS for Q12013 (first quarter in the year 2013) was conducted in Accra (Greater Accra Region) in April 2013 /13/. The KS captured 30% small domestic, 43% medium domestic, 12% small commercial and 15% medium commercial stoves. The methods used for data collection include one-on-one interviews, participant observation and focused group discussions in situation where more than one person operated the kitchen. The cluster definition in the registered PDD /01/ is confirmed by the quarterly KS /13-17/ carried out during the monitoring period. *During the on-site visit to the manufacturing sites, the Gyapa "baby" is under construction, but the manufacturers declared that they are not yet in the market. During the next verification it is requested to verify if the cluster definition will include the baby size actually under construction.* **Usage Factor.** The usage factor is measured/estimated every two years through the KT. For the monitoring period the KT carried out in June 2013 /12/ is used for determining the drop	**FAR1**

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				rate. All the households who participated in the KT were asked if they still use stove from the time they bought or whether they stopped using it. All of them they never stopped using it unless the Gyapa stove is damages due to old age. As per the monitoring report /02/ the drop rate for small and medium size was less than 5% for age 1 and less than 10% for age 2 and 3. In order to be conservative the 5% and 10% and 17% for large size was used for the emission reduction calculation. *The KT does not contain the determination/analysis of the drop rate used in the emission reductions calculation. Moreover the PP during the on-site visit also explained that the result of the drop rate in the KT is more conservative than the drop rate established in the registered PDD. The more conservative data have not been used in the emission reductions calculation.* *The ER sheet states that the usage survey was carried out in Jul-Aug2011 /2012 which is not in line with the information provided for the actual monitoring period.* **Age Factor.** The age factor is measured every two years through the KT. For the monitoring period the KT carried out in June 2013 /12/ is used for measuring the age factor. According the monitoring report /02/ during the KT several stoves were found to be in used which where more than 3 years and they were in good condition, but according the registered PDD these stoves stop being used in calculation of the emission reductions. The age factor is controlled through the production sale records /28-30/. It is calculated from the sale date and after three years the specific cook-stoves is no longer considered for the purpose of the emission reductions calculation /18/.	~~**CAR3**~~ **OK** ~~**CR8**~~ **OK**

Checklist Question	Reference	MoV[1]	Comments	Conclusion
			New stove performance. *According the registered PDD /01/ the recording frequency is every two years while in the monitoring report /02/ is when a new cluster is added. This is not consistent throughout the documents*. The parameters is measured through the KT /11/ and for the actual monitoring period no new stove models or sizes have been added. This is confirmed through the on-site inspection to the ceramists and manufacturers.	~~**CAR4**~~ **OK**
			For the parameter project fuel consumption, cluster definition, usage factor, age factor and new stove performance the proportion of data to be monitored is a sample. The KT /11/ used for the estimation/measure of these parameters states that a random sample was used without any explanation how the random sample has been determined.	~~**CR4**~~ **OK**
			Market Development. *According the monitoring report /02/ the parameter is estimated quarterly through company report. During the on-site visit the PP confirmed that the company report does not exist and moreover the quarterly survey does not contain the specific monitored data*.	~~**CAR5**~~ **OK**
			Non-renewable biomass fraction. The parameter is calculated every two years. For the calculation of the NRB the Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states /21/ is used. This methodology is applicable to both the LDC and to Parties with 10 or fewer registered CDM project activities as of 31/12/2010 /22/. The f_{NRB}% (fraction of non-renewable biomass) is calculated as per the equation 1 of the EB67 Annex 22 guideline /21/ and accounts to 99.410%. The parameters and the relevant data sources used for the NRB calculation are shown in	

Checklist Question	Reference	MoV[1]	Comments	Conclusion
			the Determination of NRB_Ghana spreadsheet /10/ and are the following: • NRB (t/yr) non-renewable biomass – 49,319,188. Proportion of Total Annual Biomass Removals (R) that is not demonstrably renewable. It is calculated as per the equation 2 of the EB67 Annex 22 /21/. • DRB (t/yr) demonstrably renewable biomass – 292,572. Calculated as equivalent to the total annual biomass growth in protected areas, as per the equation 5 of the EB67 Annex 22 /21/. • R (t/yr) total annual biomass removals – 49,611,760. Used as a national level proxy for B_y. Accounts for all removals which is equivalent to the sum of Mean Annual Increment of biomass growth and the Annual change in living forest biomass. It is calculated as per the equation 3 of the EB67 Annex 22 /21/. • MAI (t/yr) Mean Annual Increment in biomass growth – 33,611,760. Country-specific MAI calculated from extent of forest and its growth rate as per the equation 4 of the EB67 Annex 22 /21/. • ΔF (t/yr) Annual change in living forest 16,000,000. Calculated by converting the Annual Change in Carbon Stock in Living Forest Biomass 2005-2010 (t-carbon/yr) to Annual Change in Living Forest Biomass 2005-2010 (t/yr). FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 11 /23/ for the Annual Change in Carbon Stock in Living Forest Biomass and 2003 IPCC Guidelines: Good Practice Guidance for Land Use, Land-Use Change and Forestry /24/ for Annual Change in Living Forest Biomass. • F (ha) extent of forest 4,940,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 2 /23/.	

Checklist Question	Reference	MoV[1]	Comments	Conclusion
			• PA (ha) protected area extent of forest – 43,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 6 /23/. • Annual change in carbon stocks in living forest biomass (2005-2010) (t/y) –8,000,000. FAO Forest Resource Assessment (FRA) 2010 Global Tables, table 11 /23/. • Carbon stock biomass conversion rate – 0.5. Information Note Default values of fraction of non-renewable biomass for least developed countries and small island developing states, EB67 Annex 22 /21/. *The data used by the PP for determining the NRB are not consistent with the default values used in the calculation available in the CDM-SSC WG information note (Annex 14 of 37 Meeting Report).* *There is no evidence how the GR Growth rate of biomass is determined and included in the NRB calculation.* **Emission factor charcoal production**. The value is a default value taken from the IPCC Guidelines /24/ and accounts to 1.802 tCO_2/kg_ch. The value is monitored every year. **Double counting**. The parameters is monitored every year through the database production and sales maintained by the PP /28-30/. The same database is used for the emission reduction calculation. The PP for avoiding any mistake provide to cross check each month with the previous month and the previous years. **All leakage risks.** The parameter is estimated through the quarterly KS. During the monitoring period five KS were carried out and no leakage was found /13-17/.	~~**CAR6**~~ **OK**

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				For the monitoring period the baseline emissions account to 1,414,732 tCO_2 while the project emissions to 960,837 tCO_2 thus the total emission reductions are 453,895 tCO_2. *In ER sheet vintage calculations start from 01/07/2012 and ends on 30/04/2013, inconsistent with the monitoring report.*	~~**CR7**~~ **OK**
B.3.2	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate?	/01/ /02/	DR I CC	Please refer to section B.3.1. No measurement equipment are involved in the monitoring of the project activity. The accuracy of the data is established as per the registered PDD as 100%. *During the on-site inspection a sample of records from ceramist and metal manufacturer have been checked. In the most of cases there is no a specific method established for recording the sales data and thus the PP is requested how is able to maintain the 100% of the accuracy of data used in the emission reductions calculation. The data collected by the metal manufacturers and liners are registered in the monthly supplied data collection sheet.*	~~**CAR7**~~ **OK**
B.3.3	Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/02/	DR	No measurement equipment are involved in the monitoring of the project activity.	**OK**
B.3.4	Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/01/ /02/	DR	The monitoring frequency in the monitoring report is in accordance with the monitoring plan in the registered PDD.	**OK**
B.3.5	Is the recording frequency adequate for all monitoring parameters? Is it in line with the registered monitoring plan?	/01/ /02/	DR	The recording frequency in the monitoring report is in accordance with the monitoring plan in the registered PDD.	**OK**
B.3.6	Does data management (from monitoring equipment to emission reduction calculation) ensure correct	/01/ /02/	DR I	The Monthly liner supplies data collection sheet /45/ and Monthly stove supplies data collection sheet /46/	

Checklist Question		Reference	MoV[1]	Comments	Conclusion
	transfer of data and reporting of emission reductions?	/28/ /29/ /30/ /45/ /46/	CC	populated the excel sheet production and sales records /28-30/. The excel sheet is accessed by specific personnel and it is protected thus formula cannot be changed. Actually the cook stove is not identified with a serial number but only with the brand stick. *Not in all cases the manufactured Gyapa stoves are identified at the manufacturing site with the appropriate identification with the brand stick.*	~~**CR5**~~ **OK**
B.4 Monitoring of GS indicators of sustainable development /environmental impacts					
B.4.1	Data/Parameter monitored / Data unit / Description / Source of data to be used / Value data for the monitoring period	/01/ /02/ /13/ /14/ /15/ /16/ /17/ /41/ /47/	DR I CC	**Air Quality.** The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS when using Gyapa stove was better as compared to the traditional coal-pot. Application of Gyapa reduces exposure to heat in the cooking area, less risk with cut from sharp edges and less ask spread. Smoke emission and irritation of the eyes during cooking are reduced drastically. This is also confirmed through the on-site inspection and interview to end-users. **Lively-hood of the poor.** The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS, during the monitoring period, on the average, Gyapa usage save from 37% to 53% of daily fuel expenditure per household/domestic user, depending in the Region where the user is located. Charcoal is easily accessible and available to 98% of users but the relevant issue is the increasing cost. The payback period vary from 6 days to 18 depending on the stove size and use (domestic, non-domestic). Although slightly expensive than other stove options like the traditional coalpot, it make economic sense to use gyapa due to the benefits from fuel savings and considering the low levels of household incomes cash savings on charcoal	

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				consumption are very much appreciated. This is also confirmed through the on-site inspection and interview to end-users. *The information in the monitoring report regarding the payback of the stove is not consistent with the in information available in the Survey Monitoring Reports*. **Employment**. The project created new employment during the monitoring period as confirmed by the contracts . that Relief International signed with manufacturers (Gyapa cookstove producer contract) /47/. *From the monitoring report is not clear if during the monitoring period new employment have been created by the project activity.* **Access to energy services**. The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS, during the monitoring period the access to energy services has improved with the introduction of Gyapa on the Ghanaian market because of the easily access to Gyapa stove. *The monitoring source mentioned in the in the monitoring report is not in accordance with the source mentioned in the registered monitoring plan.* **Product quality.** The product quality is monitored at least one per year per line manufacturer. The parameter is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS the general outlook of Gyapa observed were rated very good. The PP staff checks the quality of the liners	**~~CR9~~** **OK** **~~CR6~~** **OK** **~~CR6~~** **OK**

Checklist Question		Reference	MoV[1]	Comments	Conclusion
				before they are purchased. This is also confirmed through the on-site inspection by the Relief International people. Sometimes they receive complaint from the end users by this is due because of incorrect used of the cook stove and not because of bad manufacturing. After sale service is training the end user on how to use the cook stove and moreover a Manual for users is provided with the cook stove /41/. **Exclusive usage**. The fraction of customers is monitored through quarterly KS. During the monitoring period five KS were carried out /13-17/. Based on the result of the KS from 32% to 78% of the sample interviewed used other stoves (traditional coalpot, LPG stove, wood stove) in addition to Gyapa in the same kitchen. This is also confirmed through the on-site inspection and interview to end-users. **Human and institutional capacity**. *From the monitoring report is not clear which kind of activity have been carried out during the monitoring period.* **Technological Self Reliance**. *From the monitoring report is not clear which kind of activity have been carried out during the monitoring period.*	~~**CR6**~~ **OK** ~~**CR6**~~ **OK**
B.4.2	Is the montiroing in line with the registered monitoring plan?	/02/	DR	Please refer to section B..4.1	~~**CR6**~~ **OK**
B.5 Management, quality assurance and quality control					
B.5.1	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/02/	DR	No monitoring equipment are expected for the monitoring of the project activity. The monitoring activities described in the monitoring plan are feasible within the project activity.	**OK**
B.5.2	Are procedures identified for day-to-day record	/02/	DR	Please refer to section B.3.6	~~**CR5**~~

Checklist Question		Reference	MoV[1]	Comments	Conclusion
	handling (including what records to keep, storage area of records and how to process performance documentation)?				**OK**
B.5.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/ /02/	DR	The data management and quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified.	**OK**
B.5.4	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of VERs, for this project activity, whichever occurs later?	/01/ /02/	DR	Yes.	**OK**

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
CAR 1 *The monitoring report version 01 of 15/07/2013 does not contain the following information:* - *Purpose of the project activity* - *Brief description of the installed technology/equipment* - *Location of the project activity* - *Reference to applied methodology* - *Parties and PPs involved.* - *Implementation of sampling approach if any* - *Sample calculations for all formulae used for baseline and project emissions* - *Summary of calculation of Emission Reductions.* - *Data and parameters determined ex ante and not monitored during the crediting period if any.* - *Actual emission reductions during the first commitment period and the period from 01/01/2012.*	A.2	Purpose of project has been included in MR Brief decription of project has been included in MR Location of project included in MR Reference methodology has been included in MR Parties involve din project has been included in MR The formulas have been inlcuded in the monitoring report Summary of ER has been included in MR Data and parameters determined ex ante and not monitored has been explained in MR Actual emission reduction during commitment period and period from 01/01/2013 has been separated and included in the MR	21/08/2013. The Monitoring Report version 02 of 15/08/2013 /02/ has been updated accordingly including all the information missing. CAR 1 is closed.
CAR 2 *The data of fuel saving mentioned in the KT are not in accordance with the data in the monitoring report and in the Test Analysis KT_Accra_&Kumasi_Analysis spreadsheet.*	B.3.1	The data has been updated	21/08/2013. The data of fuel saving are now consistent throughout the project documents as the Monitoring Report version 02 of 15/08/2013 /02/, the Kitchen Test /11/ and the Kitchen Test Analysis /12/. CAR2 is closed.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
CAR 3 *The KT does not contain the determination/analysis of the drop rate used in the emission reductions calculation. Moreover the PP during the on-site visit also explained that the result of the drop rate in the KT is more conservative than the drop rate established in the registered PDD. The more conservative data have not been used in the emission reductions calculation.*	B.3.1	The drop off rates used in the calculation is based on the rates applied in the PDD and the for large stoves, the value applied is the much higer than the PDD value and its based on the previous KT of 2011. These values are considered more conservative since they are high compared with prevailing household practices, since most stoves in use are more than 3 years old as established in the KT where some stove are up to 10 years. The rates therefore used are more conservative.	21/08/2013. As per the Emission Reductions calculation /18/ the drop off rates used are based on the rates applied in the registered PDD /01/ which have been based on the KT available at that time. As per the KT 2013 /12/ the users still use their stove from the time they bought unless stove is damages due to old age or due to quality issues, thus most of stoves in use are more than 3 years old as established in the KT. In conclusion the drop off rates used in the actual emission reduction calculations Usage Drop-off, Age 1 5% Usage Drop-off, Age 2 10% Usage Drop-off, Age 3 10% Usage Drop-off, Age 3- Large 17% are the more conservative ones. CAR3 is closed.
CAR 4 *New stove performance. According the registered PDD /01/ the recording frequency is every two years while in the monitoring report is when a new cluster is added. This is not consistent throughout the documents*.	B.3.1	The MR has been updated the stove performance explanation given	21/08/2013. The monitoring report version 02 of 15/08/2013 /02/ is updated accordingly, defining that the new stove performance is determined during the KTs which are performed every two years. CAR4 is closed.
CAR 5 *Market Development. According the monitoring report the parameter is estimated quarterly through company report. During the on-site visit the PP confirmed that the company report does not exist and moreover the quarterly survey does not contain the specific monitored data*.	B.3.1	This parameter has been updated in the monitoring report.	21/08/2013. The monitoring report version 02 o15/08/2013 /02/ is updated accordingly. The parameter market development is estimated based on quaterly data from sales data /30/ and number of activities on sensitisation and promotions. CAR5 is closed.
CAR 6 *The data used by the PP for determining the NRB are not consistent with the default values used in*	B.3.1	The Growth rate value has been revised and updated in line with rates applied by CDM-SSC WG information note (Annex	21/08/2013. The Determination of NRB_Ghana excel sheet /10/ is updated accordingly incluing the default data of

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
the calculation available in the CDM-SSC WG information note (Annex 14 of 37 Meeting Report). *There is no evidence how the GR Growth rate of biomass is determined and included in the NRB calculation.*		14 of 37 Meeting Report).	GR as per the CDM information Note /21/. The fixed parameters are in accordance with the CDM information note /21/ and the other data have calculated based on the fixed parameters. The NRB account to 99.492% which is closed to 99% expected by the CDM information note. CAR6 is closed.
CAR 7 *During the on-site inspection a sample of records from ceramist and metal manufacturer have been checked. In the most of cases there is no a specific method established for recording the sales data and thus the PP is requested how is able to maintain the 100% of the accuracy of data used in the emission reductions calculation. The data collected by the metal manufacturers and liners are registered in the monthly supplied data collection sheet.*	B.3.2	Accuracy is guranteed through multiple cross checks, internal review and verifications. Liner Producers record their individual production and sales numbers which are cross checked through verification against Manufacturer individual production and sales data. These records are compiled (password protected) and reviewed by the Technical Officer. The storage, product loan and sales records of Relief International is also cross checked against the compiled records. The entire database is then reviewed and verified for accuracy and completeness by the Enterprise Development Director.	21/08/2013. As stated by the PP the 100% of the accuracy of data used in the emission reductions calculation is guarenteed through multiple cross checks reviewing Gyapa Liner Sales /28/, Gyapa Sales Database /29/, Gyapa sales_manufactures to retailers /30/, Production data /31/ /32/, Monthly liner supplies data collection sheet /45/ and the Monthly stove supplies data collection sheet /46/. CAR7 is closed.
CAR 8 *The project title in the Monitoring Report version 01 is not consistent with the project title in the registered PDD version 4. Moreover the GS project ID in the Monitoring Report is not consistent with the project ID available in the GS Registry website.*	A.1	The project title has been chaged to match the registered PDD and now reads “Gyapa Improved Stoves in Ghana”. The registry project title is not consitstent with registered PDD and this can be attrivuted to regustry migration issues which th eproject developer will follow up with the registry team for rectification.	21/08/2013. The Monitoring Report version 02 of 15/08/2013 /02/ is updated accordingly; the project title is now consistent with the project title in the registered PDD /01/. CAR8 is closed.
CR 1 *The emission reductions comparison available in the monitoring report version 01 of 15/07/2013 should be available only between the monitoring period and the same period estimated in the*	A.2	The emission reduction comparison has been updated to show only the monitoring period	21/08/2013. The Monitoring Report version 02 of 15/08/2013 is updated accordingly. CR1 is closed.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
registered PDD. *The values of stoves manufactured and sold during the monitoring period in the Monitoring Report are not consistent with the ER sold-damages sheet.*		The number of stoves produced and sold have been updated and the error rectified.	
CR 2 *According the information available in the registered PDD it is not clear if there are parameters fixed ex ante that not need to be monitored during the crediting period.*	B.2.1	The registered PDD does not have values fixed ex ante. All the values are to be monitored.	21/08/2013. According the applied methodology /07/ and the registered PDD /01/ no parameters are fixed ex ante and thus all of them are to be monitored during the crediting period. CR2 is closed.
CR 3 *The monitoring report does not contain explanation on why the KT on small size was not carried out and for the purpose of the emission reductions calculation was taken into account the previous KT carried out on 2011.*	B.3.1	The monitoring report has been updated and explanation provided.	21/08/2013. Considering the low quantity of small size sold during the monitoring period, the PP didn't consider necessary to update the KT on small size Gyapa stoves and thus for the fuel saving the value from the previous KT has been applied. The Monitoring Report version 02 of 15/08/2013 is updated accordingly. CR3 is closed.
CR 4 *For the parameter project fuel consumption, cluster definition, usage factor, age factor and new stove performance the proportion of data to be monitored is a sample. The KT used for the estimation/measure of these parameters states that a random sample was used without any explanation how the random sample has been determined*.	B.3.1	Explanation sampling peocedures is explained int the Kitchen test report.	21/08/2013. To select participants for the KT simple random sampling was used using the the Gyapa Sales Database /29/. The list of customers was grouped by location first; having zoned the zones and grouped the customers based who where residing in these zones, a random sample was then used to select households to participate in KT. CR4 is closed.
CR 5 *Not in all cases the manufactured Gyapa stoves are identified at the manufacturing site with the appropriate identification with the brand stick.*	B.3.6 B.5.2	Manufacturers all have stickers which are adheared to the stoves upon sale of each product. In addition, branding stickers are distributed to retailers to ensure proper branding is on every Gyapa stove in the market. In cases where there are no	21/08/2013. As stated by the PP and confirmed through the on site visit all the manufacturers have brand stickers for identifying the Gyapa stove. The PP is also in the process to change the sticker adding the serial number for the stove.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
		stickers, the lack of it does not affect or lead to double counting, since stoves are reconciled from ceramic production and stove manufacture. RI is also in the process of rolling out new branding wuth unique serial numbers to increase data collection of users and to prevent immitation products.	There is no risk of double counting even if the stove has not the brank stickers before to be placed in the market. The PP reconciled the data from ceramic production /28/ and stove manufacture /31/ /32/. CR5 is closed.
CR 6 *From the monitoring report is not clear if during the monitoring period new employment have been created by the project activity.* *Access to energy. The monitoring source mentioned in the in the monitoring report is not in accordance with the source mentioned in the registered monitoring plan.* *Human and institutional capacity. From the monitoring report is not clear which kind of activity have been carried out during the monitoring period* *Technological Self Reliance. From the monitoring report is not clear which king of activity have been carried out during the monitoring period.*	B.4.1 B.4.2	The project provided new employment during the monitoring period and the number sof those employed are captured in the monitoring report under "employment". The MR has been updated Capacity building is conducted through regular producer on-site visits, regional trainings, and training of training meetings, Gyapa Marketing Officers provide business acumen, data management and sales support to producer groups. The monitoring report has been updated for clarity. Technological self reliance is based on the skillls gained by artisan and liner manufacturers in stove making. The parameter monitored is number of artisans who are joining and the inovations.	21/08/2013. The implementation of the project is able to create emplyoment and from the beginning of it implementation the ceramist, the stove manufacturers and the retailers increased. Actually 6 ceramists, 300 stove manufacturers /25/ and 500 retailers /26/ are working for producing Gyapa stoves. The Monitoring Report version 02 of 15/08/2013 is updated accordingly. The human and institutional capacity is assured by conducting training and meeting /33/. The technological self reliance is assured by conducting training and meeting /33/. CR6 is closed.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
CR 7 *In ER sheet vintage calculations start from 01/07/2012 and ends on 30/04/2013, inconsistent with the monitoring report.*	B.3.1	The ER vintage period has been updated and now consistent with the monitoring report.	21/08/2013. Emission Reductions calculation SalesERs-Gyapa-2012+Q1-13_Confidential-130813.xls /18/ is updated accoringly and now the monitoring period is consistent with the Monitoring Report version 02 of 15/08/2013 /02/. CR7 is closed.
CR 8 *The ER sheet states that the usage survey was carried out in Jul-Aug2011 /2012 which is not in line with the information provided for the actual monitoring period*	B.3.1	Although there was usage survey in the KT of June-July 2013, the values applied are for those of July-Aug 2011 KT results since they are more conservative and higher.	21/08/2013. Emission Reductions calculation SalesERs-Gyapa-2012+Q1-13_Confidential-130813.xls /18/ is consistent for the information provided regarding the usage factor. CR8 is closed.
CR 9 *The information in the monitoring report regarding the payback of the stove is not consistent with the in information available in the Survey Monitoring Reports*.	B.4.1	The Quarterly Surveys vary by production zones each quarter. In different areas of the country, charcoal prices vary and thus the payback periods are taken as an average based on the information taken from the Quarterly Surveys	21/08/2013. The data in the Monitoring Report version 02 of 15/08/2013 /02/ (average data) are consistent with the data in Quaterly Surveys /13/ /14/ /15/ /16/ /17/. CR9 is closed.

TABLE 3 FORWARD ACTION REQUEST

Forward action request	Reference to Table 1	Response by project participants Verification conclusion
FAR 1 *During the on-site visit to the manufacturing sites, the Gyapa "baby" is under construction, but the manufacturers declared that they are not yet in the market. During the next verification it is requested to verify if the cluster definition will include the baby size actually under construction.*	B.3.1.	The project developer will maintain records and track its sales and will consider if to include it as new cluster in the next monitoring period. 21/08/2013. The parameter will be checked during the next verification.

RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Rita Valoroso**
è qualificato come1: *is qualified as:*	**CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP** **VCS–TEC, VCS-VAL, VCS-VER, VCS-TL, VCS-FIN-EXP** **GS-TEC, GS-VAL, GS-VER, GS-TL, GS-FIN-EXP** **SCS-TEC, SCS-VAL, SCS-VER, SCS-TL, SCS-FIN-EXP** **JI-TEC, JI-FIN-EXP**
per le seguenti aree tecniche: for the following technical areas:	**1.2, 13.1**

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
1.2	Energy generation from renewable Energy sources	1
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	18-01-10	-
7	12-07-13	Annual revision

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

RINA

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: *We declare that Mr/Mrs/Ms:*	**Luca Cidonio**
è qualificato come[1]: *is qualified as:*	**CDM-TEC, CDM-VAL** **VCS-TEC, GS-TEC, JI-TEC, SCS-TEC**
per le seguenti aree tecniche: for the following technical areas:	**2.2, 3.1**

AREE TECNICHE **TECHNICAL AREAS**	**DESCRIZIONE DELL'AREA TECNICA** ***TECHNICAL AREA DESCRIPTION***	**SCOPO SETTORIALE** ***SECTORAL SCOPE***
2.2	Heat distribution	2
3.1	Energy demand	3

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE ***REVISION***	**DATA** ***DATE***	**MOTIVAZIONI PER LA REVISIONE** ***REASON FOR THE REVISION***
0	28-07-2008	-
10	15-07-2013	Annual revision

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra: **A. Cyril Augustus Arokiasamy**

We declare that Mr/Mrs/Ms:

è qualificato come[1]: **CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP, GS-TEC, GS-VAL, GS-VER, GS-TL, GS- FIN-EXP, SCS-TEC, SCS-VAL, SCS-VER, SCS-TL, SCS- FIN-EXP VCS-TEC, VCS-VAL, VCS-VER, VCS-TL, VCS- FIN-EXP, JI-TEC**
is qualified as:

per le seguenti aree tecniche: **1.1, 1.2, 2.2, 3.1, 4.5, 4.10, 5.1, 11.1, 13.1**
for the following technical areas:

AREE TECNICHE *TECHNICAL AREAS*	**DESCRIZIONE DELL'AREA TECNICA** *TECHNICAL AREA DESCRIPTION*	**SCOPO SETTORIALE** *SECTORAL SCOPE*
1.1	Thermal energy generation from fossil fuel and biomass including thermal electricity from solar	1
1.2	Energy generation from renewable energy sources	1
2.2	Heat Distribution	2
3.1	Energy Demand	3
4.5	Rubber and Plastics	4
4.10	Fuel switching and/or energy efficiency and/or waste heat/gas/pressure recovered and utilization for power generation at manufacturing industries	4
5.1	Chemical process industries	5
11.1	Chemical process industries	11
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE *REVISION*	**DATA** *DATE*	**MOTIVAZIONI PER LA REVISIONE** *REASON FOR THE REVISION*
0	30-06-2010	-
10	10-10-2013	Updated qualification as VCS-VER, VCS-VAL, VCS-TL

Il Resp. QPT
Head of QPT

[1] Legend:

VAL:	Validator	CDM: Clean Development Mechanism
VER:	Verifier	VCS : Verified Carbon Standard:
TEC:	Technical Expert	GS: Gold Standard
TL:	Team Leader	SCS: SocialCarbon Standard
FIN-EXP:	Financial Expert	JI: Joint Implementation
DET:	Determiner	

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports