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# Gold Standard Validation Report

E+CARBON, INC.

VALIDATION OF THE GS VER RETROACTIVE  
REGISTRATION PROJECT:

**IMPROVED HOUSEHOLD CHARCOAL STOVES IN  
GHANA**

REPORT NO. 1256866-GS v1

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<b>Subject:</b> Validation of a GS VER Project	
<b>Accredited TÜV SÜD Unit:</b> TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstrasse 199 80686 Munich Germany	<b>TÜV SÜD Contract Partner:</b> TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstrasse 199 80686 Munich Germany
<b>Project Participant:</b> E+Carbon, Inc. 383 Franklin St Bookmfield, NJ 07003	<b>Project Site(s):</b> Greater Accra, Ghana
<b>Project Title:</b> Improved Household Charcoal Stoves in Ghana	
<b>Applied Methodology / Version:</b> Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes version 01.	<b>Scope(s):</b> 1
<b>First PDD Version:</b> Date of issuance: 20-08-2008 Version No.: 2 Starting Date of GSP 08-12-2008	<b>Final PDD version:</b> Date of issuance: 08-06-2009 Version No.: 3.3
<b>Estimated Annual Emission Reduction:</b>	<b>65 568 tCO<sub>2</sub>e</b>
<b>Assessment Team Leader:</b> Martin Schroeder	<b>Further Assessment Team Members:</b> Johann Thaler Cyprian Fusi
<b>Summary of the Validation Opinion:</b>	
<input checked="" type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant Gold Standard requirements. Hence TÜV SÜD will recommend the project for registration by the Gold Standard.	
<input type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the Gold Standard and will inform the project participants and the Gold Standard on this decision.	



## **Abbreviations**

<b>AM</b>	Approved Methodology
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CDM EB</b>	CDM Executive Board
<b>CER</b>	Certified Emission Reduction
<b>CR / CL</b>	Clarification Request
<b>DNA</b>	Designated National Authority
<b>DOE</b>	Designated Operational Entity
<b>EF</b>	Emission Factor
<b>EIA / EA</b>	Environmental Impact Assessment / Environmental Assessment
<b>ER</b>	Emission Reduction
<b>ERPA</b>	Emission Reductions Purchase Agreement
<b>FAR</b>	Forward Action Request
<b>GHG</b>	Greenhouse Gas(es)
<b>GS</b>	Gold Standard
<b>GS TAC</b>	Gold Standard Technical Advisory Committee
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IRL</b>	Information Reference List
<b>IRR</b>	Internal Rate of Return
<b>KP</b>	Kyoto Protocol
<b>MP</b>	Monitoring Plan
<b>NRB</b>	Non-Renewability fraction of Biomass
<b>NGO</b>	Non Governmental Organisation
<b>PDD</b>	Project Design Document
<b>PP</b>	Project Participant
<b>SDM</b>	Sustainable Development Matrix
<b>TEL</b>	Toyola Energy Limited
<b>TÜV SÜD</b>	TÜV SÜD Industrie Service GmbH
<b>VER</b>	Verified Emission Reductions/Voluntary Emission Reduction
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	Validation and Verification Manual



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Annex 1: Validation Protocol

Annex 2: Information Reference List (IRL)

## 1 INTRODUCTION

### 1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set for the registration under the Gold Standard (GS version 1). Validation is part of the GS project cycle and results in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the Gold Standard Technical Advisory Committee (GS-TAC). The ultimate decision on the registration of a proposed project activity rests with the GS-TAC.

The project activity covered by this validation report has been submitted under the project title:  
**“Improved Household Charcoal Stoves in Ghana”**

### 1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of GS project activities the scope is set by:

- The Gold Standard Technical Advisory Committee (GS-TAC)
- Guidance and decisions provided by GS-TAC
- The Kyoto Protocol, in particular § 12 and modalities and procedures for the CDM
- CDM and/or GS-VER approved Baselines and Monitoring methodologies (including GHG inventories)
- Decisions and specific guidance by the CDM-EB published under <http://cdm.unfccc.int>
- Management systems and auditing methods
- Environmental issues relevant to the sectoral scope applied for
- Applicable environmental, social impacts, and aspects of CDM project activity
- Sector specific technologies and their applications
- Current technical and operational knowledge of the specific sectoral scope and information on best practice

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

Once TÜV SÜD receives a first PDD version, it is made publicly available at TÜV SÜD's webpage to start a Global Stakeholder consultation Process (GSP). In special circumstances (e.g. certain conditions may warrant the repetition of the GSP), a request to revise the PDD will be necessary. The original PDD and the modified PDD will form the basis for the final evaluation. Information on both PDD's is presented on page 1.

The purpose of a validation report is its use during the registration process as part of the GS retroactive registration project cycle. Therefore, TÜV SÜD cannot be held liable by any party for decisions made, or not made, based on the validation opinion, which will go beyond that purpose.

## 2 METHODOLOGY

The project assessment applies standard auditing techniques to assess the correctness of the information provided by the project participants. The assessment is based on:

- GS Validation and Verification Manual for VER projects as defined for GS version 01.
- The “Clean Development Mechanism Validation and Verification Manual” version 01.

The process begins with the appointment of the validation or audit team covering the technical and/or sectoral scope(s) and relevant host country experience for evaluating the GS project activity. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up interviews, resolution of issues identified, and finally preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control at TÜV SÜD Certification Body (CB) - “Climate and Energy” - before submission to the GS TAC.

In order to ensure transparency, assumptions are clearly and explicitly stated; background materials are clearly referenced. TÜV SÜD developed methodology-specific checklists and customised protocol for the project. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team, and the results from validating the identified criteria.

The validation protocol serves the following purposes:

It organizes details and clarifies the requirements a GS project is expected to meet;

It ensures a transparent validation process where the auditor has to document how a particular requirement has been validated, as well as the results of the validation and any adjustments, if any, made to the project design.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

<b>Validation Protocol Table 1: Conformity of Project activity and PDD</b>				
<b>Checklist Topic / Question</b>	<b>Reference</b>	<b>Comments</b>	<b>PDD in GSP</b>	<b>Final PDD</b>
<i>The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further sub-divided. The lowest level constitutes a checklist question / criterion.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any <b>Request</b> has to be substantiated within this column</i>	<i>Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (☑), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question (See below). <b>Clarification Request (CR)</b> is used when the validation team has identified a need for further clarification. <b>Forward action request</b> to highlight issues related to project implementation that require review during the first verification.</i>	<i>Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.</i>

<b>Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests</b>			
<b>Clarifications and corrective action requests</b>	<b>Ref. to table 1</b>	<b>Summary of project owner response</b>	<b>Validation team conclusion</b>
<i>If the conclusions from table 1 are either a Corrective Action, a Clarification or a Forward action Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the issue is explained.</i>	<i>The responses given by the client or other project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the discussion on and revision to project documentation together with the validation team's responses and final conclusions. The conclusions should be reflected in Table 1, under "Final PDD".</i>

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

<b>Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests</b>		
<b>Clarifications and corrective action requests</b>	<b>Id. of CAR/CR 1</b>	<b>Explanation of the Conclusion for Denial</b>
<i>If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.</i>	<i>Identifier of the Request.</i>	<i>This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion with a clear reference to the requirement which is not complied with.</i>

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

## 2.1 Appointment of the Assessment Team

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

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The following table shows the validation team and their qualifications as appointed by TÜV SÜD CB

<b>Name</b>	<b>Qualification</b>	<b>Coverage of technical scope</b>	<b>Coverage of sectoral expertise</b>	<b>Host country experience</b>
<b>Martin Schröder</b>	<b>ATL</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Johann Thaler	GHG-A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cyprian Fusi	GHG-T	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



**Martin Schröder** is appointed as Assessment Team Leader and GHG-Auditor by the certification body "climate and energy". He holds a Masters Degree in forestry and passed successfully internal training schemes in the field of auditing as well as the technical features of landfill and energy related projects. Before entering the company, he worked in the field of development projects in the Amazon Region and managed forestry based carbon offset projects.

**Johann Thaler** graduated as Master of environmental Economy at the University of Augsburg. During his study he got first experiences in environmental management systems. His master thesis was about a fuel switch program in Brazil as a CDM project. Based in Brazil he has been working for TÜV SÜD as a GHG auditor on freelance basis since March 2005. He attended and successfully finished a ISO 14001 Environmental Management Internal Auditing Training.

**Cyprian Fusi (an African)** is a GHG auditor (Trainee) with the "Carbon Management Service" in Munich - the head office of TÜV SÜD Industrie Service GmbH, Germany. He holds a Dipl.-Ing (M.Sc) degree in electrical engineering with a speciality in Radio Frequency / Microwave (RF/MW) engineering. Mr. Fusi has worked previously with Siemens AG Berlin, Volkswagen Hannover, Fraunhofer Institute IZM Berlin, Ferdinand Braun Institute for High Frequency Techniques Berlin and Microelectronics for Multimedia Berlin. He has received training in the CDM/JI validation and verification processes and has participated in several CDM/JI project audits and workshops.

## 2.2 Review of Documents

The first version of the PDD was submitted to the DOE in August 2008. The first PDD version submitted by the PP and additional background documents related to the project design and baseline have been reviewed to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources (if available) has been done as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report (Information Reference List).

## 2.3 Follow-Up Interviews

From 02-04 December 2008 TÜV SÜD conducted interviews during the on-site visit with project stakeholders to confirm relevant information, and to resolve issues identified in the first document review. The table below provides a list of all persons interviewed in this context. An expanded list including some end users interviewed is provided in annex 2.

Name	Organisation
Erik Wuster (Mr.)	Manager Carbon Finance, E+Co
Ernest K Kyei (Mr.)	Director, Toyola Energy Ltd
Suraj W. Ologburo (Mr.)	CEO, Toyola Energy Ltd
Joeseoph Osiakwan (Mr.)	Min. of Lands, Forestry & Mines, Ghana
Yvonne Asumah (Mr.)	Contract Field Worker, Ghana
Sister Ajele (Mrs.)	Domestic end user, Toyola Coalpot

## 2.4 Further Cross-Check

During the validation process the team makes reference to available information related to similar projects or technologies as the GS project activity. The documentation has also been reviewed against the "Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes" V01 applied to confirm the appropriateness of formulae and correctness of calculations.

## **2.5 Resolution of Clarification and Corrective Action Requests**

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which needed to be clarified before TÜV SÜD's conclusion on the project design. The CARs and CRs raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process the concerns raised and responses that were provided are documented in more detail in table 2 of the validation protocol provided in annex 1. In total, 25 CARs, 12 CRs and 1 FAR were raised. After three loops of deliberations with the project participants, the audit team was able to close out all remaining issues of concern. The details of the discussions that transpired between the PP and the audit team and finally culminated in the validation opinion can be followed in table 2 of the validation protocol provided in annex 1 of this report. This process led to the revision of the PDD to version 3.2 on which this report is based (IRL No. 24).

The final PDD version submitted June 2009 (IRL No. 24) serves as the basis for the final assessment presented here. Changes are not considered to be significant with respect to the qualification of the project as a GS project.

## **2.6 Internal Quality Control**

As final step of a validation activity the final documentation, which includes the validation report and the validation protocol, has to undergo an internal quality control at the CB "Climate and Energy". This means that each report has to be approved either by the head of the CB or the deputy. In situations where either the Head of the CB or his/her Deputy is part of the assessment team approval can only be given by either of them not serving on the audit team for the project.

After confirmation by PP, the validation report and relevant documents are submitted to the GS TAC through the DOE access to the GS registry.

## **3 GENERAL VALIDATION FINDINGS**

The assessment work and the main results are described below in accordance with the VVM reporting requirements. The reference documents indicated in this section and in the validation protocol are provided in Annex 2 (Information Reference List).

### **3.1 Participation**

Project participants are:

- E+Carbon, Inc; USA
- Toyola Energy Limited (TEL), Ghana

The participants have confirmed their voluntary participation in the GS project activity (IRL No. 4)

The host party to the project activity is Ghana.

### **3.2 Project Design Document (PDD)**

The PDD is compliant with relevant form and guidance as provided by GS. The most recent version of the PDD form was used.

TÜV SÜD considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information was provided by the participants in the applicable PDD sections A.3. Completeness was assessed through the checklist included in Annex 1 of this report.

### 3.3 Project Description

The following description of the project as per PDD was verified during the on-site visit:

The project activity takes place at end users' kitchens in and around the Greater Accra region, Eastern Region, Ashanti Region and Central Region in Ghana and involves the dissemination of fuel-efficient charcoal stoves to low income households in the country. The improved charcoal stove (Toyola Coalpot) reduces fuel consumption by introduction of a ceramic liner that increases combustion efficiency and retains heat. The project boundary here is defined as the domestic kitchens of the project population using Toyola Coalpot stoves.

The objective of the project is to provide efficient charcoal stoves for cooking at affordable prices to people in Greater Accra region and beyond.

The target area, as defined in the applied methodology, is Toyola Energy Limited (TEL) current distribution network, but will gradually expand to cover major towns and market centers in all regions of Ghana, including Western, Brong-Ahafo, Volta, Upper West, Upper East and Northern. Wood fuel and charcoal consumption can be substantially reduced as a result of implementing the project. The savings in charcoal consumption would then translate into emission reduction according to the GS Methodology "Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes" version 1.

As a result of E+Carbon's investment in TEL (IRL No. 15, 16, 17 & 23), which was undertaken based on the project's potential of generating revenues from VER in the future, Toyola could enjoy sufficient working capital to start its own kind of micro lending arrangement - by offering end users the opportunity to purchase stoves on credit payable over multiple instalments. This situation allowed for sales to grow significantly. Without E+Carbons involvement, purchasing a Toyola stove would account for several percent of annual incomes and the ability for the end users to save this amount of money to purchase the stove is extremely limited. TEL is currently selling stoves accompanied by rebate cards with the hope of realizing additional revenues from the sales of VERs in order to remain viable and also to reimburse the end users an amount which is estimated at the time of validation as one Ghana Cedi (GHC 1) per stove. This rebate will allow end users to realize a partial refund on their purchase, which further helps to overcome end user financial hurdles. That is, some carbon revenues would act as a direct subsidy so that efficient stoves are cost competitive with their inefficient business-as-usual counterparts. Carbon finance will lower the price of stoves so that a broader spectrum of Ghanaian society can afford them.

In order to convince the population at large about the long term benefits of the efficient stoves, workshops and publicity programs are planned. The project is owned and managed by Suraj Ologburu (Entrepreneur and managing director of TEL) but is being developed by an American organisation called E+Carbon, Inc. - a subsidiary of a non profit organisation called E+Co.

The information presented in the PDD on the technical design is consistent with the actual planning and implementation of the project activity as confirmed through:

- Review of data and information (see annex 2). This was verified with other sources if available.
- An on-site visit has been performed and relevant stakeholder and personnel with knowledge of the project were interviewed. If doubts arose further investigations and additional interviews were conducted.
- Finally, information related to similar projects or technologies as the VER and/or CDM project activity have been used (if available) to confirm the accuracy and completeness of the project description.

In concluding, TÜV SÜD is able to confirm that the project description, as included to the PDD, is sufficiently accurate and complete and therefore comply with GS VER requirements.

### **3.4 Baseline and Monitoring Methodology**

#### **3.4.1 Applicability of the Selected Methodology**

Compliance with each applicability criterion as listed in the applied baseline and monitoring methodology “Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes” version 01 has been demonstrated.

The assessment was carried out for each applicability criterion and included, among others, the compliance check of the local project setting with the applicability conditions in regard to baseline setting and eligible project measures. This assessment also included the review of secondary sources, and these attest that applicability conditions are complied with. As the most plausible baseline scenario for this project an evolving baseline has been chosen and justified according to section II, chapter 2 of the methodology as appropriate for a project whose conditions are not changing during the crediting period.

The Methodology specific checklist (validation protocol), included in Annex 1, documents the assessment process, which also includes the various steps taken in the course of the validation. The results of the compliance check, as well as the relevant evidences, are detailed in Annex 1.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

Emission sources, which are not addressed by the applied methodology, and are expected to contribute more than 1% of the overall expected average annual emission reductions according to Appendix A of the GSv1 VVM, have not been identified.

#### **3.4.2 Project Boundary**

The project boundary was assessed during the physical site inspection, interviews, and using other evidences on the design of the project received.

The project boundary here is defined as the domestic kitchens of the project population using Toyola Coalpot stoves in Ghana. This was also confirmed during the on-site visit. The target area, as defined according to the methodology being applied, is TEL’s current distribution network, but will gradually expand to cover major towns and market centres in all regions of Ghana, including Western, Brong-Ahafo, Volta, Upper West, Upper East and Northern.

TÜV SÜD can therefore confirm that the identified boundary, the target area, the selected sources, and gases as documented in the PDD are justified for this project activity.

#### **3.4.3 Baseline Identification**

The PDD defines the following baseline scenario:

The baseline scenario has been determined as the continuous use of non-renewable biomass at unsustainable rate in inefficient stoves and inefficient traditional cooking regime in the next 10 years. This was established according to the applied methodology through surveys and tests to estimate and quantify baseline conditions in homes which are not using the improved stove. Monitoring of the emissions in the project scenario and the baseline scenario will be done according to option1 (as described in the applied methodology) due to evolving baseline.

Since the baseline CO<sub>2</sub> emission is due mainly to the consumption of non-renewable biomass, and the project technology emits less CO<sub>2</sub>, the project activity leads to additional emission reductions.

The information presented in the PDD has been validated during the desk review of the PDD and any document provided by the project participants. Further confirmation is based on the on-site visit and further information obtained from similar projects and/or technologies. The sources referenced

in the PDD have been quoted correctly. The information was verified against credible sources, such as:

- IPCC data on climate change (2006 IPCC Guidelines for National Greenhouse Gas Inventories)
- Similar projects found at GS website undergoing validation
- FAO (FAOSTAT-Forestry Database, 2005, <http://faostat.fao.org>).

TÜV SÜD has determined that no reasonable alternative scenario has been excluded.

Based on the validated assumptions used in calculations, TÜV SÜD considers that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD confirms that all relevant GS requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly. A verifiable description of the baseline scenario has been included in the PDD.

TÜV SÜD confirms that:

1. All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
2. All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
3. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable;
4. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD
5. The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would have occurred in the absence of the proposed GS project activity.

#### **3.4.4 Algorithm and/or Formulae used to determine Emission Reductions**

TÜV SÜD has assessed the calculations of project emissions, baseline emissions, leakage, and emission reductions. Corresponding calculations were carried out based on calculation spreadsheets - Ghana PDD ER Projections.xls (IRL No. 8). The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and other applicable tools. The equation comparison has been made considering all the formulae presented in the calculation files "Ghana PDD ER Projections.xls" - CEIHD Household Energy Carbon Calculator (IRL No. 8).

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked and confirmed.

Based on the information reviewed it can be confirmed that the sources used are correctly quoted and interpreted in the PDD. The values presented in the PDD are considered reasonable based on the documentation and references reviewed as well as on the result of the interviews.

The baseline methodology has been correctly applied according to requirements.

The estimate of the baseline emissions can be confirmed to be the same as that which have been replicated by the audit team using the information provided.

Detailed information on the verification of the parameters used in the equations can be found in Annex 1. The algorithms for the determination of the baseline, project, and leakage emissions are discussed in the subsequent sections of this report.

##### **3.4.4.1 Baseline Emissions**

Project and baseline emissions have been calculated using the CEIHD Household Energy Carbon Calculator (CHECC). This a detailed excel model developed by the Center for Entrepreneurship in International Health and Development (CEIHD) that estimates emission reductions of carbon diox-

ide, methane and nitrous oxide from improved cook stoves. Fuel savings figures from the KPT were used as inputs into this model to project potential emission reductions. PDD annex 2 summarizes the input data and assumptions that were used in this model.

Baseline emissions are those which would be displaced by the deployment and use of efficient stoves in end users' kitchen in Ghana.

### **3.4.5 Project Emissions**

Generally, the project emissions are calculated with Approach 1 (measurement of all fuels mix) according to the methodology. This has been estimated using the excel workbook "Ghana PDD ER Projections.xls" (IRL No. 8). The approach and the equations used to calculate project emissions are consistent with the applied methodology.

### **3.4.6 Leakage**

No significant leakage emissions have been identified for this project activity. However, the dissemination of efficient stoves may lead to the so-called 'bounce effect' - which is the increased use of wood/charcoal outside the project boundary. To make sure that the dissemination of efficient stoves does not have a significant impact on the local charcoal and wood fuel usage, every two year PPs will conduct a survey with market participants to look if the saved wood and charcoal is being used for other purposes.

### **3.4.7 Emission Reductions**

In summary, the estimate of the baseline emissions; project emissions, leakages and the resulting emission reductions, can be considered to be appropriate. As demanded by the GS pre-feasibility assessment report, the Kitchen Survey and Kitchen Tests & Statistical Analyses in the PDD have been conducted by a third party. The statistical evaluation is deemed to be appropriate regarding the requirements of the methodology.

## **3.5 Additionality**

Apart from demonstrating that the project would lead to reduction of GHG emissions, it also has to be demonstrated that the reductions are additional to those that would have occurred in the absence of the propose project activity. According to the methodology "The project proponent must show that the project could not or would not take place without the presence of carbon finance. Possible reasons may be that the initial investment, or the on-going costs for marketing, distribution, quality control and manufacture, are not affordable to the target project population in the form of high stove prices."

Steps 1 through 4 of the UNFCCC "Tool for the demonstration and assessment of additionality" version 5 have been used to demonstrate that the emission reductions due to the project activity are additional to any that would have occurred in the absence of the project activity. The approach in the PDD has been assessed mainly based on a document review, where following relevant documents have been reviewed:

- Transfer of Title and Ownership to Emission Reduction: Toyola-E+Carbon Offset Prepayment: signed 29.08.2008 (IRL No. 17)
- Prefeasibility Assessment Cook-stoves Ghana Final.pdf (IRL No. 20).
- Carbon Monitoring Report on the Toyola Improved Charcoal Stove (IRL No. 25)
- Disbursement record.pdf, dated 14<sup>th</sup> November 2006 (IRL No. 23)

On site the additionality has been discussed principally with the project owner Suraj Ologburo and the project developer Erik Wuster (IRL No. 4). Further documents reviewed on-site can be found below in Annex 2 (IRL).

Finally, the data, rationales, assumptions, justifications, and documentation provided have been verified using local and/or country knowledge or experience as well as sectoral and financial expertise. This information was also confirmed through the following documentation and/or sources:

- FAO, Forestry Country Profiles - Ghana, <http://www.fao.org/forestry/18308/en/gha/> (IRL No. 26)
- International Tropical Timber Organization, "Status of Tropical Forest Management: Ghana", SFM Tropics, 2005, [http://www.itto.or.jp/live/Live\\_Server/1233/Ghana.e.pdf](http://www.itto.or.jp/live/Live_Server/1233/Ghana.e.pdf) (IRL No. 27)
- UNDP, "A Review of the Household Energy Programme For Cooking, 2007" [http://www.energycom.gov.gh/household/pdf/household\\_review07.pdf](http://www.energycom.gov.gh/household/pdf/household_review07.pdf) (IRL No. 28)

Based on this validation steps it can be confirmed that the documentation assessed is appropriate to prove that the project activity is additional.

For more information about GS conservative approach check see chapter 4.3 of this report.

### **3.5.1 Prior Consideration of Finances from Carbon Credits**

The starting date of the project activity is 14<sup>th</sup> November 2006 (which is before 02 August 2008), determined by the date when E+Co disbursed \$ 68.200,00 (IRL No. 23) to TEL as a low interest loan with the hope that income from the sales of VERs would eventually be part of TEL's cash flow. This is considered as the date when 'real action' began according to the CDM glossary of terms. In order to corroborate this information the assessment team has reviewed the following documents:

- Emission Reduction Purchase Agreement between E+Carbon & TEL 21.11.2007 (IRL No. 9)
- Letter of Intent signed 31<sup>st</sup> August 2007 (IRL No. 10)
- VER offset prepayment dated 29.08.2008 (IRL No. 17)
- ERPA Amendment dated 01.02.2008 (IRL No. 21)

The original documents presented have been reviewed and verified based on interviews with the project owner Suraj Ologburo and the project developer Erik Wuster (IRL No. 4). Therefore the documents can be considered appropriate to confirm prior consideration of VER income.

### **3.5.2 Identifications of Alternatives**

The output of the project is emission reductions through the dissemination of fuel-efficient charcoal stoves in Ghana.

The list of alternatives to supply the above mentioned results, which are also presented in the PDD, includes the project activity undertaken without being registered as GS VER project. The remaining alternatives presented do include all plausible scenarios taking into account the local and sectoral situations for the mentioned results. The list of alternatives is therefore considered complete.

### **3.5.3 Investment Analysis**

The PP uses the barrier analysis to demonstrate additionality of the project activity.

### **3.5.4 Barrier Analysis**

The project participants have used the barrier analysis in order to demonstrate the additionality of the project. The presented barriers are:

- Financial barrier
- Investment barrier
- Knowledge barrier
- Prevailing practice

The financial and investment barriers have been assessed using the low interest loans from E+Carbon to TEL (IRL No. 15 & 16) and the disbursement record (IRL No. 23). The result of this assessment clearly shows that the barrier presented in the PDD can be considered real.

This barrier would prevent the project activity but would not prevent the baseline of the project. This is confirmed through the documentation review, interviews, and the local and/or country and sectoral expertise of the assessment team.

As highlighted in the UNFCCC additionality tool, credible investment barriers include evidence that “similar activities have only been implemented with grants or other non-commercial finance terms.” TEL has been thankful to past financial investment made by E+Carbon in the form of low interest loans (IRL No. 23) and VER prepayment (IRL No. 17) . These investments were undertaken based on the project’s potential to generate revenues from VER in the future. Toyola therefore could enjoy sufficient working capital to start its own kind of micro lending arrangement - by offering end users the opportunity to purchase stoves on credit payable over multiple instalments. This situation allowed for sales to grow significantly. Without E+Carbon’s involvement, purchasing a Toyola stove would account for several percent of annual incomes and the ability for the end users to save this amount of money to purchase the stove is extremely limited. TEL is currently selling stoves accompanied by rebate cards with the hope of realizing additional revenues from the sales of VERs in order to remain viable and also to reimburse the end users an amount which is estimated at the time of validation as one Ghana Cedi (GHC 1) per stove. This amount to about 10% - 12.5% of the stove’s selling price. This rebate will allow end users to realize a partial refund on their purchase, which further helps to overcome end user financial hurdles. That is, some carbon revenues would act as a direct subsidy so that efficient stoves are cost competitive with their inefficient business-as-usual counterparts. Carbon finance will lower the price of stoves so that a broader spectrum of Ghanaian society can afford them.

In the absence of the role played by E+Carbon, investment and the on-going costs for marketing, distribution, quality control and manufacture, would not be affordable to the target project population in the form of high stove prices. Without this unsustainable practice by E+Carbon, TEL would not have been able to remain viable, and would have grounded and probably gone out of business completely. In other words, sales would have dropped to zero. Income from the sales of VERs would be expected to improve the state of the business to a level which could be sustainable in a long run.

Even with a commercial loan, which is difficult to come by in Ghana due to the nature of the business and the conditions to obtain a loan in Ghana, the business would still not been viable and sustainable because of high stoves prices.

Based on the validation of the barriers presented above, the assessment team can confirm, with reasonable certainty, that the barriers are credible and correctly presented to demonstrate the additionality of the project.

### **3.5.5 Common Practice Analysis**

The region for the common practice analysis has been defined by the PP as Ghana. However, project activities with similar technology can be found in different countries in the region, where different situations can be encountered. As a result, the region can be defined by taking into account similar technologies as well as similar industry types.

The assessment team has reviewed the approach presented in the PDD and can confirm that relevant parameters such as location, infrastructure, economical situation, and development have been taken into account in order to define the region to be used for the common practice. Extreme poverty and deforestation are the most important factors determining the implementation of efficient stoves projects. Therefore, the presented region can be considered appropriate for the common practice analysis. Barriers due to prevailing practice shows that there are no similar projects in Ghana as the project activity that has been implemented with the same scale without seeking revenues from the sales of offsets credits. Only one other case of large scale efficient stove dissemination exists in Ghana. EnterpriseWorks, with their international partner ClimateCare JP Morgan Chase, are devel-



oping a project of similar geography and technology. This project, however, is seeking carbon revenues to reach scale as well.

The assessment team also reviewed official sources such as Gold Standard website. Information from this site reveals that similar projects are being implemented in Mali, Madagascar and Uganda. All these projects are seeking registration at Gold Standard in order to be viable.

Therefore, it can be confirmed that the proposed GS VER project activity is not a common practice in the defined region.

### **3.6 Monitoring plan**

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology; no relevant deviations have been found. The procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. This information, together with a physical inspection, allows the assessment team to confirm that the proposed monitoring plan is feasible, and within the project design. The major parameters to be monitored have been discussed with the PPs. Especially the non-renewability of biomass (NRB), data management, and the quality assurance and quality control procedures to be implemented in the context of the project. The major parameter affecting the baseline is the non-renewability fraction of biomass (NRB). Since sales of stoves will expand in the future to include other towns and city centers, this would lead to new fuel wood harvest areas. New baseline assessments will therefore be necessary to accurately account for the target area as it expands, as outlined in the monitoring section in the PDD. Since the non-renewable biomass baseline is monitored over time and can vary, the fuel collection area can also change as fuel collection habits change in Ghana and as TEL's target area expands. This justifies the PP's decision to go with the evolving baseline scenario.

Therefore, we find that the PP's will be able to implement the monitoring plan and the emission reductions achieved can be reported ex-post and verified.

## **4 GOLD STANDARD CRITERIA**

### **4.1 Project Type Eligibility Screen**

**Project Type:**

The assessed project belongs to the category End User Energy Efficiency Improvement

**Host Country:**

Ghana, being a signatory to the Kyoto Protocol is considered an eligible Host Country.

**Project size:**

Project size is **65 563 tCO<sub>2</sub>e** per year and therefore belongs to the GS category of large scale projects. It involves a domestic energy efficiency technology that uses more efficient stoves with less GHG emission for domestic cooking thereby displacing less efficient stoves with more GHG emissions.

### **4.2 Further GS Requirements on Additionality**

#### **4.2.1 Previous Public Announcement Check**

GS requires that there is no previous public announcement of the project activity even as a normal project without VER components.

The project, in its current design (with the involvement of E+Carbon), has not previously been announced to go ahead as a normal project (even not as a voluntary offset project), prior to any payment being made for the implementation of the project. However, the project owner has been in the

biomass stove business since 2003 in a completely different kind of business scenario and scale. This prompted GS to conduct a pre-feasibility assessment of the project in order to determine its eligibility. This was confirmed on 25<sup>th</sup> July 2008 with the issuance of the pre-feasibility assessment report by GS (IRL No. 20). TEL made plans in mid 2007 to secure carbon finance with a view to a major expansion effort that would allow the Toyola Coalpot stove to be sold at affordable prices to low income households. The discussions and negotiations between the carbon credit buyer E+Carbon, Inc and project owner TEL intensified in late 2007. These discussions were concluded with the signing of a Letter of Intent (IRL No. 10) and an Emission Revisions Purchase Agreement - ERPA (IRL No. 9) between E+Carbon and TEL on 31<sup>st</sup> August 2007 and 21<sup>st</sup> November 2007 respectively.

#### **4.2.2 ODA Additionality Test**

Gold Standard requires an official declaration from the project proponent that no ODA would be diverted to purchase VERs issuing from this project.

According to a confidential excerpt from E+Carbon's sales contract for all VERs generated (IRL No. 20), no ODA funds are used for purchasing VER credits. All VERs are bought by E+Carbon Inc. The relevant excerpt from this confidential contract shows that E+Carbon would sell all VERs generated from this project to a private sector investment bank (Name of bank withheld due to confidentiality). The project proponent has also provided a Declaration of Financier of Non-Use of Official Development Assistance (IRL No. 13). This proves therefore, that there is no agreement with any country's government to purchase the VER offsets using ODA funds.

#### **4.3 Conservative Approach Check**

According to Gold Standard version 1 requirements, it must be assessed whether a sufficiently conservative baseline scenario is chosen based on the baseline report and by consulting a local expert. The latter is demonstrated by the Assessment report "Carbon Monitoring Report on Improved Charcoal Stoves of Toyola Energy Limited, Ghana" prepared in August 2008 by a 3<sup>rd</sup> party called Berkeley Air Monitoring Group and is included in the PDD in annex 6.

The PDD demonstrates that the most conservative baseline scenario has been chosen, and that all assumptions and parameters comply with the conservativeness criteria. To show how the calculation of emission reductions has been carried out in a conservative manner, the following examples are given:

- The calculation of NRB assumes that wood fuel consumption is the only cause of wood harvest in the country. Similarly, the data used is assumed to be constant throughout the duration of the project activity which is not the case. As a result of 2% growth rate in population per year and also the increase rate of urbanization, the demand of fuel wood and timber for construction is expected to be on the rise as well. Therefore the calculated value of NRB of 73% can be considered conservative.
- The actual drop-off rate in the number customers is expected to be less than 20% per year due to quality assurance measures, and will be monitored carefully by the project. Actual drop-off rates will be substituted for this conservative estimate of 20% which is mentioned in the PDD and used in the calculation of emission reductions.
- Households cooking for very large numbers (greater than 11) were excluded from the KPT so as to be conservative with overall fuel savings estimates. This exclusion criterion essentially excluded the less common situation of commercial cooking.
- Adjustment factors for fuel savings applied in similar projects in Uganda and Mali proved to be conservative as far as estimating emissions reductions for three stove sizes is concerned. These have been applied in the same manner in calculating emission reductions for this project.

- The daily fuelwood savings adjustment factors will be applied to Medium household, small commercial and large commercial stoves without any adjustments in spite of their large size, but in order to be conservative, it will not be applied to Small household stoves.

The audit team concludes that all relevant parameters for the baseline assessment as documented in the PDD have been chosen following the general principle of conservativeness.

## **4.4 Technology Transfer and/or Technology Innovation**

The stoves are manufactured in Ghana. The project is based on pilot work by Toyola Energy Limited. TEL was established in 2003 and has been selling improved biomass cook stoves in Ghana since then. TEL was part of 50 informal metal artisans selected and trained by EnterpriseWorks Worldwide to fabricate the “GYAPA” charcoal efficient cook stoves. More recently, TEL renamed their product to reflect a slightly different design, as well as to help avoid double counting with other carbon finance projects in Ghana. While the stove is very similar to the GYAPA, TEL’s stove is marketed and sold under the name “Toyola Coalpot” to avoid confusion between these different products. TEL is owned and managed by Ghana based educated and trained entrepreneurs. TEL also employs and trains individuals from the locality in the manufacture of efficient stoves.

The project activity does not involve any aspect of technology transfer from an industrialized country but rather it is an innovation of local technology.

## **4.5 Sustainable Development Screen**

### **4.5.1 Sustainable Development Assessment**

The project has used the sustainable development assessment matrix as required by the Gold Standard version 1. The total score obtained is +10, where:

- Local/regional/global environment has a subtotal of +3
- Social sustainability and development has a subtotal of +5
- Economic and technological development has a subtotal of +2

None of the sub-total scores is negative, the total score is positive and none of the indicators has a score of -2 or -1. All the assumptions used in defining the score values have been reviewed by the audit team based on the desk review of submitted documentations, interviews conducted during the on-site visit undertaken as part of the validation of the project, report on technical test on SEWA stoves (a similar project in Mali applying an identical technology), and the calculation of NRB submitted by an independent 3<sup>rd</sup> party – Berkeley Air Monitoring Group. Hence, the project activity complies with this Gold Standard criterion.

The GS Documentation also includes additional parameters (with a score of +1 or +2) to be monitored to further confirm that it is in line with sustainable development. These parameters are:

- Air quality
- Employment quality
- Livelihood of the poor (including poverty alleviation)
- Employment (number)

These additional parameters will be monitored as outlined in the GS documentation, even though the sustainable development assessment matrix did not result in any crucial SD indicators. Nonetheless, these four parameters will help verify that the project contributes to sustainable development in the region.

#### **4.5.2 Environmental Impact Assessment (EIA)**

In Ghana Environmental Impact Analysis is not required for this project

However, according to GS an EIA should be performed if any sustainable development indicator is rated -1. Since this is not the case (every sub-total and total score is positive) for this project activity, an EIA is not necessary in order to comply with GS requirements. Nevertheless, E+Co's investment officer Kofi Nketsia-Tabiri prepared an analysis of potential environmental impacts associated with the project and concluded that no adverse environmental impacts will take place as a result of the project activity (PDD Annex 3). Furthermore, the Stakeholder Consultation outlined in annex 5 shows that the stakeholders are very positive about the harmless effect of the project. No significant negative impacts have been identified. Therefore, the EIA has not been performed according to GS requirements.

The Designated National Authority in Ghana has not granted any approval of the project (as this is not required by Gold Standard). However, the presence of Ahiataku Togobo Wisdom and Agyemang Bonsu William both from the Ghana DNA and Ministry of Energy during the stakeholder consultation is an indication of the DNA's support of the project.

#### **4.5.3 Public Consultation Procedures**

The project proponent reported one stakeholder consultation and not two as required by the Gold Standard. But it is worth mentioning that projects applying for retroactive registration have to discuss the stakeholder consultation as part of the pre-feasibility assessment and conduct a complementary consultation based on the outcome of the pre-feasibility assessment. The DOE has received pre-feasibility assessment report (IRL No. 20) indicating that this was done and the second round of stakeholder consultation mentioned in the pre-feasibility assessment is what is reported in the PDD undergoing validation.

The lists of participants from the meeting have been included in the PDD. The spectrum of stakeholders invited to attend the meetings can be considered appropriate. This was also confirmed by those who were interviewed during the on site visit. The stakeholders were invited by using a number of methods:

- The most important multilateral development organizations, NGOs and governmental institutions were invited per emails and letters (annex 5).
- For those stakeholders who lacked email addresses, project participants made in person visits to the offices of each stakeholder in Accra more than one week in advance to hand deliver hard copies of the invitations.
- For illiterate stakeholders, project participants relayed the invitation verbally
- Finally, the invitation was posted in a local newspaper in Ghana (annex 5).
- Eight Gold Standard officials were also invited for virtual input

A total of 66 stakeholders from Ghana's government, NGO community, stove users, stove manufacturers, artisans and retailers convened to discuss the carbon finance project aimed at disseminating efficient household cook stoves in Ghana. Virtual input was also requested from the 22 invited guests who were unable to attend. A summary of the project in the form of a PowerPoint presentation was offered, that included background information on carbon finance and emissions trading, as well as a profile of traditional cooking practices in Ghana. The presentation was translated into the native language by Ernest Kyei of TEL. Before concluding with general feedbacks, there was a question and answer sessions and also questions relating to the checklist for Social and Environmental Impacts. How due account was taken of any comments received has been provided in section G.3 of the PDD. No objections or negative comments were raised about the project.

A Global Stakeholder Process (GSP) was initiated by TÜV SÜD from 8<sup>th</sup> December 2008 and included;

- Making the PDD publicly available on its website
- Inviting all GS supporter organizations, their local representatives and the general public to comment on the project

The project can be accessed at the link given in section 5:

#### 4.5.4 Summary Table of Gold Standard Criteria

According to the Pre-feasibility Assessment Report of this project conducted by Gold Standard, a summary table for some mentioned points and a brief explanation of how they have dealt with should be provided in the validation report.

Issue raised in the Pre-feasibility Assessment Report		How the issue has been dealt with
1	Eligibility of Greenhouse Gases	The only GHG considered by the project activity are CH <sub>4</sub> , N <sub>2</sub> O and CO <sub>2</sub> . This has been mentioned in the PDD by the project participants (PP) and validated by the DOE.
2	Clarification on Additionality	Project participants have applied the 'Tool for the demonstration and assessment of additionality' version 5 to prove the additionality of the project activity. The main barriers presented are investment barrier and barrier due to prevailing practice. The DOE has reviewed all the documental evidences presented in support of additionality and has reported this in detail in this report.
3	Baseline and project emission reductions	An assessment of the baseline scenario and the range of stakeholders selected have been conducted by an independent third party expert called Berkeley Air Monitoring Group. The Kitchen Survey was conducted by Berkeley Air Monitoring Group staff by visiting the households. All households were visited and no telephone interviews were conducted. The results have been included in the PP as required. The DOE has reviewed the information provided during the desk review of the PDD and also during interviews conducted on-site with a surveyor and some end users. The DOE can therefore confirm that the baseline, project emissions and emission reductions have been determined according to the GS applied cook stove methodology.
4	Non-renewable biomass fraction	The Non-Renewable Biomass fraction (NRB) was determined by Berkeley Air Monitoring Group. TÜV SÜD therefore did not see the need of requesting the expertise of an independent expert in the home country to confirm the non-renewability fraction of biomass (NRB) calculated by Berkeley Air Monitoring Group and stated in the PDD (IRL No. 24) as the best estimate of the percent non-renewability of the wood fuel providing the charcoal used in Ghana is 73%. This is the most conservative value to be applied for both charcoal and wood fuel.  However, Mr. Joseph Osiakwan, policy coordinator in the Ministry of Lands, Forestry and Mines in Ghana (IRL No. 4), during an interview with the audit team disclosed that the rate of deforestation for domestic energy needs and otherwise far outweighs the rate of reforestation. He was able to demonstrate this, convincingly, using maps of forest allocations in Ghana. He believes that the NRB mentioned in the PDD is very conservative but could not confirm the figure since he is not well versed with the

		method of calculation. Mr. Osiakwan's contact details may be provided to GS upon request.
5	Sustainable Development Assessment Matrix (SDM).	All the assumptions used in defining the score values have been reviewed by the audit team based on the desk review of submitted documentations, interviews conducted during the on-site visit undertaken as part of the validation of the project and an analysis of potential environmental impacts associated with the project (PDD page 54) prepared by E+Co's investment officer Kofi Nketsia-Tabiri. Hence, the project activity complies with this Gold Standard criterion.
6	Stakeholder Consultation	It is worth mentioning that projects applying for retroactive registration have to discuss the stakeholder consultation as part of the pre-feasibility assessment and conduct a complementary consultation based on the outcome of the pre-feasibility assessment. The DOE has received pre-feasibility assessment report (IRL No. 20) indicating that this was done and the second round of stakeholder consultation mentioned in the pre-feasibility assessment is what is reported in the PDD undergoing validation.  The lists of participants from the meeting have been included in the PDD. The spectrum of stakeholders invited to attend the meetings can be considered appropriate. This was also confirmed by those who were interviewed during the on site visit. The stakeholders were invited by a number of methods as indicated in this report.
7	Monitoring	The monitoring plan described in the PDD has been validated by the DOE. All the recommendations in the pre-feasibility report have been addressed by the project participant. No leakage has been considered for this project activity. The method and equations used in the calculation of emission reductions are according to the applied methodology.
8	Others	The project is considered as a large scale project activity since the <i>ex-ante</i> amount of emission reductions is greater than the threshold of 60 000 tCO <sub>2</sub> e. This is also indicated in the PDD and was considered by the DOE to be appropriate.

## 5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on its website and invited comments from affected Parties, stakeholders, and non-governmental organisations during a 60 day period.

The following table presents all gathered key information:

<b>webpage:</b> <a href="http://www.netinform.net/KE/Wegweiser/Guide2.aspx?ID=5818&amp;Ebene1_ID=49&amp;Ebene2_ID=1821&amp;mode=4">http://www.netinform.net/KE/Wegweiser/Guide2.aspx?ID=5818&amp;Ebene1_ID=49&amp;Ebene2_ID=1821&amp;mode=4</a>	
<b>Starting date of the global stakeholder consultation process:</b> 2008-12-08	
<b>Comment submitted by:</b> None	<b>Issues raised:</b> -
<b>Response by TÜV SÜD:</b> -	

## 6 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed GS retroactive project activity:

### **Improved Household Charcoal Stoves in Ghana.**

Standard auditing techniques have been used for the validation of the project. Methodology-specific checklists and protocol for the project have been prepared to carry out the audit in order to present the outcome in a transparent and comprehensive manner.

The review of the project design documentation, subsequent follow-up interviews and further verification of references have provided TÜV SÜD with sufficient information to determine the fulfilment of stated criteria in the protocol. In our opinion, the project meets all relevant GS version 1 requirements. Therefore, TÜV SÜD will recommend the project for registration by the Gold Standard Technical Advisory Committee as a Gold Standard VER project activity.

An analysis as guided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are additional to any that would have occurred in the absence of the project activity. Given that the project would be implemented as designed, it is likely to achieve the estimated amount of emission reductions of **655 629 tCO<sub>2</sub>eq** over the ten year crediting period, amounting to a calculated annual average of **65 563 tCO<sub>2</sub>eq** as specified within the final PDD version.

The validation is based on the information made available to us, as well as the engagement conditions detailed in this report. The validation has been performed following the VVM requirements. The sole purpose of this report is its use during the registration process as part of the GS VER project cycle. TÜV SÜD can therefore not be held liable by any party for decisions made, or not made, based on the validation opinion beyond that purpose.

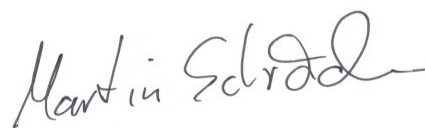
Munich, 24-08-2009



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Certification Body "Climate and Energy"  
TÜV SÜD Industrie Service GmbH

Munich, 24-08-2009



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Martin Schroeder  
Assessment Team Leader

Validation of the GS VER Project:  
**Improved Household Charcoal Stoves in Ghana**

## **Annex 1: Validation Protocol**



# GS Validation Protocol

Project Title: **Improved Household Charcoal Stoves in Ghana**

Date of Completion: 15-06-2009

Number of Pages: 65



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
<b>A. General description of project activity</b>				
<b>A.1. Title of the project activity</b>				
<b>A.1.1.</b> Does the used project title clearly enable to identify the unique GS project activity?	1	Yes. The project title is given as “ <b>Improved Household Charcoal Stoves in Ghana</b> ”	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.1.2.</b> Are there any indication concerning the revision number and the date of the revision?	1	Yes. The revision number is indicated as 2.0 and dated 20 <sup>th</sup> . August 2008.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.1.3.</b> Is this consistent with the time line of the project's history?	1	Yes, this is consistent with the time line of the project's history. The project started on 31 <sup>st</sup> August 2007.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.2. Description of the project activity</b>				
<b>A.2.1.</b> Is the description delivering a transparent overview of the project activities?	1	Yes, the project's description gives a transparent overview of the project activities	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.2.2.</b> What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1,	<p>According to the interview conducted on site the following can be concluded:</p> <p>TEL is producing and selling four categories of Toyola Coalpot stoves with a rebate. Stove purchasers would be refunded a certain amount, which is not yet determined, if the project is successfully registered.</p> <p>The four categories are:</p> <ul style="list-style-type: none"> <li>a. improved fuel-efficient household charcoal stoves (small)</li> <li>b. improved fuel-efficient household charcoal stoves (medium)</li> <li>c. improved fuel-efficient commercial charcoal stoves (small)</li> <li>d. improved fuel-efficient commercial charcoal stoves (large)</li> </ul> <p>In the PDD it is stated that: “Carbon offset projections in this PDD assume that all stoves are the medium household size stove.”</p>		<input checked="" type="checkbox"/>

# GS Validation Protocol

Project Title: **Improved Household Charcoal Stoves in Ghana**

Date of Completion: 15-06-2009

Number of Pages: 65



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		<p>Reduced charcoal consumption figures are based on the “Carbon Monitoring Report on the Improved Charcoal Stove of Toyola Energy Limited, Ghana”, prepared by Berkeley Air Monitoring Group on August 2008 (Annex 6 of the PDD). This is (according to the information provided during the on-site visit) not in line with the information provided in A.2 of the PDD where 37% and 50% efficiency and potential efficiency respectively are mentioned. Total sales figures between 12/2006 and 06/2007 (7,477) were evidenced by sales records presented during the on-site visit.</p> <p><b><u>Corrective Action Request No.1.</u></b></p> <ol style="list-style-type: none"> <li>1. A.2. of the PDD should be revised. Information about fuel-efficiency of Toyola coalpot stoves according to the study conducted by Berkeley Air Monitoring Group should also be included.</li> <li>2. Please include an evaluation for the project’s impact on “Balance of payments” in A.2 of the PDD.</li> <li>3. A fixed amount or percentage of revenue from carbon credit to be refunded to the coalpot end-users should be indicated on the rebate card.</li> </ol>	CAR1	
<b>A.2.3.</b> Is the information provided by these proofs consistent with the information provided by the PDD?	1	See A.2.2	See CAR1	<input checked="" type="checkbox"/>
<b>A.2.4.</b> Is all information presented consistent with details provided by further chapters of the PDD?	1	See A.2.2	See CAR1	<input checked="" type="checkbox"/>
<b>A.3. Project participants</b>				
<b>A.3.1.</b> Is the form required for the indication of	1	Yes. The form is correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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project participants correctly applied?				
<b>A.3.2.</b> Is the participation of the listed entities or Parties confirmed by each one of them?	1,	A letter of Intent between E+Co and TEL was signed on 31 <sup>st</sup> . August 2007. Similarly, an ERPA+Amendment between E+Co and TEL was signed on 01.02.2008. These two documents, coupled with information gathered during the on-site visit confirm the participation of both parties to the project activities.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.3.3.</b> Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1	Yes, the information on project participants and on Parties in A.3 and in Annex 1 is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.4. Technical description of the project activity</b>				
<b>A.4.1. Location of the project activity</b>				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1,	The project is expected to be located in a single country – Ghana in this case. In the PDD it is stated that “The project promotes sales of improved charcoal stoves in urban, peri-urban and rural communities in Ghana. The company’s distribution network is expanding to cover major towns and market centres in and around the Greater Accra Region, Eastern Region, Ashanti Region and Central Region” The Methodology requires that “Projects which promote the use of improved cook-stoves or improved cooking regimes require careful definition of <b>Project Boundary, Target Area, and Fuel Collection Area</b> ” <b><u>Clarification Request No. 1.</u></b> PP should clearly and carefully define the Project Boundary, Tar-	CR1	<input checked="" type="checkbox"/>

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		<p>get Area and Fuel Collection area for this project in the PDD.</p> <p><b><u>Clarification Request No. 2.</u></b></p> <p>As TEL is beginning to market stoves to other regions of the country, namely Ashanti, Central, and Northern regions, PP should clarify whether on-going Kitchen Surveys has already been performed in these areas as well.</p> <p><b><u>Clarification Request No. 3.</u></b></p> <p>PP should also clarify in which region the assessment of non-renewability of biomass was conducted and the source of the 73% non-renewability indicated in the PDD</p>	<p>CR2</p> <p>CR3</p>	
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	1, 12	<p>The project owner can operate the stoves in the end-users' kitchen but these end-users are not considered project participants according to the methodology. This is guaranteed by the implementation of the rebate cards.</p> <p>The end-users declare in these rebate cards, that they assign and transfer all right, title and interest to carbon offsets arising from the stoves to TEL and that the end user waive any claim or right to such offsets.</p> <p>The project owner also possesses an operating license (Certificate of Incorporation No. CA-206), signed on 20<sup>th</sup> June 2006.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.4.2. Size of the project activity (micro-, small- or large-scale)</b>				
A.4.2.1. Is the size of the project specified correctly in the GS-PDD according to the threshold described in the GS Requirement manual?	1	Yes, the size of the project has been indicated in the PDD correctly as large scale (more than 60 000 tCO <sub>2</sub> eq saved per year)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.4.3. Category(ies) of project activity</b>				

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A.4.3.1. To which category(ies) does the project activity belong to? Is the project category correctly specified as either The Renewable Energy Supply category or The End-use Energy Efficiency Improvement?	1	The project belongs to the category The End-use Energy Efficiency Improvement, indicated in section A.4.3 of the PDD as 'Domestic Energy Efficiency'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.2. Does the project activity belong to one of the categories listed in Annex C to the GS Toolkit?	1	Yes the project activities belong to the category listed as 'Improved distributed heating and cooking devices (e.g. biogas, cook-stoves), and distributed micro-scale electricity generation units (e.g. micro-hydro and PV for households)'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.4.4. Brief Explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed GS project, including why the emission reduction would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances</b>				
A.4.4.1. Is there a brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed GS project, including why the emission reduction would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances?	1	<p>The PDD indicates that emission reductions from the project activity would be achieved by disseminating more efficient charcoal stoves to end users thereby replacing less efficient ones. The fuel savings are converted to reduction in GHG emissions.</p> <p>During the on site visit the validation team got some information that stoves were sold since 2003 but in much lesser quantities.</p> <p><b><u>Corrective Action Request No.2.</u></b></p> <ol style="list-style-type: none"> <li>1. The barrier analysis should be revised and evidences for the most important barriers to the project activity have to be mentioned in a transparent manner in the PDD and also submitted to the validation team.</li> <li>2. The additionality discussion should consider the fact that sales of stoves started since 2003, i.e. clearly before the starting date of the project activity (31.08.2007), and explain why this does not jeopardize the additionality of the</li> </ol>	CAR2	<input checked="" type="checkbox"/>

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		project. 3. PP should explain how the baseline was identified and which stove(s) or regimes are considered as baseline stove(s) or regimes. It should be explained in a transparent manner how the project activity differs from the baseline scenario considering the fact that some efficient stoves were already disseminated prior to project start.		
<b>A.4.5. Estimated amount of emission reductions over the chosen crediting period</b>				
A.4.5.1. Is the form required for the indication of projected emission reductions correctly applied?	1	Yes, the form is correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.5.2. Are the figures provided consistent with other data presented in the GS PDD?	1	Yes, the figures are consistent with those provided in other section of the PDD. However, A.4.4.1	see CAR2	<input checked="" type="checkbox"/>
<b>A.4.6. Technology to be employed by the project activity</b>				
A.4.6.1. Does the technical design of the project activity reflect current good practices?	1	The project aims at replacing low efficient stoves with more efficient ones. The high efficiency of the Toyola coalpot stove has been achieved by introducing a ceramic liner that increases combustion efficiency and retains heat. This technology is considered to reflect good practice for stoves used in less income households in need of increased fuel efficiency. <b><u>Corrective Action Request No.3.</u></b> Include a technical drawing of the stove(s) in the PDD as well a description of the technical features that allows the increase of the efficiency in fuel use.	CAR3	<input checked="" type="checkbox"/>
A.4.6.2. Does the description of the technology to be applied provide sufficient and	1	Yes, savings in fuel consumption due to the increase in combus-		<input checked="" type="checkbox"/>

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transparent input/ information to evaluate its impact on the greenhouse gas balance?		<p>tion efficiency would translate to reduction in emission of GHGs. However, the impact of the project may lead to leakage emissions out of the project's boundary.</p> <p><b><u>Corrective Action Request No.4.</u></b> The impact of the project on GHG balance could substantially be undermined by the leakage effect. PP should therefore address and document in the PDD, the impact on the GHG balance of all the various cases of leakages suggested by the methodology.</p>	CAR4	
A.4.6.3. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country(ies)?	1	No. The project depends on 'locally manufactured technology with optimized energy efficiency' leading to technological self-reliance.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.4. Is the technology implemented by the project activity environmentally safe?	1	Yes, the project can be considered to be environmentally safe.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.5. Is the information provided in compliance with actual situation or planning?	1	<p>The technology is in compliance with actual situation in the host country.</p> <p>However, during the on-site visit, the validation team identified through sampling of end-users, that in most cases old inefficient stoves were not completely replaced. End-users use the efficient stoves more frequently and only tend to use the inefficient stoves during emergencies, for example when two dishes must be prepared in parallel.</p> <p>GS is looking into this and would recommend how emission reduction would be discounted as a result of parallel usage.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.6. Does the project use state of the art technology and / or does the technology result in a significantly better perform-	1	The technology is considered appropriate and good practice for low income household for it leads to fuel savings and emission reductions as a result.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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ance than any commonly used technologies in the host country?				
A.4.6.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1	It is highly unlikely that this technology would be substituted in the near future by a more efficient one. Fuelwood and charcoal meet approximately 75% of Ghana's fuel requirements and this is not expected to change overnight.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	1	The project would require some initial training for new employees. The on-site visit revealed that both initial training for new employees as well as periodic training has taken place. On site visit also revealed that there is enough infrastructure for training and to absorb new employment in the future.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.9. Is information available on the demand and requirements for training and maintenance?		See A.4.6.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.6.10. Is a schedule available for the implementation of the project and are there any risks for delays?	1	The project is already in operation and there is therefore no risk of any delay.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>A.4.7. Public funding of the project activity</b>				
A.4.7.1. Is the information provided on public funding provided in compliance with the actual situation or planning as indicated by the project participants?	1	There is no public funding involved with the project activity. All funds are coming from E+Co in form of loans and from the project owner. <b><u>Corrective Action Request No.5.</u></b> ODA Declaration should be submitted by E+Co to the validating DOE	CAR5	<input type="checkbox"/>
A.4.7.2. Is all information provided consistent with the details given in remaining chap-		See A.4.7.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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ters of the PDD (in particular annex 2)?				
<b>B. Application of a baseline and monitoring methodology</b>				
<i>B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity</i>				
<b>B.1.1. Justification of the choice of the methodology and why it is applicable to the project activity</b>				
B.1.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	1, 2	Yes. The methodology is "Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes" and its version is 01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.1.2. Is the applied version the most recent one and / or is this version still applicable?	1, 2	Yes. The most recent version of the methodology is being applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.1.3. Is the applied methodology considered the most appropriate one?	1, 2	Yes. The methodology is considered the most appropriate for this project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.1.4. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?		Yes. The PDD discusses the applicability of the methodology to the project activities. Relevant procedures such as the kitchen test have been carried out. See below for details.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.1.5. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	1, 13	No. Every option offered by the methodology is not clearly and transparently justified in the PDD. The PDD provides a calculation performed by Berkeley Air Monitoring Group showing that the threshold of 50 KW is not reached. The first applicability criterion does not seem to be complied with for the audit team did not see a complete shift from inefficient stoves and high emission kitchen regimes to high efficient stoves and low emission kitchen regimes in the various household visited. However, improved stoves were used more frequently compared to in efficient stoves and high emission regimes.  <b><u>Corrective Action Request No.6.</u></b>	CAR6	<input checked="" type="checkbox"/>

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		PP should consider every applicability criterion in turn in justifying applicability of the methodology to the project activity. This should be included in the PDD.										
Integrate the required amount of sub-checklists on the applicability criteria as given by the applied methodology and comment on at least every line answered with "No";												
B.1.1.6. Criterion 1: Low-emission cook-stoves and regimes replace relatively high-emission baseline scenarios		<table border="1"> <thead> <tr> <th>Applicability checklist</th> <th>Yes / No</th> </tr> </thead> <tbody> <tr> <td>Criterion discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Compliance provable?</td> <td>YES</td> </tr> <tr> <td>Compliance verified?</td> <td>YES</td> </tr> </tbody> </table> <p>However, See B.1.1.5</p>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	YES	Compliance provable?	YES	Compliance verified?	YES	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No											
Criterion discussed in the PDD?	YES											
Compliance provable?	YES											
Compliance verified?	YES											
B.1.1.7. Criterion 2: The project boundaries can be clearly identified, and the stoves counted in the project are not included in another voluntary market or CDM project (i.e. no double-counting takes place)		<table border="1"> <thead> <tr> <th>Applicability checklist</th> <th>Yes / No</th> </tr> </thead> <tbody> <tr> <td>Criterion discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Compliance provable?</td> <td>YES</td> </tr> <tr> <td>Compliance verified?</td> <td>NO</td> </tr> </tbody> </table> <p>It is stated in the PDD that "More recently, TEL renamed their product to reflect a slightly different design and the different geographic market in which TEL operates, as well as to help avoid double counting with other carbon finance projects in Ghana"</p> <p><b>Clarification Request No. 4.</b> During the site visit, it was discovered that some GYAPA Stoves are also counted in this project activity. This therefore contradicts the above claims. PP should explain in a transparent manner how double counting will be avoided by the proposed project activity. Coalpot stoves have to be clearly distinguishable from stoves in</p>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	YES	Compliance provable?	YES	Compliance verified?	NO	CR4	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No											
Criterion discussed in the PDD?	YES											
Compliance provable?	YES											
Compliance verified?	NO											

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		other project activities.										
B.1.1.8. Criterion 3: The project is located in a single country		<table border="1"> <tr> <td>Applicability checklist</td> <td>Yes / No</td> </tr> <tr> <td>Criterion discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Compliance provable?</td> <td>YES</td> </tr> <tr> <td>Compliance verified?</td> <td>YES</td> </tr> </table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	YES	Compliance provable?	YES	Compliance verified?	YES	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No											
Criterion discussed in the PDD?	YES											
Compliance provable?	YES											
Compliance verified?	YES											
B.1.1.9. Criterion 4: The improved cook-stoves do not number more than ten per kitchen and each have continuous useful energy outputs of less than 50kW.		<table border="1"> <tr> <td>Applicability checklist</td> <td>Yes / No</td> </tr> <tr> <td>Criterion discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Compliance provable?</td> <td>YES</td> </tr> <tr> <td>Compliance verified?</td> <td>YES</td> </tr> </table> <p>PP: Impossible to have more than 10 stoves per kitchen. Stoves specification provided</p>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	YES	Compliance provable?	YES	Compliance verified?	YES	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No											
Criterion discussed in the PDD?	YES											
Compliance provable?	YES											
Compliance verified?	YES											
<b>B.2. Description of how the methodology is applied in the context of the project activity:</b>												
<b>B.2.1. Baseline: Determine customer groups or project "clusters"</b>												
B.2.1.1. Has a pilot Sales Record been correctly established according to the approved methodology?		<p>Sales Records are kept by the vendors of the stoves in paper form and subsequently transferred into an excel file usually once per month.</p> <p>The company TEL, which produces the stoves, is using this system of vendors as part of its merchandising system.</p> <p>In the PDD it is mentioned that "The customer database is populated with mobile telephone numbers and/or addresses and land-line telephone numbers, with the aim to achieve a minimum of</p>		<input checked="" type="checkbox"/>								

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		<p>400 such in each major cluster. The database currently consists of about 5000 users“.</p> <p>For the pilot sales record, corresponding data was used to identify the households to be visited in the context of the kitchen test for the initial baseline assessment.</p> <p>The approach taken to quantify baseline emissions based on recent stoves sales (Pilot sales record) is in line with the methodology.</p> <p>A paired study was used, comparing fuel consumption before and after the introduction of the stove. For the Kitchen Test based on the pilot sales record, it was clarified that the project team chose another household if the initial choice could not be located.</p> <p>The audit team contacted a selection of stove end-users, part of the initial sales record (compare monitoring section on Usage of stoves)</p> <p><b><u>Clarification Request No. 5.</u></b></p> <p>Clarify and document in the PDD how it was assured that the households from the pilot sales record used for the Kitchen Test were not already using the Toyola coalpot stove prior to the date of the baseline assessment.</p> <p><b><u>Clarification Request No. 6.</u></b></p> <p>It is indicated that the Kitchen Test was based on 125 respondents. Clarify in the PDD the actual process of selection, how these candidates were selected (e.g random clustered selection) and how it was preceded if a stove owner was not identifiable / locatable, and if this might have impacted the results.</p> <p><b><u>Corrective Action Request No.7.</u></b></p> <p>The exact step wise approach (enumeration of steps, including</p>	<p>CR5,</p> <p>CR6</p> <p>CAR7</p>	

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		sub-steps) as defined per methodology should be followed in the PDD.		
B.2.1.2. Has a provisional assessment of fuel types, fuel mixed and kitchen regime been carried out according to the approved methodology?		Yes. Berkeley Air Monitoring Group carried out Kitchen Surveys; assessing fuel types, fuel mixed and kitchen regime.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.1.3. Has Renewability status of wood fuels been analyzed according to the approved methodology?	1	<p>Yes. The renewability status of wood fuels has been analyzed by an independent 3<sup>rd</sup> party. Fieldwork was conducted by Berkeley Air Monitoring Group in June, 2008 according to the approved methodology making use of FAO reported data.</p> <p>The wood that meets the fuel needs of the inhabitants of the Greater Accra and Eastern regions is harvested from forest stands and savannah across the country, including specifically: the Afram Plains, Brong Ahafo, Volta, and the Eastern and Central Regions. This is considered adequate.</p> <p><b><u>Clarification Request No. 7.</u></b> Clarify the approach on the renewability status estimates and the chosen supply areas if in future the actual target areas is going to be different (including i.e. other cities apart from Greater Accra and Eastern regions)</p> <p><b><u>Clarification Request No. 8.</u></b> In regard to harvest data: Provide the actual detailed reference (pages) indicating the input data used for the calculations of None Renewable Fraction per region.</p>	<p>CR7</p> <p>CR8</p>	<input checked="" type="checkbox"/>

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B.2.1.4. Has the pilot Sales Record been divided into customers groups or class according to the approved methodology?	1	One customer cluster has been defined based on the full results of the Baseline Monitoring Report for both the Kitchen Surveys and Kitchen Performance Tests. This is considered adequate in light of homogenous structures of the households.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.1.5. Has a qualitative Kitchen Survey (KS) been conducted according to the approved methodology?	1,	Yes. Berkeley Air Monitoring Group was responsible for 125 KS.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.2.2. Calculation of Baseline Emissions</b>				
B.2.2.1. Has an estimate been made of expected variation and improvement in emission reduction according to the approved methodology?	1	Yes. The PDD and excel calculation file provide information about the expected estimate of variation in emission reductions based on the Kitchen Performance Tests (KPT). The KPT are conducted according to information on clusters provided by the KS, however it is not explicitly mentioned in Annex 6 how a 90% confidence interval is guaranteed.  <b><u>Corrective Action Request No.8.</u></b> Annex 6 should include an explanation how the 90% confidence interval is guaranteed.	CAR8	<input checked="" type="checkbox"/>
B.2.2.2. Are the units of emission reductions or fuel consumption correctly specified according to the approved methodology?	1, 22	Yes. The units of emission reductions or fuel consumption are correctly specified according to the approved methodology. No further units are introduced. Main input for calculations is the fuel used per day and household/kitchen.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.2.3. Has quantitative Kitchen Performance Test (KPT) or measurements been carried out according to the approved methodology?	1	Yes. E+Carbon hired a third party monitoring firm, Berkeley Air Monitoring Group, to conduct Kitchen Performance Tests (KPT). 54 of those KPT were performed in 3 different villages. The households of the KPT were selected using screening criteria based on the 125 Kitchen Surveys. The tests were performed in the households "Before" the introduction of the efficient charcoal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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		stove (traditional charcoal stove phase), the efficient stove was then introduced, the HHs were given several days to become accustomed to the efficient stove, and finally the "After" test was performed.		
B.2.2.4. Is the Baseline correctly calculated or estimated according to the approved methodology?	1	Yes. An "evolving baseline" will be used through the life of the project to take into account the fact that the baseline scenario will likely change over time as fuel use patterns change and the percentage of non-renewable biomass fluctuates. This will require that baseline estimates are revisited at verification.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.2.3. Data and parameters that are available at validation</b>				
B.2.3.1. Is the list of parameters presented in the PDD considered to be complete with regard to the requirements of the applied methodology?	1	Yes. The list of default parameters presented is considered to be complete.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Integrate the required amount of sub-checklists for monitoring parameter and comment on any line answered with "No"				
B.2.3.2. Parameter Title: <b>EFbl.bio,co2</b> CO2 emission factor arising from use of wood-fuel in baseline scenario	1	<b><u>Corrective Action Request No.9.</u></b> A table similar to the one used in the Methodology (the layout used in section 8 of the methodology) should be used in describing both default and monitored parameters. Actual values applied and their sources and comments should be indicated.	CAR9	<input checked="" type="checkbox"/>
B.2.3.3. Parameter Title: <b>EFpj.bio,co2</b> CO2 emission factor arising from use of wood-fuel in project scenario	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>

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B.2.3.4. Parameter Title: <b>EFaf,co2</b> CO2 emission factor arising from use of alternative fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.5. Parameter Title: <b>EFbl.bio,non-co2</b> Non-CO2 emission factor arising from use of wood-fuel in baseline scenario	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.6. Parameter Title: <b>EFpj.bio,non-co2</b> CO2 emission factor arising from use of wood-fuel in project scenario	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.7. Parameter Title: <b>EFaf, non-co2</b> Non-CO2 emission factor arising from use of alternative fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.8. Parameter Title: <b>EFbio,prod,co2</b> CO2 emission factor arising from production of wood-fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.9. Parameter Title: <b>EFaf,prod,co2</b> Non-CO2 emission factor arising from production of alternative fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
B.2.3.10. Parameter Title: <b>EF-bio,prod,non-co2</b> Non-CO2 emission factor arising from production of wood-fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>



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B.2.3.11. Parameter Title: <b>EF<sub>f,prod,non-co2</sub></b> Non-CO2 emission factor arising from production of alternative fuel	1	See B.2.3.2	See CAR9	<input checked="" type="checkbox"/>
<b>B.2.4. Ex-ante calculation of emission reductions</b>				
B.2.4.1. Is the projection based on the same procedures as used for future monitoring?	1	Yes. The projection is based on the same procedures as used for future monitoring	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.4.2. Are the GHG calculations documented in a complete and transparent manner?	1	Yes. The GHG calculations are documented in a complete and transparent manner in the PDD. <b><u>Clarification Request No. 9.</u></b> Provide excel spreadsheets for the relevant emission reduction calculations.	CR9	<input checked="" type="checkbox"/>
B.2.4.3. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	1	Yes. The data provided in this section are consistent with data as presented in other chapters of the PDD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.2.5. Summary of the ex-ante estimation of emission reductions</b>				
B.2.5.1. Will the project result in fewer GHG emissions than the baseline scenario?	1	Based on the conservative approach as claimed by the PDD and indicated in the passport, the project activity is expected to result in fewer GHG emissions than the baseline scenario.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.5.2. Is the form/table required for the indication of projected emission reductions correctly applied?	1	Yes. The form/table required for the indication of projected emission reductions is correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.5.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting	1	Yes. The projection is in line with the envisioned time schedule for the project's implementation and the indicated crediting period	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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period?				
B.2.5.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	1	Yes. The data provided in this section is consistent with data presented in other chapters of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered VER project activity (assessment and demonstration of additionality):</b>				
Integrate questions concerning the determination of the additionality as provided by the methodology applied or insert the module provided when applying the “additionality tool”;				
<b>B.3.1.</b> In case the project activity started before the validation activity, how is it demonstrated that the VER was seriously taken into account in the decision to start the project?	1	<p>The letter of Intent (dated August 31, 2007) between E+Co and Toyola as well as the ERPA contract (November 21, 2007) were submitted to the validation team. Both documents clearly show that VER was seriously taken into account in the decision to proceed with the project activity.</p> <p><b><u>Clarification Request No. 10.</u></b> PPs are requested to submit Emails and other documentation to the validation team, which prove that VER was seriously taken into account before the project’s starting date.</p> <p><b><u>Corrective Action Request No.10.</u></b> The project’s starting date should be corrected to the date of the ERPA contract (dated 21/11/2007) as this is the legally binding contract between E+Co and Toyola. The letter of intent (whose date of signature is chosen as project’s starting date) is not legally binding for any of the both parties.</p>	CR10  CAR10	<input checked="" type="checkbox"/>
<b>B.3.2.</b> Are alternative scenarios defined that provide outputs or services comparable with	1, 19	The alternative to the proposed project activity is the continuation of the status-quo, viz. the people from Ghana would continue cooking using the same inefficient stoves and consume greater		<input checked="" type="checkbox"/>

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the proposed GS project activity?		amounts of charcoal/fuelwood. This has been explained in A.4.4.  <b><u>Corrective Action Request No.11.</u></b> The alternatives to the project activity need to be clearly demonstrated according to the 4 steps structure of the additionality tool requirements (including the project activity without carbon finance)	CAR11	
<b>B.3.3.</b> Can the list of alternatives be considered to be complete, why? Is the project activity scenario without being registered as GS VER project included?	1	The list of alternatives can be considered as complete as it was explained during the on-site visit. However the project activity scenario without being registered as GS VER project is not included.  <b><u>Corrective Action Request No.12.</u></b> 1. The project activity scenario without being registered as GS VER project should be included as alternative into the additionality analysis. 2. Please explain why other alternatives to the continuation of the status-quo and VER project without VER can't be considered as realistic alternatives.	CAR12	<input checked="" type="checkbox"/>
<b>B.3.4.</b> In case several different facilities, technologies, outputs or services are present in the project, are separately alternative scenarios for each of them included? Have realistic combinations been considered as project scenario?	1	Not Applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.5.</b> Describe why the alternative scenarios are credible and realistic (technology, practices, services, status of implementation)?	1	Fuelwood and charcoal meet approximately 75% of Ghana's fuel requirements. About 69% of all urban households in Ghana use charcoal. Thus, the continuation of the status-quo is considered as a credible and realistic alternative.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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		The project activity is considered as a credible alternative as the applied technology is an appropriate technology that results in health and environmental benefits and serves to satisfy the cooking needs of the Ghanaian population.		
<b>B.3.6.</b> Do the alternative scenarios comply with mandatory laws and regulations?	1	The alternatives are in line with legal requirements.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.7.</b> If a scenario does not comply with the mandatory laws and regulations, is it clearly demonstrated that the law and/or regulation is systematically not enforced in the country?	1	Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.8.</b> In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	1	According to the information obtained during the on-site visit, PPs decided to apply the barrier analysis and not the investment analysis.  <b><u>Corrective Action Request No.13.</u></b> Please revise the section regarding investment analysis in the PDD if barrier analysis is preferred to investment analysis.	CAR13	<input checked="" type="checkbox"/>
<b>B.3.9.</b> In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than carbon income	1, 19	Not applicable. See B.3.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.10.</b> In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1	Not applicable. See B.3.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.11.</b> In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio,	1	Not applicable. See B.3.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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or (levelized) unit cost)?				
<b>B.3.12.</b> In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	1	Not applicable. See B.3.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.13.</b> In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	1	Not applicable. See B.3.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.14.</b> In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	1	Cost barriers, Knowledge barrier, prevailing practice and barriers such as institutional, limited information, managerial resources, organizational capacity, financial resources, capacity to absorb new technologies have been discussed in the PDD However, see A.4.4.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.15.</b> In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	1	See A.4.4.1 and B.3.2.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.16.</b> In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by the identified barriers?	1	See B.3.2.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.17.</b> Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	1	The PDD seems to indicate that there are other improved stoves manufacturers in Ghana as well. But the impact of these other stoves on the proposed project activities has not been fully addressed in the PDD  <b>Corrective Action Request No.14.</b>	CAR14	<input checked="" type="checkbox"/>

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		1) PP should fully and transparently analyse and document the effect of other improved cook stoves disseminated within the same project boundary. 2) The on site audit revealed that some GYAPA stoves are counted in this project activity and in another carbon offset project as well. PP should explain in detail and in a transparent manner how these stoves can be distinguished and as such avoid double counting.		
<b>B.3.18.</b> If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the VER component (step 4b)?	1	See B.3.17	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>B.3.19.</b> Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers (step 5)?		<b><u>Corrective Action Request No.15.</u></b> It should be transparently demonstrated how the approval of the project would help overcome the financial hurdles cited in the PDD.	CAR15	<input checked="" type="checkbox"/>
<b>B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the project activity:</b>				
<b>B.4.1.</b> Do the spatial and technological boundaries as verified on-site comply with the discussion provided by / indication included to the PDD?	1	Project boundary: The project is located in a single country – Ghana. In section B.4 the project boundary is defined as the kitchens used by the project population (Toyola coalpot stove purchasers).  Fuel Collecting area: The wood that meets the fuel needs of the inhabitants of the Greater Accra and Eastern regions is harvested from forest stands and savannah across the country, including specifically: the Afram Plains, Brong Ahafo, Volta, and the Eastern and Central Regions.		<input checked="" type="checkbox"/>

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		In the PDD it is stated that the activity would be extended in future to include other urban areas in Ghana  <b><u>Corrective Action Request No.16.</u></b> The target areas and the fuel collection area should be defined in the PDD as per the methodology.	CAR16											
<b>B.4.2. Description of the sources and gases included in the project boundary</b>														
Integrate the required amount of sub-checklists for sources and gases as given by the methodology applied and comment on at least every line answered with "No"														
B.4.2.1. Source: Cooking Description of Source Gas(es): CO2 Type: Baseline Emissions and Project Emissions	1	<table border="1"> <thead> <tr> <th>Boundary checklist</th> <th>Yes / No</th> </tr> </thead> <tbody> <tr> <td>Source and gas(es) discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Inclusion / exclusion justified?</td> <td>YES</td> </tr> <tr> <td>Explanation / Justification sufficient?</td> <td>YES</td> </tr> <tr> <td>Consistency with monitoring plan?</td> <td>YES</td> </tr> </tbody> </table> <p><b><u>Corrective Action Request No.17.</u></b> The table on emissions sources as per methodology section II.1 should be included in the PDD:</p>	Boundary checklist	Yes / No	Source and gas(es) discussed in the PDD?	YES	Inclusion / exclusion justified?	YES	Explanation / Justification sufficient?	YES	Consistency with monitoring plan?	YES	CAR17	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No													
Source and gas(es) discussed in the PDD?	YES													
Inclusion / exclusion justified?	YES													
Explanation / Justification sufficient?	YES													
Consistency with monitoring plan?	YES													
B.4.2.2. Source: Cooking Description of Source Gas(es): CH4 Type: Baseline Emissions and Project Emissions	1	<table border="1"> <thead> <tr> <th>Boundary checklist</th> <th>Yes / No</th> </tr> </thead> <tbody> <tr> <td>Source and gas(es) discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Inclusion / exclusion justified?</td> <td>YES</td> </tr> <tr> <td>Explanation / Justification sufficient?</td> <td>YES</td> </tr> <tr> <td>Consistency with monitoring plan?</td> <td>YES</td> </tr> </tbody> </table> <p>However, see B.4.2.1</p>	Boundary checklist	Yes / No	Source and gas(es) discussed in the PDD?	YES	Inclusion / exclusion justified?	YES	Explanation / Justification sufficient?	YES	Consistency with monitoring plan?	YES	See CAR17	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No													
Source and gas(es) discussed in the PDD?	YES													
Inclusion / exclusion justified?	YES													
Explanation / Justification sufficient?	YES													
Consistency with monitoring plan?	YES													

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<b>B.4.3.</b> Source: Cooking Description of Source Gas(es): N2O Type: Baseline Emissions and Project Emissions	1	<table border="1"> <tr> <td>Boundary checklist</td> <td>Yes / No</td> </tr> <tr> <td>Source and gas(es) discussed in the PDD?</td> <td>YES</td> </tr> <tr> <td>Inclusion / exclusion justified?</td> <td>YES</td> </tr> <tr> <td>Explanation / Justification sufficient?</td> <td>YES</td> </tr> <tr> <td>Consistency with monitoring plan?</td> <td>YES</td> </tr> </table> <p>However, see B.4.2.1</p>	Boundary checklist	Yes / No	Source and gas(es) discussed in the PDD?	YES	Inclusion / exclusion justified?	YES	Explanation / Justification sufficient?	YES	Consistency with monitoring plan?	YES	See CAR17	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No													
Source and gas(es) discussed in the PDD?	YES													
Inclusion / exclusion justified?	YES													
Explanation / Justification sufficient?	YES													
Consistency with monitoring plan?	YES													
<b>B.5. Details of baseline information, including the date of completion of the baseline study and the name of person (s)/ entity (ies) determining the baseline:</b>														
<b>B.5.1.</b> Is the baseline determined according to the approved baseline and monitoring methodology?	1	Yes. The baseline is determined according to the approved baseline and monitoring methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
<b>B.5.2.</b> Is there any indication of a date when the baseline was determined?	1	Yes. The baseline study was conducted by Berkeley Air Monitoring Group in June 2008. However the date of determination is not mentioned in B.5 of the PDD.  <b><u>Corrective Action Request No.18.</u></b> Please mention the date of determination of the baseline in B.5 of the PDD.	CAR18	<input checked="" type="checkbox"/>										
<b>C. Duration of the project activity / crediting period</b>														
<b>C.1. Duration of the project activity</b>														
<b>C.1.1.</b> Are the project's starting date and operational lifetime clearly defined and reasonable?	1	Yes. The project starting date has been given as 31/08/2007 and its lifetime as 10 years 0 months.  <b><u>Corrective Action Request No.19.</u></b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										



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		PPs should revise the explanation of the lifetime of the project activity and justify this choice. See also B.3.1.		
<b>C.2. Choice of the crediting period and related information</b>				
<b>C.2.1.</b> Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1	Yes. The crediting period is indicated as fixed for 10 years	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D. Application of the monitoring methodology and description of the monitoring plan</b>				
<b>D.1. Name and reference of approved monitoring methodology applied to the project activity:</b>				
<b>D.1.1.</b> Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated in the PDD?	1	The title of the methodology is given in the PDD as "Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes"	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.2. Justification of the choice of the methodology and why it is applicable to the project activity:</b>				
<b>D.2.1. OPTION 1: Monitoring of the emissions in the project scenario and the baseline scenario</b>				
<b>D.2.1.1. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived</b>				
<b>D.2.1.1.1. Are the monitoring tasks undertaken continuously correctly described?</b>				
1. Maintenance of a Total Sales Record.		The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2. Maintenance of a Detailed Customer Database, and Monitoring KS's		The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. Continuous updating of the Project Database		The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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4. Calculation of emission reductions		The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.2.1.1.2. Are the following monitoring tasks undertaken periodically correctly described?</b>				
1, The NRB fraction should be re-assessed, not less frequently than bi-annually.		The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2. Leakage estimates identified in the PDD should be surveyed, and an investigation made into the possibility of new leakage effects, not less frequently than bi-annually.	1	The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. A Usage Survey should be undertaken not less frequently than bi-annually (every two years) for sales made in the first year of the project,	1	The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. An "Aging-Stove KT" should be undertaken not less frequently than bi-annually for sales made in the first year,.	1	The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. Baseline Monitoring KT. If the KS reveals that baseline parameters of the type measured by KTs may have changed significantly, or if the KS is not adequate to update evolving baseline conditions, and no New-Stove KT is taking place to perform this function, then a Baseline Monitoring KT should be carried out not less frequently than bi-annually amongst new customers to update baseline parameters.	1	<b><u>Corrective Action Request No.20.</u></b> Baseline Monitoring KT is missing in the PDD. This should be included in section D of the PDD.	CAR20	<input checked="" type="checkbox"/>
6. A "New-Stove KT" to measure fuel consumption should take place for new models and designs when they are launched, and will	1	<b><u>Corrective Action Request No.21.</u></b> Information regarding the moment when the new stove KT has to be performed has to be revised i.e when the stove was launched.	CAR21	<input checked="" type="checkbox"/>

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be repeated not less frequently than bi-annually.				
7. The wider social and economic impact of the project should be investigated biannually and an assessment made of its contribution, positive or otherwise, to sustainable development in the area.	1	The corresponding monitoring requirements are defined in section D of the PDD and they are in line with the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.2.1.1.3. Are the following parameters included to the monitoring plan (an evolving baseline option)</b>				
1. Parameter Title: <b>Xnr<b>b</b>,<b>bl</b>,<b>y</b></b> Non-renewability status of woody biomass fuel in year <b>y</b> in baseline scenario	1	<b><u>Corrective Action Request No.22.</u></b> The list of parameters should be consistent with the Table in chapter 3 of the methodology. All relevant information (amongst others QA/QC procedures for measured data) should be provided in the PDD.	CAR22	<input checked="" type="checkbox"/>
2. Parameter Title: <b>Xnr<b>b</b>,<b>pj</b>,<b>y</b></b> Non-renewability status of woody biomass fuel in year <b>y</b> in project scenario	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
3. Parameter Title: <b>Xre,<b>bl</b>,<b>y</b></b> Woody biomass combustion avoided due to renewable energy form in year <b>y</b> in baseline	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
4. Parameter Title: <b>Xre,<b>bl</b>,<b>y</b></b> Woody biomass combustion avoided due to renewable energy form in year <b>y</b> in project	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>

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5. Parameter Title: <b>Xaf,bl,y</b> Woody biomass combustion avoided due to alternative fuels in year <b>y</b> in baseline	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
6. Parameter Title: <b>Xaf,pj,y</b> Woody biomass combustion avoided due to alternative fuels in year <b>y</b> in project	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
7. Parameter Title: <b>Leakage</b> Potential GHG emissions outside project boundary caused by project activity	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
8. Parameter Title: <b>Bbl,y</b> Mass of woody biomass combusted in the baseline in year <b>y</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
9. Parameter Title: <b>AFbl,i,y</b> The mass of alternative fuel <b>i</b> combusted in the baseline in year <b>y</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
10. Parameter Title: <b>Bpj,,y</b> Mass of woody biomass combusted in the project in year <b>y</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
11. Parameter Title: <b>AFpj,i,y</b> Mass of alternative fuel <b>i</b> combusted in the project in year <b>y</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>

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12. Parameter Title: <b>Usage</b> in year <b>y</b> Percentage of stoves of age <b>x</b> remaining in use in year <b>y</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
13. Parameter Title: <b>Age</b> Adjustment to values of <b>Bpj,,y</b> and <b>AFpj,i,y</b> for stoves of age <b>x</b>	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
14. Parameter Title: <b>New Stove</b> Adjustment to values of <b>Bpj,,y</b> and <b>AFpj,i,y</b> for new stove models	1	See (1) above	See CAR22	<input checked="" type="checkbox"/>
<b><i>D.2.1.2. Data to be collected in order to monitor project performance on the most sensitive sustainable development indicators</i></b>				
Integrate the required amount of sub-checklists for monitoring sustainability parameters and comment on any line answered with "No"				
D.2.1.2.1. Air quality	1	A.2. of the PDD includes the Sustainability assessment as defined by Goldstandard version 01. The provided information is considered credible and in line with the chosen evaluation approach (matrix). Air quality, Livelihood of the poor, Employment is foreseen for monitoring in the PDD. It is indicated that a corresponding survey will be carried out.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.2. Livelihood of the Poor	1	Air quality, Livelihood of the poor, Employment is foreseen for monitoring in the PDD. It is indicated that a corresponding survey will be carried out.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.3. Employment	1	Air quality, Livelihood of the poor, Employment is foreseen for monitoring in the PDD. It is indicated that a corresponding survey will be carried out.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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D.2.1.2.4. Water quality and quantity	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.5. Soil condition	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.6. Other pollutants	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.7. Biodiversity	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.8. Quality of employment	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.9. Access to affordable and clean energy services	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.10. Human and institutional capacity	1	Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.2.11. Balance of payments and investment	1	<b><u>Corrective Action Request No.23.</u></b> Please include a short explanation regarding the impact of the project on balance of payment. Provide justification if this is not important for the project activity.	CAR23	<input checked="" type="checkbox"/>
D.2.1.2.12. Technology transfer and technological self-reliance		Not foreseen for monitoring. No negative impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>D.2.1.3. Description of formulae used to estimate baseline and project emissions (for each gas, source, formulae/algorithm, emissions units of CO2 equ.)</i></b>				
D.2.1.3.1. Are the formulae used to estimate baseline emissions consistent with those outlined in the description of the baseline methodology?	1	Yes. The formulae used for the estimation of baseline emissions are consistent with the ones outlined in the description of the baseline methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.3.2. Are the formulae used to estimate project emissions consistent with those outlined in the description of the baseline methodology?	1	Yes. The formulae used for the estimation of project emissions are consistent with the ones outlined in the description of the baseline methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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D.2.1.3.3. Are the gas sources correctly identified?	1	See B.4.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.3.4. Is the unit of CO2 eq correctly applied to each emission source?	1	Yes, the unit of CO2 eq is correctly applied	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.1.3.5. Is the collection and archiving of relevant data necessary for the calculation of baseline and project emissions done according to good practice?	1	<b><u>Corrective Action Request No.24.</u></b>  PP should include information on how data use for emission reductions calculations would be collected and archived. It should also be noted that this data would have to be kept for at least two years after the end of the crediting period.	CAR24	<input checked="" type="checkbox"/>
<b><i>D.2.1.4. Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary and how such data will be collected and archived</i></b>				
D.2.1.4.1. Does the table used to present the data respect the prescribed format?	1	Yes. The table used to present the data respect the prescribed format.  See above. Relevant parameters are to be incorporated based on Request indicated in section 2.1.1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>D.2.2. OPTION 2: Direct monitoring of emission reductions from the project activity (values should be consistent with those in section E)</i></b>				
<b><i>D.2.2.1.Data to be collected in order to monitor emissions from the project activity and how these date would be archived</i></b>				
D.2.2.1.1. Is the collection and archiving of relevant data necessary for the calculation of project emissions done according to good practice?	1	<b><u>Corrective Action Request No.25.</u></b>  The structure of the PDD template has been altered. PP should complete the section 2.2 and sub-items of PDD.	CAR25	<input checked="" type="checkbox"/>
D.2.2.1.2. Is the list of parameters complete and accurate?	1	See D.2.1.1.3 above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>D.2.2.2.Description of formulae used to estimate and project emissions (for each gas, source, formulae/algorithm,</i></b>				

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<b>emissions units of CO2 equ.)</b>				
D.2.2.2.1. Are the formulae used to estimate project emissions consistent with those outlined in the description of the baseline methodology?	1	See D.2.1.1.3 above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.2.2.2. Are the gas sources correctly identified?	1	See D.2.1.1.3 above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.2.2.3. Is the unit of CO2 eq correctly applied to each emission source?	1	See D.2.1.1.3 above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.2.2.4. Is the collection and archiving of relevant data necessary for the calculation of project emissions done according to good practice?	1	See D.2.1.1.3 above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.2.3. Treatment of leakage in the monitoring plan</b>				
D.2.3.1. Is the list of parameters to be collected in order to monitor leakage effects of the project complete and accurate?	1	Yes, the list of parameters to be collected in order to monitor leakage effects of the project can be considered complete and accurate. <b><u>Clarification Request No. 11.</u></b> PP should consider the different sources of leakage indicated in the methodology and justify, in a clear and transparent manner, their relevance or non relevance to the project activity.	CR11	<input checked="" type="checkbox"/>
D.2.3.2. Are the formulae used to estimate project leakage emissions consistent with those outlined in the description of the baseline methodology	1	Yes, the formulae used to estimate project leakage emissions are consistent with those outlined in the description of the baseline methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.3.3. Are the sources of leakages correctly identified?	1	Yes, the gas sources of leakages are correctly identified	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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D.2.3.4. Is the unit of CO2 eq correctly applied to each source of leakage?	1	Yes, the unit of CO2 eq is correctly applied to each emission source	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.2.4. Description of formulae used to estimate emission reductions for the project activity (for each gas, source, formulae/algorithm, emissions units of CO2 eq.)</b>				
D.2.4.1. Are the formulae used to calculate emission reductions consistent with those outlined in the description of the baseline methodology?	1	Yes, the formulae used to estimate emission reductions are consistent with those outlined in the description of the baseline methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.4.2. Is the unit of CO2 eq correctly applied to each emission source?	1	Yes, the unit of CO2 eq is correctly applied to each emission source	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored</b>				
D.3.1.1. Is the table outlining data and QC/QA procedures according to the prescribed format?	1	Yes, the table outlining data and QC/QA procedures is according to the prescribed format.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.3.1.2. Can the table be considered complete and accurate?	1	Yes, the table can be considered complete and accurate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.4. Description of the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity</b>				
<b>D.4.1.</b> Is the operational and management structure clearly described and in compliance with the envisioned situation?		Yes, TEL has created a "Detailed Customer Database", consisting of more than 5000 TEL customers who could be available for interview. <b>Clarification Request No. 12.</b> PP should clarify how it is assured that high quality database will always be available during quarterly re-assessments. Clarify the mode of information transfer between participants and team for kitchen assessment and where such information is stored.	CR12	<input checked="" type="checkbox"/>
<b>D.4.2.</b> Are responsibilities and institutional ar-	1	A list of stove purchasers is compiled by TEL stove vendors. This	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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rangements for data collection and archiving clearly provided?		list comprises the customer's name, contact information and type and quantity of stove purchased.		
<b>D.4.3.</b> Does the monitoring plan provide current good monitoring practice?	1	See H.3.1 below	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.4.4.</b> If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	1	NA. No information relating to monitoring in Annex 4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.5. Name of person/entity determining the monitoring methodology</b>				
<b>D.5.1.</b> Is the information on the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	1	Yes. The baseline study was conducted by Berkeley Air Monitoring Group in June 2008 and it is being applied by TEL – the project operator.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>D.5.2.</b> Is the person(s)/entity(ies) determining the baseline considered as project participant(s)	1	No. Berkeley Air Monitoring Group is not being considered as a project participant	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E. Estimation of GHG emissions by sources</b>				
<b>E.1. Estimate of GHG emissions by sources:</b>				
<b>E.1.1.</b> Are estimates of emissions by sources of GHG provided according to the approved methodology?	1	Yes, the sources are provided according to the methodology. However see A.4.6.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.1.2.</b> Can these estimates be considered as reasonable?	1	See E.1.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.1.3.</b> Have the calculations been cross-checked and validated by the DOE?	1	Yes, the calculations have been cross-checked by the DOE. Calculation files "Ghana PDD ER Projections.xls" have been sent to the DOE is being cross-checked.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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<b><i>E.2. Estimated leakages:</i></b>				
<b>E.2.1.</b> Are estimates of leakages provided according to the approved methodology?	IRL No.	Yes, the sources are provided according to the methodology. Section B.2 of the PDD summarizes the participants' views on leakage. However, see D.2.3.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.2.2.</b> Can these estimates be considered as reasonable?	1	Leakage has been considered to be negligible for the project activity but PP plan to monitor potential sources of leakage continuously in the course of the project. However see E.2.1above.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.2.3.</b> Have the calculations been cross-checked and validated by the DOE?	1	Leakage has been considered to be negligible for the project activity but PP plan to monitor potential sources of leakage continuously in the course of the project. However see E.2.1above.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>E.3. The sum of E.1 and E.2 representing the project activity emissions:</i></b>				
<b>E.3.1.</b> Is the project emissions obtained as the sum of E.1 and E.2?	1	Yes, the project emissions are obtained from the sum of project emissions and leakages	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.3.2.</b> Can this sum be considered as reasonable?	1	The Household Energy Carbon Calculator (CHECC) is a detailed excel model developed by the Center for Entrepreneurship in International Health and Development (CEIHD) that estimates emission reductions of carbon dioxide, methane and nitrous oxide from improved cookstoves. This sum is therefore considered reasonable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.3.3.</b> Have the calculations been cross-checked and validated by the DOE?	1	See E.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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<b><i>E.4. Estimated anthropogenic emissions by sources of greenhouse gases of the baseline:</i></b>				
<b>E.4.1.</b> Is the baseline emissions estimated according to the approved methodology?	1	Yes, the baseline emissions are estimated according to the approved methodology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.4.2.</b> Can this estimate be considered as reasonable?	1	See E.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.4.3.</b> Have the calculations been cross-checked and validated by the DOE?	1	See E.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>E.5. Difference between E.4 and E.3 representing the emission reductions of the project activity:</i></b>				
<b>E.5.1.</b> Is the ex-ante estimate of emission reductions done according to the approved methodology?	1	Yes the ex-ante estimate of emission reductions is done according to the methodology as baseline emissions – project emissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.5.2.</b> Can this estimate be considered as reasonable?	1	See E.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.5.3.</b> Have the calculations been cross-checked and validated by the DOE?	1	See E.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>E.6. Table providing values obtained when applying formulae above:</i></b>				
<b>E.6.1.</b> Is a table summarising the values obtained above been provided using the correct format?	1	Yes, the table has the correct format	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E.6.2.</b> Are the values in the table consistent with those in other sections of the PDD?	1	Yes, the table has the correct format	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b><i>F. Environmental impacts</i></b>				
<b><i>F.1. Documentation on the analysis of the environmental impacts, including transboundary impacts</i></b>				
<b>F.1.1.</b> Has the analysis of the environmental impacts of the project activity been sufficiently	1	Section A.2 of the PDD includes the sustainability analysis and also environmental analysis. The descriptions are considered	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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described?		sufficient.		
<b>F.1.2.</b> Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	1	The host country does not require an EIA for the proposed project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>F.1.3.</b> Will the project create any adverse environmental effects?	1	No adverse effects are expected	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>F.1.4.</b> Were transboundary environmental impacts identified in the analysis?	1	No trans-boundary environmental impacts have been identified since the project activity is restricted within Ghana's borders.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>F.2.If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party</b>				
<b>F.2.1.</b> Have the identified environmental impacts been addressed in the project design sufficiently?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>F.2.2.</b> Does the project comply with environmental legislation in the host country?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G. Stakeholders' comments</b>				
<b>G.1. Brief description how comments by local stakeholders have been invited and compiled</b>				
<b>G.1.1.</b> Have relevant stakeholders been consulted?	1	Yes, a total of 66 Stakeholders attended the Ghana Stakeholder Consultation Meeting held on 4 <sup>th</sup> . July, 2008, Aburi, Ghana. The identified stakeholders from different institutions as well as stove users were consulted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G.1.2.</b> Have appropriate media been used to invite comments by local stakeholders?	1	Stakeholders were invited verbally, via email and through the mass media. Evidence on the invitations was reviewed and is included to the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G.1.3.</b> If a stakeholder consultation process is		Stakeholder consultation is certainly not a criterion in the host	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		country for the proposed project activity. However, the stakeholder consultation was conducted according to GS requirements.		
<b>G.1.4.</b> Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	1	Yes, the stakeholder process has been reported in a transparent manner. This include a signed list of participants, Q&A and how due account has been taken of the stakeholders' comment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G.2. Summary of the comments received</b>				
<b>G.2.1.</b> Is a summary of the received stakeholder comments provided?	1	Yes, a summary of the received stakeholder comments has been provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>G.3. Report on how due account was taken of any comments received</b>				
<b>G.3.1.</b> Has due account been taken of any stakeholder comments received?	1	Yes. See PDD section G.1.4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H. Annexes 1 - 4</b>				
<b>H.1. Annex 1: Contact Information</b>				
<b>H.1.1.</b> Is the information provided consistent with the one given under section A.3?	1	Yes, information provided is consistent with the one given under section A.3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.1.2.</b> Is the information on all private participants and directly involved Parties presented?	1	Yes, information on all private participants and directly involved Parties have been presented	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.2. Annex 2: Baseline information</b>				
<b>H.2.1.</b> If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?		Yes, additional background information on baseline data is provided; and this is consistent with data presented in other sections of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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<b>H.2.2.</b> Is the data provided verifiable? Has sufficient evidence been provided to the validation team?		A detail database comprising TEL coalpot stove purchasers has been given to the validating DOE. Also baseline and project emission calculation workbook, TEL operating permit and other supporting documentations have been given to the DOE. These evidences are considered verifiable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.2.3.</b> Does the additional information substantiate / support statements given in other sections of the PDD?	1	Yes, the additional information is substantiated / supported by statements given in other sections of the PDD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.3. Annex 3: Monitoring information</b>				
<b>H.3.1.</b> If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	1	No further details provided. It is said "E+Co has regional monitoring and evaluation officers that will assess TEL's progress on a regular basis. In addition, E+Carbon will hire specialists to perform various tests to be verified on a regular basis, as outlined in section D."	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.3.2.</b> Is the information provided verifiable? Has sufficient evidence been provided to the validation team?	1	See H.3.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.3.3.</b> Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	1	See H.3.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.4. Annex 4: Declaration of Financier of Non-Use of Official Development Assistance</b>				
<b>H.4.1.</b> Is the Declaration of Financier of Non-Use of Official Development Assistance according to the format given in Annex D to the Toolkit?	1	Yes. The declaration has been provided in the Passport. (Passport is not a requirement for GSv.1). This declaration will be required in hard copy as demanded by GS The letter should indicate the willingness of the financier to notify GS upon discovery of any deviation of ODA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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<b>H.4.2.</b> Is 'Acknowledgment of Duty to Notify Upon Discovery' included in the declaration?	1	See H.4.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>H.4.3.</b> If necessary: Is an affirmation available that any such funding from Annex-I countries does not result in a diversion of ODA?	1	Yes. See H.4.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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**Table 2 Resolution of Corrective Action and Clarification Requests**

Clarifications and corrective action re-requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion	Final PDD
<p><b><u>Corrective Action Request No. 1</u></b></p> <p>1. A.2. of the PDD should be revised. Information about fuel-efficiency of Toyola coalpot stoves according to the study conducted by Berkeley Air Monitoring Group should also be included.</p> <p>2. Please include an evaluation for the project’s impact on “Balance of payments” in A.2 of the PDD.</p> <p>A fixed amount or percentage of revenue from carbon credit to be refunded to the coalpot end-users should be indicated on the rebate card.</p>	<p>A.2.2</p>	<p>1. The PDD has been revised accordingly. See pg 4.</p> <p>2. a) The PDD has been revised accordingly. See pg 9. b) The amount of rebate was purposely excluded from the rebate card since we did not know how much VERs would be sold for. However, we can now set the initial rebate at GHC 1, to be distributed upon project approval. This rebate, converting to a discount upon project approval, will be increased as needed and after the project has been approved. The PDD and the rebate card have been updated accordingly. See pg 20, 26 &amp; 60.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> A GHC 1 (approximately equal to \$1) discount constitutes 12.5% discount when stoves are sold at \$8/stove and a 10% discount when stoves are sold at \$10/stove. The PDD has been updated</p>	<p><b><u>Audit Team: 08.01.2009</u></b></p> <p>The 33% efficiency of the Toyola coalpot relative to the traditional methods has been included in the PDD as requested.</p> <p>The initial rebate of GHC 1 has been included on the rebate card as demanded. The PDD has been updated as required. However, it is stated in the PDD that an average sized Toyola Coalpot stove cost about \$8-10. What percentage of this amount does the rebate constitute?</p> <p><b><u>Audit Team: 25.02.2009</u></b></p> <p>A rebate of 10% – 12.5% is considered appropriate. The issue is therefore considered closed out.</p>	<p>☒</p>

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Clarifications and corrective action re-quests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion	Final PDD
		accordingly, see pg 20.		
<p><b><u>Corrective Action Request No. 2</u></b></p> <ol style="list-style-type: none"> <li>1. The barrier analysis should be revised and evidences for the most important barriers to the project activity have to be mentioned in a transparent manner in the PDD and also submitted to the validation team.</li> <li>2. The additionality discussion should consider the fact that sales of stoves started since 2003, i.e. clearly before the starting date of the project activity (31.08.2007), and explain why this does not jeopardize the additionality of the project.</li> <li>3. PP should explain how the baseline was identified and which stove(s) or regimes are considered as baseline stove(s) or regimes. It should be explained in a transparent manner how the project activity differs from the baseline scenario considering the fact</li> </ol>	A.4.4.1	<ol style="list-style-type: none"> <li>1. The barrier section has been revised accordingly. See revised additionality rationale, section B.3., pg 19.</li> <li>2. The additionality section now addresses the point of sales prior to the start date. See additionality rationale in section B.3.</li> <li>3. The baseline scenario is the use of inefficient stoves, and the PDD has been updated to clarify this point. See additionality section B.3. – pg 21, end of ‘investment barrier’ addresses this point directly.</li> </ol> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> Two other alternatives, cooking with LPG and with solar cookers, have been included in the additionality section and then eliminated based on barriers. They are introduced on pg 19 and eliminated on pg 22.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> It is indicated in the PDD that “All other alternatives considered face even more barriers than those outlined in step 3 of this analysis, and were therefore eliminated.” These alternatives have not been mentioned as alternatives to the project scenario. For example “alternatives such as solar cookers and other more expensive or less culturally appropriate options” have not been cited as alternatives. PP should mention all possible alternatives consistent with mandatory laws and regulation before eliminating them according to barriers.</p> <p><b><u>Audit Team: 25.02.2009</u></b> The list of alternatives as provided in the PDD is considered complete and appropriate. This issue is therefore closed out.</p>	☒

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that some efficient stoves were already disseminated prior to project start.				
<b><u>Corrective Action Request No. 3</u></b> Include a technical drawing of the stove(s) in the PDD as well a description of the technical features that allows the increase of the efficiency in fuel use.	A.4.6.1	PDD updated accordingly. See pg 4.	<b><u>Audit Team: 08.01.2009</u></b> A technical drawing of the efficient stove has been included in the PDD as request. This issue is therefore closed out.	<input checked="" type="checkbox"/>
<b><u>Corrective Action Request No. 4</u></b> The impact of the project on GHG balance could substantially be undermined by the leakage effect. PP should therefore address and document in the PDD, the impact on the GHG balance of all the various cases of leakages suggested by the methodology.	A.4.6.2	PDD updated accordingly. See pg 18.	<b><u>Audit Team: 08.01.2009</u></b> The possibilities of leakage emissions have been substantially addressed in the PDD as required by the Methodology. No significant leakage has been identified at the moment but PP would continue to monitor and would consider any significant leakage effect.	<input checked="" type="checkbox"/>
<b><u>Corrective Action Request No. 5</u></b> ODA Declaration should be submitted by E+Co to the validating DOE	A.4.7.1	Declarations were sent to DOE in conjunction with this response.	<b><u>Audit Team: 08.01.2009</u></b> ODA Declaration has been submitted to the DOE as demanded. The issue is considered closed out.	<input checked="" type="checkbox"/>
<b><u>Corrective Action Request No. 6</u></b> PP should consider every applicability criterion in turn in justifying applicability	B.1.1.5	The PDD has been updated accordingly. See pg 12. With respect to the 1st applicability criterion, on which Gold	<b><u>Audit Team: 08.01.2009</u></b> The PDD has been updated as required. DOE is seeking expla-	<input checked="" type="checkbox"/>

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<p>ty of the methodology to the project activity. This should be included in the PDD.</p>		<p>Standard is currently providing clarification, see also the following quote from the methodology, pg 2, para 2, which suggests that parallel use is allowed. “The methodology addresses the switch from cook-stoves and kitchen regimes used in institutions or domestic homes having significant green-house gas emissions to those having considerably less or zero emissions. Kitchen regimes with significant green-house gas emissions may involve the use of more than one fuel type and more than one stove type, and the switch to low emission regimes may involve a shift in the apportionment of fuel types and/or adoption of new fuels and cook-stoves. The shift may occur in a phased manner, a program or project comprising a progressive increase over the project years in adoption of an improved fuel mix and improved stoves.”</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> The PP has received clarification from the Gold Standard TAC on this subject. The clarifying text has been shared with the DOE. As such, the PP is implementing a scheme to comply with the clarifi-</p>	<p>nations of ‘replace’ and ‘switch’ used in the methodology in order to be on a safe side. However, the issue is becoming clearer with time.</p> <p><b><u>Audit Team: 25.02.2009</u></b> The email exchange with GS has been received (IRL No. 22). GS would decide how emission reductions would be discounted due to parallel use of both efficient and inefficient stoves in household. The issue is therefore considered closed out.</p>	

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		cation that offers a discount on efficient stoves purchased if the purchase is accompanied by surrendering an operational inefficient stove. Inefficient stoves will be destroyed and sold for scrap metal. The PDD has been updated accordingly. See pg 12, applicability criteria #1 and 18, point e).		
<b><u>Corrective Action Request No. 7</u></b> The exact step wise approach (enumeration of steps, including sub-steps) as defined per methodology should be followed in the PDD.	B.2.1.1	The step wise approach has been used according to the meth as can be seen on pg 12-18.	<b><u>Audit Team: 08.01.2009</u></b> The applicability criteria have been updated in line with the methodology as required. The issue is therefore closed out.	☒
<b><u>Corrective Action Request No. 8</u></b> Annex 6 should include an explanation how the 90% confidence interval is guaranteed.	B.2.2.1	PDD updated accordingly. See pg 89 & 91 in annex 6.	<b><u>Audit Team: 08.01.2009</u></b> A p-value of 0.10 would correspond to a 90% confidence interval while a p-value of 0.01 would correspond to a 99% confidence interval. The p-values given in annex 6 would therefore guarantee a 90% confidence interval. This issue is therefore closed out.	☒
<b><u>Corrective Action Request No. 9</u></b> A table similar to the one used in the Methodology (the layout used in section 8 of the methodology) should be used in describing both default and	B.2.3.2	The PDD has been updated accordingly. See section D.2.1.1, pg 31, annex 2 and annex 3. Note that the methodology uses one table format while the Gold Standard PDD ver 1 template uses	<b><u>Audit Team: 08.01.2009</u></b> The table has been updated according to the methodology as demanded. This issue is considered solved.	☒

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monitored parameters. Actual values applied and their sources and comments should be indicated.		another that necessitates consolidating parameters from methodology. PP attempted to resolve this discrepancy using specific references to parameters in methodology incorporated in chart from PDD template, while including the methodology parameters and their original chart formats in annex 2 & 3.		
<p><b><u>Corrective Action Request No. 10</u></b></p> <p>The project's starting date should be corrected to the date of the ERPA contract (dated 21/11/2007) as this is the legally binding contract between E+Co and Toyola. The letter of intent (whose date of signature is chosen as project's starting date) is not legally binding for any of the both parties.</p>	B.3.1	<p>PP submitted clarification to Gold Standard on this point and will change start date accordingly based on their response. See also section C 1.1., pg 26 for more clarification of this topic.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b></p> <p>Since the signing of the letter of agreement, a rebate to end users has been offered in exchange for waiving ownership rights over carbon offsets. If a date later than this start date is used, Toyola will be unable to comply with this obligation to deliver rebates. Perhaps more importantly, several investments were made prior to the claimed start date that was based on the promise of carbon revenues. Could the point of investment not be considered "the point of no return" where significant financial obligations were imposed and significant capi-</p>	<p><b><u>Audit Team: 08.01.2009</u></b></p> <p>The starting date is considered as the point of no return. This means any reversal after this point would lead to huge financial losses. The letter of Intent can therefore not be considered as the point of no return.</p> <p><b><u>Audit Team: 25.02.2009</u></b></p> <p>PP has denied the audit team's advice to reconsider the starting date according to procedures and stated requirements</p> <p><b><u>Audit Team: 25.02.2009</u></b></p> <p>The point when funds were disbursed to TEL (IRL No. 23) can be considered as the point of no return. This therefore marks the</p>	☒

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		<p>tal put at risk? The PP has left the date of signing of the LoA as the start date as this marks when we formalized the arrangement but is after the point at which capital was put at risk.</p> <p><b><u>Project Proponent, 25 Feb 2009:</u></b> As highlighted by the DOE, the start date should be the point at which “any reversal after this point would lead to huge financial losses.” The PP has changed the PDD to reflect the date when E+Co dispersed \$68,200 to Toyola in 2006, funds that would not have been dispersed were carbon finance not a future revenue stream of Toyola. The date of disbursement is 14/11/2006, and the PDD has been edited accordingly.</p>	<p>start of the project activity. The starting date of the project activity given as 14 November 2006 in the PDD is therefore appropriate (IRL No. 24). The issue is therefore considered closed out.</p>	
<p><b><u>Corrective Action Request No. 11</u></b> The alternatives to the project activity need to be clearly demonstrated according to the 4 steps structure of the additionality tool requirements (including the project activity without carbon finance)</p>	B.3.2	<p>See additionality rationale in section B.3., beginning on pg 19.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> See response to CAR 2.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> See CAR2 above</p> <p><b><u>Audit Team: 25.02.2009</u></b> The list of alternatives as provided in the PDD is considered complete and appropriate. This issue is therefore closed out.</p>	☒

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<p><b><u>Corrective Action Request No. 12</u></b></p> <ol style="list-style-type: none"> <li>The project activity scenario without being registered as GS VER project should be included as alternative into the additionality analysis.</li> <li>Please explain why other alternatives to the continuation of the status-quo and the project without VER can't be considered as realistic alternatives.</li> </ol>	B.3.3	<ol style="list-style-type: none"> <li>This has now been included in additionality rationale in section B.3., beginning on pg 19.</li> <li>See additionality section pg 19, "All other alternatives considered face even more barriers than those outlined in step 3 of this analysis, and were therefore eliminated. Alternatives such as solar cookers and other more expensive or less culturally appropriate options face significantly larger barriers than the alternatives contemplated."</li> </ol> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> See response to CAR 2.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> See CAR2 above</p> <p><b><u>Audit Team: 25.02.2009</u></b> The list of alternatives as provided in the PDD is considered complete and appropriate (IRL No. 19). This issue is therefore closed out.</p>	☒
<p><b><u>Corrective Action Request No. 13</u></b></p> <p>Please revise the section regarding investment analysis in the PDD if barrier analysis is preferred to investment analysis.</p>	B.3.8	<p>The investment analysis section has been eliminated from the PDD since the PP decided that a barrier analysis is a more appropriate approach.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> The PP has provided the DOE with signed and authenticated documents supporting the assertion that invest-</p>	<p><b><u>Audit Team: 08.01.2009</u></b> PP has decided to go with barrier analysis rather than investment analysis. It is stated in the PDD that "E+Co offered financing in the form of two, low interest loans, as well as a prepayment on VERs. All of this investment took place based upon the premise that Toyola would be able to</p>	☒



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		<p>ments in Toyola were only made based on the promise of carbon revenues. The PP has also made small edits in the additionality section to further clarify the logic and address specific concerns raised by the DOE.</p>	<p>realize carbon revenues from its activities.” PP should explain whether these two loans were prepayments on VER as well or there was a separate prepayment on VER made. It is not clear how these loans or prepayment on VER contribute to the additionality of the project. In other words, investing in a project with the hope that it would be registered as a VER project is not an argument for additionality. If selling the stoves at \$8-10 allows the business to repay its debt then the project is not additional.</p> <p><b><u>Audit Team: 25.02.2009</u></b></p> <p>According to the investment recommendations in 2006 and 2007, loans were made to TEL at low rates of 6.55 and 8% per annum respectively (IRL No. 15 &amp; 17). These loans were made in anticipation of income from the sales of future VERs from the project. E+Carbon also made anticipated VER prepayment to</p>	

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			TEL on 29 <sup>th</sup> August 2008 (IRL No. 17). This shows that TEL would have been unable to operate sustainably without E+Carbon's involvement. This issue is therefore considered closed out.	
<p><b><u>Corrective Action Request No. 14</u></b></p> <p>1) PP should fully and transparently analyse and document the effect of other improved cook stoves disseminated within the same project boundary.</p> <p>2) The on site audit revealed that some GYAPA stoves are counted in this project activity and in another carbon offset project as well. PP should explain in detail and in a transparent manner how these stoves can be distinguished and as such avoid double counting.</p>	B.3.17	<p>1. See PDD, annex 4. All ownership rights to emission reductions are aggregated from end users to Toyola. In addition, Toyola Coalpot stoves are uniquely identifiable in the field due to several unique characteristics.</p> <p>2. There is no evidence to suggest that stoves are being counted twice. Evidence in the site visit revealed that in the early months of the project, Toyola was still selling stoves under the "GYAPA" name, as was outlined in the PDD, footnote of pg 3. But there is no evidence that these stoves have been counted in another carbon offset project. However, it is correct that we need proof that early stoves marketed under the GYAPA name were <u>not</u> counted in the other project. Toyola Coalpot</p>	<p><b><u>Audit Team: 08.01.2009</u></b></p> <p>PDD ver 3 of 5th Jan '09 states that "More recently, TEL re-named their product to reflect a slightly different design and the different geographic market in which TEL operates, as well as to help avoid double counting with other carbon finance projects in Ghana. While the stove is very similar to the GYAPA, TEL's stove is marketed and sold under the name "Toyola Coalpot" to avoid confusion between these different products." It is further explained in the footnote that "For simplicity, the term "Toyola Coalpot" is used to describe any stove similar to the Jiko design sold in Ghana by TEL, including before TEL began marketing under this name. The term</p>	☒

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		<p>stoves can be distinguished from GYAPA stoves because, among other things, they are a different size and have different labels. The few, early stoves in the project can also be distinguished because while they share many characteristics with the non-Toyola GYAPAs, they have different diameters. If measured, one can identify the difference in the field. Design changes were gradual. In fact, the name was the last thing to change among the different design characteristics that differentiate the GYAPA from the Toyola Coalpot. That said, the PP will consider instituting additional marking mechanisms if the DOE considers this advisable. The PDD has been updated to further clarify this issue. See annex 4 in PDD.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> Some of the quotes referenced by the DOE have been edited to avoid confusion. In addition, annex 4 of the PDD includes the following language, which</p>	<p>Gyapa is used to describe any stove similar to the Jiko design sold in Ghana by companies other than TEL. The name of TEL's stove changed from Gyapa to Toyola Coalpot in July, 2008.”</p> <p>From the above quotes it can be concluded that there are GYAPA stoves with identical designs and otherwise from TEL and from other stove manufacturers. It is the duty of the PP to provide information on whether there is/are other projects in Ghana with similar products and how these products are distinguishable. On site visit revealed that the ‘Toyola coalpot’ labels fall off almost as soon as the stoves are put to use. It would be hair splitting for an auditor in the field to make out a stove when in doubts.</p> <p><b><u>Audit Team: 25.02.2009</u></b> <b><u>Forward Action Request FAR No 1.</u></b> The experience on-site reveals that these legs fall off sooner or later making it difficult to differen-</p>	

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		<p>provides sufficient technical details to differentiate TEL stoves from others in the field:</p> <p>“...Toyola Coalpot stoves are uniquely identifiable in the field. Specifically, Toyola Coalpot stoves lack 3 legs on the bottom, which improved stoves from other projects have. Moreover, Toyola Coalpot stoves are a different diameter than other improved coalpot stoves in Ghana. The diameter of Toyola Coalpot stoves are as follows, allowing them to be uniquely identified in the field. No other improved stoves are sold in Ghana with these exact diameters:</p> <ul style="list-style-type: none"> <li>a. improved fuel-efficient household charcoal stoves (small) - 260mm</li> <li>b. improved fuel-efficient household charcoal stoves (medium) - 350mm</li> <li>c. improved fuel-efficient commercial charcoal stoves (small) - 410mm</li> <li>d. improved fuel-efficient commercial charcoal stoves (large) - 500mm”</li> </ul>	<p>tiate stoves in the field. There is no guarantee that other stoves manufacturers would not sell stoves with similar characteristics as the Toyola stoves. The only means of differentiating stoves in the field would be using name tags which would be permanent throughout the crediting period. During verification, if random sampling reveals that Toyola stoves are not well labelled or unambiguously identifiable this should be addressed in the emission reduction estimate. This issue is therefore resolved.</p>	
<p><b><u>Corrective Action Request No. 15</u></b> It should be transparently demon-</p>	<p>B.3.19</p>	<p>See additionality rationale in section B.3. pg 19.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> The main hurdle to the project is</p>	<p><input checked="" type="checkbox"/></p>

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<p>strated how the approval of the project would help overcome the financial hurdles cited in the PDD.</p>		<p><b><u>Project Proponent, 20 Feb 2009:</u></b>                      The full price for an average size stove is currently set at \$8-\$10/stove, depending upon whether the customer chooses to pay for the stove in several instalments. See pg 22 of PDD. The future price as a result of the project's approval will depend on market conditions, and has not been determined, but the discount will be larger than the currently offered rebate, which is GHC 1 (about \$1). See pg 20 of PDD for this information.</p>	<p>the lack of access to loans. It is also mentioned that "at full price Toyola stoves are unaffordable to the majority of Ghanaians..." This 'full price' has not been explicitly given in the PDD and no future price as a result of project's approval has been mentioned. Similarly, no argument has been given on how the approval of the project would overcome the difficulty to get access to loans.</p> <p><b><u>Audit Team: 25.02.2009</u></b>                      PP's response is considered adequate and issued is closed.</p>	
<p><b><u>Corrective Action Request No. 16</u></b>                      The target areas and the fuel collection area should be defined in the PDD as per the methodology.</p>	<p>B.4.1</p>	<p>PDD updated accordingly. See section B.4., pg 25.</p>	<p><b><u>Audit Team: 08.01.2009</u></b>                      The target area has been defined as Toyola's current distribution network throughout the Greater Accra Region, Eastern Region, Ashanti Region and Central Region, but will gradually expand to cover major towns and market centers in all regions of Ghana, including Western, Brong-Ahafo, Volta, Upper West, Upper East and Northern. The baseline would be reassessed if the need</p>	<p>☒</p>

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			arises. This is considered acceptable. Issue is closed out.	
<p><b><u>Corrective Action Request No. 17</u></b> The table on emissions sources as per methodology section II.1 should be included in the PDD:</p>	B.4.2.1	PDD updated accordingly. See section B.3., pg 25.	<p><b><u>Audit Team: 08.01.2009</u></b> The table has been used according to the methodology. The issue is considered closed out.</p>	☒
<p><b><u>Corrective Action Request No. 18</u></b> Please mention the date of determination of the baseline in B.5 of the PDD.</p>	B.5.2	PDD updated accordingly. See section B.5., pg 25.	<p><b><u>Audit Team: 08.01.2009</u></b> The baseline study was completed in June 2008 as indicated. The issue is considered solved (IRL No. 14).</p>	☒
<p><b><u>Corrective Action Request No. 19</u></b> PPs should revise the explanation of the lifetime of the project activity and justify this choice. See also B.3.1.</p>	C.1.1	<p>PDD updated accordingly, See section C.1.2., pg 26.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> According to the Ghanaian Companies Act of 1963 (Act 179), operating licenses do not expire, except in certain regulated industries such as mining. This is why there is no date of expiration on the certificate of incorporation submitted. As such, the PP has changed the operational life of the project to 30 years, since it is clear that the operational life exceeds the crediting period.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> NA is not appropriate for operational lifetime. The duration of the operating licence could serve as the lifetime but this is not mentioned on the certificate of incorporation provided.</p> <p><b><u>Audit Team: 25.02.2009</u></b> Operational lifetime of a project is usually determined by the duration of the equipment or the length of the operating this license. Both cannot be applied in projects of this nature since stoves do not last that long but</p>	☒

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			are continuous sold to end users. Stoves are also being repaired and/or replaced in case of damage. The operational lifetime mentioned is therefore accepted. Issue considered closed out.	
<b><u>Corrective Action Request No. 20</u></b> Baseline Monitoring KT is missing in the PDD. This should be included in section D of the PDD.	D.2.1.1.2	The PDD has been updated accordingly. See pg 29.	<b><u>Audit Team: 08.01.2009</u></b> The update in the PDD is considered appropriate. The issue is therefore solved (IRL No. 14).	☒
<b><u>Corrective Action Request No. 21</u></b> Information regarding the moment when the new stove KT has to be performed has to be revised i.e when the stove was launched.	D.2.1.1.2	The PDD has been updated accordingly. See pg 29.	<b><u>Audit Team: 08.01.2009</u></b> The update in the PDD is considered appropriate. The issue is therefore solved (IRL No. 14).	☒
<b><u>Corrective Action Request No. 22</u></b> The list of parameters should be consistent with the Table in chapter 3 of the methodology. All relevant information (amongst others QA/QC procedures for measured data) should be provided in the PDD.	D.2.1.1.3	The PDD has been updated accordingly. See annex 3, pg 53 for all parameters. QA/QC procedures are summarized in tables in annex 3 as well as in section D.3. pg 39.	<b><u>Audit Team: 08.01.2009</u></b> The update has been done as demanded and the issue is considered closed (IRL No. 14).	☒
<b><u>Corrective Action Request No. 23</u></b> Please include a short explanation regarding the impact of the project on balance of payment. Provide justification if this is not important for the pro-	D.2.1.2.11	PDD has been updated accordingly. See pg 9.	<b><u>Audit Team: 08.01.2009</u></b> The project's impact on balance of payment has been included in the PDD. The issue is considered solved (IRL No. 14).	☒

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ject activity.				
<b><u>Corrective Action Request No. 24</u></b> PP should include information on how data use for emission reductions calculations would be collected and archived. It should also be noted that this data would have to be kept for at least two years after the end of the crediting period.	D.2.1.3.5	PDD has been updated accordingly. See section D.2.1.1. pg 31	<b><u>Audit Team: 08.01.2009</u></b> Data would be collected and stored in both hard copies and electronically. Backups would be kept at project operator and at project proponent (financier). Issue considered closed out.	<input checked="" type="checkbox"/>
<b><u>Corrective Action Request No. 25</u></b> The structure of the PDD template has been altered. PP should complete the section 2.2 and sub-items of PDD.	D.2.2.1.1	PDD has been updated accordingly. See pg 35-36.	The structure of the PDD has been restated as demanded. The matter is considered solved.	<input checked="" type="checkbox"/>
<b><u>Clarification Request No. 1</u></b> PP should clearly and carefully define the Project Boundary, Target Area and Fuel Collection area for this project in the PDD.	A.4.1.1	The PDD has been updated accordingly. See pg 25.	<b><u>Audit Team: 08.01.2009</u></b> This has been done according to the methodology. (See CAR16). This CR was therefore not needed. Issue considered closed	<input checked="" type="checkbox"/>
<b><u>Clarification Request No. 2</u></b> As TEL is beginning to market stoves to other regions of the country, namely Ashanti, Central, and Northern regions, PP should clarify whether on-going Kitchen Surveys has already been performed in these areas as well.	A.4.1.1	Although Berkeley Air has already conducted several quarterly monitoring KSs, to date they have taken place in the Eastern and Greater Accra region. Berkeley Air will expand to other regions as they determine that sufficient sales exist in other regions to warrant monitoring KSs in these regions. There is not a	<b><u>Audit Team: 08.01.2009</u></b> The question then arises: when should an expansion in sales triggers a monitoring KS to be conducted? When is reassessment of the baseline necessary? Normally, an expansion would encroach into a different fuel	<input checked="" type="checkbox"/>



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Clarifications and corrective action re-quests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion	Final PDD
		<p>specific threshold listed in the methodology for what % of sales in a region warrants a monitoring KS. This threshold is up to the discretion of Berkeley Air as independent, professional statisticians that determine how to conduct representative KSs.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> As stated above, there is not a specific threshold prescribed in the methodology to determine when KSs should be conducted in specific regions, which is why we yield to the better judgement of Berkeley Air to conduct studies that they conclude yield sufficiently representative results.</p>	<p>supply area with different population having a different cooking habit.</p> <p><b><u>Audit Team: 25.02.2009</u></b> NRB was calculated by Berkeley Air Monitoring Group for the whole country – a third party. We hope the revised Methodology will address issues such as this. With this is the issue considered as closed out.</p>	
<p><b><u>Clarification Request No. 3</u></b> PP should also clarify in which region the assessment of non-renewability of biomass was conducted and the source of the 73% non-renewability indicated in the PDD</p>	A.4.1.1	<p>The full NRB study methodology is outlined in annex 6, beginning on pg 84. Berkeley Air defines the supply area as “Fuel supply area for greater Accra and Eastern regions includes forest stands and savannah across the country, primarily the Afram Plains, Brong Ahafo, Volta, and the Eastern and Central Regions.” 73% is calculated using the formula <math>X_{nr} = 1 - (MAI/H)</math>, plugging in numbers sourced from various credible sources resulting from Berkeley Air’s</p>	<p><b><u>Audit Team: 08.01.2009</u></b> The NRB was calculated based on FAO figures and figures from other credible studies conducted on Ghana forest resources. The calculation is clear and transparent. Issue considered closed out.</p>	☒

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		primary and secondary research on the subject.		
<p><b><u>Clarification Request No. 4</u></b>            During the site visit, it was discovered that some GYAPA Stoves are also counted in this project activity. This therefore contradicts the above claims. PP should explain in a transparent manner how double counting will be avoided by the proposed project activity. Coalpot stoves have to be clearly distinguishable from stoves in other project activities.</p>	B.1.1.7	<p>The PDD states that “The name of TEL’s stove changed from Gyapa to Toyola Coalpot in July, 2008,” (subscript on pg 3) and therefore what was found in the field does not contradict what is stated in the PDD. Some of the early Toyola stoves were sold under the name GYAPA. However, steps were taken to avoid double counting of those stoves as well. Among other things, these stoves are uniquely identifiable in the field because they are a slightly different diameter than other GYAPA stoves sold in Ghana. The PDD has been updated to more clearly state the situation with respect to double counting. See annex 4 for explanation and see also response to CAR 14.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b>            See response to CAR 14. The quotes have been changed slightly to attempt to avoid confusion. In spite of the stoves having been sold another the same name during a brief period of time in the beginning of the project, they stoves are nonetheless uniquely identi-</p>	<p><b><u>Audit Team: 08.01.2009</u></b>            The subscript on pg3 reads “For simplicity, the term “Toyola Coalpot” is used to describe any stove similar to the Jiko design sold in Ghana by TEL, including before TEL began marketing under this name. The term Gyapa is used to describe any stove similar to the Jiko design sold in Ghana by companies other than TEL. The name of TEL’s stove changed from Gyapa to Toyola Coalpot in July, 2008.” This implies that before July 2008 TEL stoves were called GYAPA and stoves produced by other manufacturers were also called GYAPA. Also in the main body of the PDD it is said that “More recently, TEL renamed their product to reflect a slightly different design and the different geographic market in which TEL operates, as well as to help avoid double counting with other carbon finance projects in Ghana.</p>	☒

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		fiable in the field based on subtle, technical differences as outlined in annex 4 of the PDD.	While the stove is very similar to the GYAPA, TEL's stove is marketed and sold under the name "Toyola Coalpot" to avoid confusion between these different products." And what was found on site is a contradiction and the double counting and confusion set out to avoid remain (IRL No. 14).  <b><u>Audit Team: 25.02.2009</u></b> See FAR No. 1	
<b><u>Clarification Request No. 5</u></b> Clarify and document in the PDD how it was assured that the households from the pilot sales record used for the Kitchen Test were not already using the Toyola coalpot stove prior to the date of the baseline assessment.	B.2.1.1	The pilot sales record was used to perform the Kitchen Surveys, not the Kitchen Performance Tests. KPTs were performed on households with similar socioeconomic and demographic characteristics as Toyola customers (as defined by the Kitchen Survey), but who did not have stoves prior to the test. They were then provided with a stove for purposes of the test. Households with Toyola Coalpot or GYAPA stoves by definition were excluded from the Kitchen Test. The PDD has been updated accordingly, see pg 16.	<b><u>Audit Team: 08.01.2009</u></b> The DOE has to take the PP for his words when he says that KPTs were conducted on customers who previously had no efficient stoves of any kind. 'Toyola customers' though misleading is just a label given to this experimental group (IRL No. 14). Issue considered closed out.	☒

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<p><b><u>Clarification Request No. 6</u></b>                      It is indicated that the Kitchen Test was based on 125 respondents. Clarify in the PDD the actual process of selection, how these candidates were selected (e.g random clustered selection) and how it was preceded if a stove owner was not identifiable / locatable, and if this might have impacted the results.</p>	<p>B.2.1.1</p>	<p>125 respondents were included in the Kitchen Survey, not the Kitchen Test. According to the PDD, "The Kitchen Survey households were chosen from Toyola's sales record using clustered random sampling inside of the two regions of Ghana. The sales records were used, along with input from Toyola's local sales representatives, to target areas with high concentrations of sales of the stove. These areas were representative of and demographically similar to Toyola's typical Greater Accra and Eastern Region customers." See pg 15 &amp; 83 of PDD. Toyola's detailed customer database was of sufficient size that when Berkeley Air was unable to locate a household, they would simply choose another household from the database using clustered random sampling. As third party, independent statisticians, Berkeley Air does not think that any sampling bias exists based on an inability to locate households since there were no notable differences between households that could and could not be located, and because the inability to locate households was quite rare.</p>	<p><b><u>Audit Team: 08.01.2009</u></b>                      This confusion has been well clarified in the PDD and the matter can be considered closed (IRL No. 14).</p>	<p><input checked="" type="checkbox"/></p>

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<p><b><u>Clarification Request No. 7</u></b> Clarify the approach on the renew-ability status estimates and the cho-sen supply areas if in future the actual target areas is going to be different (including i.e. other cities apart from Greater Accra and Eastern regions)</p>	B.2.1.3	The first and fifth ongoing monitoring tasks (pg 29, B. 1 & 5) take into account such circumstances. If significant sales occur outside of the areas where NRB analysis was already performed, quar-terly KSSs will detect the need for addi-tional cluster definitions, which could prompt a more comprehensive NRB study. Moreover, bi-annual review of the evolving non-renewable biomass baseline will result in necessary adjust-ments in renewability status of biomass. In the words of Berkeley Air, “The 2-year follow-up biomass non-renewability study will capture any significant changes due to the efficient stove pro-ject and any others.” See Annex 6, pg 93.	<p><b><u>Audit Team: 08.01.2009</u></b> PP has indicated that non-renewability of biomass would be monitored and adjusted as re-quired. Similarly, if TEL decides to expand beyond Greater Accra Region, Eastern Region, Ashanti Region and Central Region, the baseline may have to be reas-sessed. The matter is therefore clarified (IRL No. 14).</p>	<input checked="" type="checkbox"/>
<p><b><u>Clarification Request No. 8</u></b> In regard to harvest data: Provide the actual detailed reference (pages) in-dicating the input data used for the calculations of None Renewable Fraction per region.</p>	B.2.1.3	The FAO's FAOSTAT-Forestry Data-base was used to attain the data. This is a database that exports excel files based on parameters set by the user. The database is available at <a href="http://faostat.fao.org/site/626/default.aspx#anchor">http://faostat.fao.org/site/626/default.aspx#anchor</a> and has been referenced in the baseline study on pg 92 of the PDD.	<p><b><u>Audit Team: 08.01.2009</u></b> FAO published figures were used in the calculation of NRB. This approach is acceptable.</p>	<input checked="" type="checkbox"/>
<p><b><u>Clarification Request No. 9</u></b> Provide excel spreadsheets for the relevant emission reduction calcula-</p>	B.2.4.2	Excel sheets were provided to the DOE during the site visit.	<p><b><u>Audit Team: 08.01.2009</u></b> Excel workbook on emission re-duction calculations has been</p>	<input checked="" type="checkbox"/>

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tions.			received by the DOE. A highly professional ER calculation workbook called “CEIHD Household Energy Carbon Calculator” (IRL No. 8) has been analysed by the team of auditors. The inputs and outputs are realistic and in line with the methodology. The Household Energy Carbon Calculator (CHECC) is a detailed excel model developed by the Center for Entrepreneurship in International Health and Development (CEIHD) that estimates emission reductions of carbon dioxide, methane and nitrous oxide from improved cookstoves. Issue closed out.	
<p><b><u>Clarification Request No. 10</u></b> PPs are requested to submit Emails and other documentation to the validation team, which prove that VER was seriously taken into account before the project’s starting date.</p>	B.3.1	<p>An email proving the signing date of the letter of intent is included with this response and was showed to the DOE in Ghana during site visit. See response to CAR 10 for further start discussion.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b> See response to CAR 10.</p>	<p><b><u>Audit Team: 08.01.2009</u></b> An email exchange date 5<sup>th</sup> September 2007 confirming the signing of Lol has been forwarded to the DOE. However, the Lol is not a legally binding document. And as such the date of its signatory could not be considered as the starting date of the project activity</p>	☒

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Clarifications and corrective action re-quests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion	Final PDD
			<p><b><u>Audit Team: 25.02.2009</u></b>                      The point when funds were disbursed to TEL (IRL No. 23) can be considered as the point of no return. This therefore marks the start of the project activity. The starting date of the project activity given as 14 November 2006 in the PDD is therefore appropriate (IRL No. 24). The issue is therefore considered closed out.</p>	
<p><b><u>Clarification Request No. 11</u></b>                      PP should consider the different sources of leakage indicated in the methodology and justify, in a clear and transparent manner, their relevance or non relevance to the project activity.</p>	D.2.3.1	<p>The PDD has been updated accordingly to be consistent with the methodology. See pg 18 of the PDD.</p>	<p><b><u>Audit Team: 08.01.2009</u></b>                      PP has addressed the leakage issue in the PDD according to the methodology. The matter is considered solved (IRL No. 14).</p>	☒
<p><b><u>Clarification Request No. 12</u></b>                      PP should clarify how it is assured that high quality database will always be available during quarterly re-assessments. Clarify the mode of information transfer between participants and team for kitchen assessment and where such information is stored.</p>	D.4.1	<p>The PDD has been updated accordingly. See pg 27 &amp; 28.</p> <p><b><u>Project Proponent, 20 Feb 2009:</u></b>                      The quote below, found on pg 27 &amp; 28, addresses the question: “The project proponent and owner have implemented a system of rebate cards to be completed by end users upon sale...These cards include personal contact details of</p>	<p><b><u>Audit Team: 08.01.2009</u></b>                      PP was also requested to clarify the mode of information transfer between participants and the team for kitchen assessment and how the information is stored.</p> <p><b><u>Audit Team: 25.02.2009</u></b>                      The mode of transferring information transfer is considered</p>	☒

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		<p>end users, which are collated into an electronic database from which project monitoring can be conducted. The excel records are backed up and sent to the project coordinator for checking prior to using them as the basis for quarterly monitoring activities. Hard copies of rebate cards are filed as additional backup and for verification purposes.</p> <p>... For all direct sales to end-users TEL will collect this information personally. For retail and agent sales, cards are distributed with stoves and collected when the next stock of stoves is delivered. Quality assurance measures will be implemented by an external third party to check the validity of sales cards and customer information, as discussed in Section D.3, below. The customers in the sales record for which phone numbers or addresses are available will be used for survey sampling to support the periodic monitoring activities described below.”</p>	feasible according to on-site observation. The issue is there considered closed out.	
<p><b><u>Forward Action Request FAR No 1.</u></b> The experience on-site reveals that these legs fall off sooner or later making it difficult to differentiate stoves in</p>	CAR 14			



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the field. There is no guarantee that other stoves manufacturers would not sell stoves with similar characteristics as the Toyola stoves. The only means of differentiating stoves in the field would be using name tags which would be permanent throughout the crediting period. During verification, if random sampling reveals that Toyola stoves are not well labelled or unambiguously identifiable this should be addressed in the emission reduction estimate. This issue is therefore resolved.				


**Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)**

Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

Validation of the GS VER Project:  
**Improved Household Charcoal Stoves in Ghana**

## **Annex 2: Information Reference List**

Reference No.	Document or Type of Information																																																						
1	Project Design Document: "Improved Household Charcoal stoves in Ghana" version 2.2																																																						
2	Title of the methodology: "Indicative Programme, Baseline, and Monitoring Methodology for Improved Cook-Stoves and Kitchen Regimes" and its version is 01																																																						
3	Validation_Protocol_GS_cookstoves_Ghana_draft_CF+JT_ver2.doc (First Draft validation after on-site visit)																																																						
4	List of Participants during the site visit 02.12.08 to 04.12.08 in Accra, Ghana																																																						
	<p>The on-site audit was conducted from 02 - 04 December, 2008 by the audit team from TÜV SÜD</p> <p><b>Composition of the audit team:</b></p> <table border="0"> <tr> <td>Johann Thaler, Mr</td> <td>ATL</td> <td>TÜV SÜD, Brazil</td> </tr> <tr> <td>Cyprian Fusi, Mr</td> <td>GHG-T</td> <td>TÜV SÜD, Munich</td> </tr> </table> <p><b>Number of people interviewed:</b></p> <table border="0"> <tr> <td>Mr. Erik Wuster</td> <td>Manager Carbon Finance</td> <td>E+Co</td> </tr> <tr> <td>Mr. Ernest K Kyei</td> <td>Director</td> <td>Toyola Energy Ltd</td> </tr> <tr> <td>Mr. Suraj W. Ologburo</td> <td>CEO</td> <td>Toyola Energy Ltd</td> </tr> <tr> <td>Mr. Joeseeph Osiakwan</td> <td>Policy Coordinator</td> <td>Min. of Lands, Forestry &amp; Mines, Ghana</td> </tr> <tr> <td>Miss. Yvonne Asumah</td> <td>Contract Field Worker</td> <td>Ghana</td> </tr> <tr> <td>Mrs. Sister Ajele</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Sister Abigel</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Oduro Theresia</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Sister Beatrice</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Mama Amene</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Veronica Amankwa</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Sakyi Juliana</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Afou Comfort</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Susana Kollety</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Abebio Dola</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> <tr> <td>Mrs. Cecilia Dosu</td> <td>Domestic end-user</td> <td>Toyola coalpot stoves</td> </tr> </table>	Johann Thaler, Mr	ATL	TÜV SÜD, Brazil	Cyprian Fusi, Mr	GHG-T	TÜV SÜD, Munich	Mr. Erik Wuster	Manager Carbon Finance	E+Co	Mr. Ernest K Kyei	Director	Toyola Energy Ltd	Mr. Suraj W. Ologburo	CEO	Toyola Energy Ltd	Mr. Joeseeph Osiakwan	Policy Coordinator	Min. of Lands, Forestry & Mines, Ghana	Miss. Yvonne Asumah	Contract Field Worker	Ghana	Mrs. Sister Ajele	Domestic end-user	Toyola coalpot stoves	Mrs. Sister Abigel	Domestic end-user	Toyola coalpot stoves	Mrs. Oduro Theresia	Domestic end-user	Toyola coalpot stoves	Mrs. Sister Beatrice	Domestic end-user	Toyola coalpot stoves	Mrs. Mama Amene	Domestic end-user	Toyola coalpot stoves	Mrs. Veronica Amankwa	Domestic end-user	Toyola coalpot stoves	Mrs. Sakyi Juliana	Domestic end-user	Toyola coalpot stoves	Mrs. Afou Comfort	Domestic end-user	Toyola coalpot stoves	Mrs. Susana Kollety	Domestic end-user	Toyola coalpot stoves	Mrs. Abebio Dola	Domestic end-user	Toyola coalpot stoves	Mrs. Cecilia Dosu	Domestic end-user	Toyola coalpot stoves
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Reference No.	Document or Type of Information
	Mrs. Nanor Domestic end-user Toyola coalpot stoves Mrs. Christina Narh Domestic end-user Toyola coalpot stoves Mrs. Comfort Yomeloh Domestic end-user Toyola coalpot stoves Mrs. Margerat Yomley Domestic end-user Toyola coalpot stoves JUST TO NAME A FEW...
5	Certificate of Incorporation: Toyola Energy Limited, signed on 20 <sup>th</sup> June 2006
6	Toyola Sales Record thru mid Nov. 2008.xls
7	Toyola End User Database.xls
8	Ghana PDD ER Projections.xls (CEIHD Household Energy Carbon Calculator Ghana)
9	ERPA between E+Co and TEL dated on 21 <sup>st</sup> November 2007
10	(Letter of Agreement) Verified Emission Reduction (VER) Letter of Intent between E+Co and Toyola signed on 31 <sup>st</sup> August 2007
11	ERPA Amendment signed on 1 <sup>st</sup> February 2008
12	Double Counting Memo dated 27 <sup>th</sup> March 2008
13	Financier letter.pdf (Declaration of Non-Use of Official Development Assistance by E+Co signed on September 22, 2008)
14	Ghana Stoves PDD_final3.docx (version 3 of 5 <sup>th</sup> January 2009)
15	E+Co Investment Recommendation for Support. Date: July 6, 2006
16	E+Co Officer Investment Package: Signed on December 13, 2007
17	TRANSFER OF TITLE AND OWNERSHIP TO EMISSION REDUCTIONS (Toyola-E+Carbon Offset Prepayment: signed 29.08.2008)
18	Start Date email.msg. Date: 05.09.2007
19	Ghana Stoves PDD_final3.docx (version 3.1 of 20 <sup>th</sup> February 2009)
20	Prefeasibility Assessment Cook-stoves Ghana Final.pdf (Feedback 25 <sup>th</sup> July 2008)
21	2nd tier ERPAs.pdf (Not dated)
22	Gold Standard email between PP and Dr. Meinrad Buerer on parallel usage of both efficient and inefficient stoves
23	disbursement record.pdf (dated 14 <sup>th</sup> November 2006)
24	Ghana Stoves PDD_final5.docx (version 3.2 of 25 <sup>th</sup> February 2009)
25	