



VERIFICATION REPORT
ASSOCIATION POUR LE DEVELOPPEMENT
DE'ENERGIE SOLAIRE SUISSE-
MADAGASCAR(ADES)

VERIFICATION OF THE
ADES SOLAR AND EFFICIENT STOVES IN
MADAGASCAR

REPORT NO. KENYA-VER/0003/2012

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BUREAU VERITAS CERTIFICATION

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VERIFICATION REPORT

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Summary:

Bureau Veritas Certification has made the 3rd periodic verification of the Ades Solar and efficient stoves in Madagascar, GS Registration Reference Number GS 464, project of Association Pour Le Development De'energie solar Suisse-Madagascar (ADES) located in BP-637-Route de Betanimena, Toliara, Madagascar and applying the methodology "Gold Standard Methodology for Improved Cook-stoves and Kitchen Regimes version 01, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Designated Operational Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CL, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is already generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 24,110 tons of CO₂eq for the monitoring period.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents.

Reporting period : 01/01/2011 to 31/12/2011
 Baseline emissions : t CO₂ equivalents(not calculated separately, since paired sample was used)
 Project emissions : t CO₂ equivalents(not calculated separately, since paired sample was used).
 Leakage emissions : 0 t CO₂ equivalents.
 Emission Reductions : 24,110 t CO₂ equivalents

Report No.: KENYA-ver/0003/2012	Subject Group: GS-VER 01
Project title: Ades Solar and efficient stoves in Madagascar	
Work carried out by: Team Leader – Andrew Kinyanjui Team Member – James Chirchir Internal Reviewer – HB Muralidhar	
Internal Technical Review carried out by: H.B Muralidhar	
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Mr. Flavio Gomes

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1 INTRODUCTION

Association Pour Le Developpement De'energie solar Suisse-Madagascar (ADES) has commissioned Bureau Veritas Certification to verify the emissions reductions of its CDM project Ades Solar and efficient stoves in Madagascar (hereafter called "the project") at BP-637-Route de Betanimena, Toliara, Madagascar.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC/GS criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

In carrying out its verification work, the DOE shall ensure that the project activity complies with the requirements of paragraph 62 of the CDM modalities and procedures.

Based on the applicable requirements of paragraph 62 of the CDM modalities and procedures, this assessment shall:

- (a) Ensure that the project activity has been implemented and operated as per the registered PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- (b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with latest applicable version of the completeness checklist for requests for issuance of CERs and verifiable and in accordance with applicable CDM requirements;
- (c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;
- (d) Evaluate the data recorded and stored as per the monitoring methodology.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may



provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 GHG Project Description

ADES Solar and efficient stoves in Madagascar is a large scale renewable energy and energy efficient project with an objective to locally produce and distribute solar and efficient cook stoves to people in Southwest Madagascar. In order to create awareness for new stove technologies and to convince people to buy a new stove, cooking demonstrations in villages and schools as well as training programs for solar cooking are conducted. Initially, the scope of the project was limited to SouthWest Madagascar but the scope has been revised to cover the entire Madagascar (refer category 2/4/).

The project is a registered Gold Standard project ID number GS464, registered in 23/12/2009 and applying the "Gold Standard Methodology for Improved Cook stoves and Kitchen Regimes V.01" methodology approved by the GS TA.

The solar and efficient cook stoves replace baseline traditional wood and charcoal stoves. In absence of the project activity the thermal energy needs for cooking applications in Madagascar would be fulfilled by the use of wood-fuel or charcoal, most of which is non- renewable biomass from primary forests.

Since the project started in August 2007, the Swiss-Madagascan non-governmental organization, Association pour le Développement de l'Energie Solaire (ADES) has continued stove production and promotion in Madagascar, continuously expanding its activities with the opening of new production centers and development of new stove models. Five stove types are currently being disseminated: solar box stove, solar parabolic stove, efficient wood stove OLI-b, efficient charcoal stove OLI-c, and larger model of efficient charcoal stove OLI-45c (formerly called OLI-G), while four new stove models are at different stages of development (refer to category 2/4/). As at 31.12.2011, a total of 11,197 solar and efficient stoves had been produced and disseminated in Madagascar and five cook-stove workshops in Tuléar, Ejeda, Morondava, Morombe and Majunga are in operation.

This verification is a determination for one year retrospective emission reductions during the period 01/01/2011– 31/12/2011. During this 3rd monitoring period, a total of 24,110 tCO₂e emissions reductions are reported generated from 5608 stoves years from the various clusters of stoves in this project.

1.4 Verification Team

The verification team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER*	TASK PERFORMED
Lead Verifier	Andrew Kinyanjui	☐ Yes ☒ No	☒ DR ☐ SV ☒ RI
Verifier	James Chirchir	☒ Yes ☐ No	☒ DR ☒ SV ☒ RI
Technical	N/A	☐ Yes ☐ No	☐ DR ☐ SV ☐ RI



Specialist			
Internal Technical Reviewer (ITR)	H.B. Muralidhar	☒ Yes ☐ No	☒ DR ☐ SV ☒ RI
Specialist supporting ITR	N/A	☐ Yes ☐ No	☐ DR ☐ SV ☐ RI

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010 and GS-VER Manual. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The verification of the project documentation provided by the project participant is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the monitoring report submitted to the DOE. Qualitative information comprises information on internal management controls, calculation procedures, and procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

In addition to the monitoring documentation provided by the project participants, the DOE reviews:

- The registered PDD, including the monitoring plan and the corresponding validation report;
- Previous verification reports, if any;



(c) Previous monitoring reports, if any;

(d) The revised monitoring plan, if any, and its impact on the current verification;

(e) The applied monitoring methodology;

(d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board and GS TA;

(e) Any other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, data on electricity generation in the national grid or laboratory analysis and national regulations).

2.2 Follow-up Interviews

Between 29/05/2012 and 04/06/2012 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Association Pour Le Development De'energie solar Suisse-Madagascar (ADES) were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
ADES	➤ Staff Training ➤ Sales Records ➤ Production Records ➤ Project operation ➤ GS sustainability
My Climate	➤ Project Design and implementation ➤ Monitoring Plan and management procedures ➤ Monitoring data ➤ GHG Calculation ➤ Data uncertainty and residual risks (QA/QC) ➤ Environmental Impacts ➤ Project Expansion ➤ Compliance with National Laws and Regulations
Local Stakeholders	➤ Relevance of Sustainability Criteria ➤ Fuel savings ➤ Fuel Costs ➤ Compliance with National Laws and Regulations ➤ Fuel usage and sources



2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

Findings established during the initial verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CAR) is issued, where:

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

Forward Action Requests (FAR) are issued, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

2.4 Internal Technical Review

The verification report underwent a Internal Technical Review (ITR) before requesting issuance of CERs for the project activity.

The ITR is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme as well as internal Bureau Veritas Certification procedures.



The Lead Verifier provides a copy of the verification report to the reviewer, including any necessary verification documentation. The reviewer reviews the submitted documentation for conformance with the verification scheme. This will be a comprehensive review of all documentation generated during the verification process.

When performing an Internal Technical Review, the reviewer ensures that:

The verification activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Verification Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized verification report is accepted for further processing such as uploading on the UNFCCC webpage.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 00 Corrective Action Requests, 05 Clarification Requests, and 00 Forward Action Requests.

The CARs, CLs and FARs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section corresponds to the VVM paragraph.



3.1 Remaining issues from previous validation/verification

All CARs and CLs raised were successfully closed during the verification. In addition, 6 FARs had been raised in the last verification and has been sufficiently addressed and closed out in this verification. Hence, no remaining issues are left.

3.2 Project implementation in accordance with the registered project design document (198)

The project which involves local production and distribution of solar and efficient wood and charcoal stoves in Southwest Madagascar has been implemented as described in the registered PDD.

Since the start of the project activity when only two workshops at Tulear and Ejeda commenced operations in 27 August 2007, the project has continued expanding its operations with the opening of new production centers and development of new stove models. During this verification, the centers for production and distribution in operations were Tulear, Ejeda, Morondava, Morombe, Majunga and Fianarantsoe and the models types produced and disseminated are; solar box stove, solar parabolic stove, efficient wood stove OLI-b, efficient charcoal stove OLI-c and efficient charcoal stove OLI-45c.

The following activities have been highlighted for this monitoring period;

- A prototype of an electric solar cooker has been developed. This type of solar box stove includes PV cells and a battery to enable cooking and charging of electronic appliances such as radio, lamps and mobile phones at the same time.
- A new production and distribution center in Majunga within the project area was opened in November 2011.
- A new production center for clay cores was opened in Fianarantsoa in July 2011. The center is operated in partnership with BERMA, a business entity by a local craftsman.
- Implementation of development phase for larger and more robust solar stoves for school kitchens was done, resulting in production of 10 solar boxes.
- Development of larger models of the efficient rocket stoves for wood and charcoal users

New stoves Models, Institutional and Street cooking

ADES is developing and testing new efficient stoves. In addition to the current four stoves types being disseminated by ADES, five new stove models are at different stages of development (refer to category 2 /4/). Besides OLI-b stove for domestic wood users, ADES has developed and tested the OLI-45b stove, designed to satisfy the requirements of the



customers using the big cooking pots No. 45 (household with 8 or more persons and street kitchens). The tests results showed a fuel savings of 68% compared to the baseline conventional wood stove (Toko stoves). OLI-45c, for charcoal users using cooking pot No. 45, was developed and tested by ADES. In 2011, 234 stoves of this type were sold. From the test results, OLI-45c fuel savings is between 50%-60%, compared to the baseline conventional charcoal stoves. The test results were reviewed during the site visit.

For customers using the even bigger cooking pots No. 60, ADES has developed OLI-60b stove for wood users and plans are underway to develop OLI-60c, for charcoal users. This stove size is suitable for institutional (schools, colleges, institutes etc.) and commercial applications. The initial test result for OLI-60b by ADES indicates a fuel savings of 43% compared to the baseline traditional wood stoves (Toko stoves). ADES also developed 4 prototypes of larger and more robust solar box stoves compared to the household type for institutional applications. The best model was selected and is under testing for practical experience in two schools.

During the site visit, the DOE observed that, the use of conventional charcoal and wood stoves in street kitchens, restaurants and schools visited was a common practice. During interviews conducted, a desire for a larger fuel efficient cook stoves, particularly charcoal stoves for commercial and street kitchen applications was expressed. In addition, a desire for fuel efficient wood stoves able to efficiently serve a school kitchen was expressed from the schools visited. Since the new stove models uses the same technology as the stoves in the registered project but at a larger scale and the baseline scenario is the same, the inclusion new stoves models and institutes and street kitchen to the registered project activity is acceptable to the DOE.

Upon the request of verifier from the second verification, the monitoring plan was updated and submitted to the Gold standard for approval. Correspondences with the Gold standard for revision and approval of the monitoring plan was reviewed and validated for during the verification for this monitoring period (Refer category 2/21/).

Project Boundary Extension

The project area defined in the registered PDD for the project activity is Southwest Madagascar since it is the region with highest insolation and thus highest potential for solar cook stoves. With the improvement and production of new efficient stove designs and continued awareness campaigns, other parts of Madagascar show a demand and potential for the distribution of efficient stoves and solar stoves. Hence a request for extension of project area was made to the Gold standard (refer Category 2/4/). During the on-site visit, a few homes outside the registered project



area were visited to establish the baseline scenario. In addition, a number of local leaders outside the project area were met and interviewed to understand the common practice and establish the baseline scenario. Rakotoarimavo Levis Joseph, the Chef de region Dihorombe, which is outside the registered project area, was interviewed during the verification site visit. He confirmed to the verification team that the commonly used source of energy for most households in the area is charcoal followed by firewood from Nonrenewable forests. The use of conventional inefficient wood and charcoal stoves was the common practice and this was evident from the observations made in the visited homes. Similar comments were raised by Voahirana Randriambola, the Footprint Programme Coordinator with WWF Madagascar & West Indian Ocean programme office.

Based on observations and interviews conducted during the verification site visit, the DOE hereby confirms that the baseline scenario, the use of conventional inefficient wood stoves, locally referred to as “Toko” stoves, and inefficient conventional charcoal stoves outside the project area is the same as the baseline scenario of the registered project area. In absence of the project activity the thermal energy needs for cooking applications in the rest of Madagascar, outside the registered project area would be fulfilled by the use of wood-fuel and charcoal, most of which is non-renewable biomass from primary forests.

It is the opinion of the DOE that the request for extension of the project boundary to entire Madagascar by the project participant be granted

The status of implementation, activities in the monitoring period, and changes to the planned activities are transparently described in the Monitoring Report for this monitoring period. (Category 1/1/)

3.3 Compliance of the monitoring plan with the monitoring methodology (203)

The necessary revision to the monitoring plan has been sought and approved by the GS Secretariat (refer Category 2 /21/), as per request for approval of design changes in the project GS 464(ref Category 2/4/).

The DOE has reviewed the revised monitoring plan (refer Category 2/18/ for adequacy and appropriateness to the requirements of the applied methodology. The revised monitoring plan has an organogram indicated hierarchy of information flow of the project to ensure proper management of the project activity.

All the parameters to be monitored either continuously or periodically as defined by the applied methodology have been identified in the monitoring



plan with the frequency of monitoring and how to monitor clearly defined. Quality control, quality assurance and reporting arrangements have been clearly defined in the revised monitoring plan.

The DOE hereby confirms that the revised monitoring plan is adequate to ensure that all project activities and data required for monitoring and accurate calculations and reporting of emissions reductions resulting from the project activity are adequate.

3.4 Compliance of monitoring with the monitoring plan (206)

Monitoring has been carried out in accordance with the monitoring plan contained in the accepted revised monitoring plan.

The parameters required by the monitoring plan and the way the Verification Team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values in the monitoring reports are described below:

- a) Total Sales –The sales records from 04/01/2008 to 31/12/2011(ref Category 1/4).The accuracy of sales record were reviewed by sampling hard copy records of the sales in each cluster and cross checking the electronic records details from the sales data base. The sampled sales records for various dates of the monitoring period were found accurate.
- b) Non-renewability of woody biomass fuel in the project year $y(X_{nrb,p,j},y)$ – Assessment of NRB –fraction was done for the PDD and revised and reassessed during validation and registration. This parameter is recorded every two years. A re-assessment in 2011 resulted in NRB fraction of 53.0% compared to the previous value of 49.26%. A default NRB fraction value of 72% for Madagascar was however used in the emission reduction in the monitoring period. The PP explained the source of variance as: It was very difficult to get good and detailed data on land cover, MAI, etc. for Madagascar. This means in order to justify the application of this data we had to use always the most conservative assumptions. Moreover, in the approach applied we did not account for other forms of wood extractions or forest clearance due to lack of data, but only for wood fuel consumption's harvest. This leads to a very low NRB fraction. We believe that the default value for Madagascar (which is known as a country that lost most of its forests) is still very conservative in comparison to the NRB default values of other countries (that go up to 100%). In addition, the DNA in Madagascar was at first reluctant to accept the default value, because they think it is too conservative. They finally accepted it with the intention to update it in due course with better data in order to achieve a higher NRB fraction. The above explanation by the project participant formed the basis of our acceptance to adopt UNFCCC default value of 72%.



- c) Mass of woody biomass combusted in the project year($B_{pj,l,y}$) – A lower value(2.499 t wood/stove year for wood cluster and 0.929 t charcoal/stove year obtained from paired KT project fuel consumption conducted in January 2012 has been applied for this monitoring period.
- d) Mass of alternative fuel I combusted in the project year($AF_{pj,l,y}$) – the parameter is measured every two year if needed. Kitchen surveys conducted in 2010 did not provide any indications for the use of alternative fuels.
- e) Percentage of stoves of age z remaining in use in year y($Usage_{z,y}$) – The parameter is calculated every two years from Kitchen usage surveys. Values for this parameter remain the same as in the validated and registered PDD. A drop-off rate of 10% per year is assumed.
- f) Adjustment to values of $B_{p,j,y}$ and $AF_{pj,i,y}$ for stoves of age x(**Agez**)-Aging-stove Kitchen Test is undertaken for sales made in the first year to measure fuel reduction performance in successive years of stoves of age x. Aging-stove KT for wood and charcoal cluster was conducted in 2010 and no stove aging effect in form of poorer stove performance leading to lower fuel savings could be determined and was checked during the second verification.
- g) Adjustment to values of $B_{p,j,y}$ and $AF_{pj,i,y}$ for new stoves models – An adjustment value of 0.96 for $B_{pj,l,y}$ was measured for new-stove Kitchen Test performed for the new efficient charcoal stove OLI-c in 2011
- h) Similar new project activity in the project area – Blue Ventures is a British marine conservation NGO with an objective of conserving the coral reef in Southwest Madagascar. This organization bought 267 solar and efficient cook stoves in 2011 for distribution to the local population in Andavadoaka, in Tulier. However, emission reductions of these stoves are not counted for this project. This was verified from sales records for the stoves sold to Blue ventures and the project database. Gesellschaft für internationale Zusammenarbeit, Deutschland(GIZ), together with local producers have developed non portable efficient stoves for charcoal consumers in Tulier and Majunga areas. The stoves are also promoted for schools kitchens within the activities of UN WFP. There has been little success with this initiatives from the interviews conducted during site visit.WWF Madagascar has approached ADES to support the dissemination of



efficient stoves models in Tulier region through communication campaign to ease severe pressure on dry forests within the area. This was confirmed by the DOE during an interview with an official from WWF Madagascar. The initiative would be part of existing Gold Standard project.

- i) Incentive scheme to surrender charcoal baseline stove – Out of 3992 OLI-c stoves available for sale at a discounted rate, only 10 stoves were sold and the baseline stoves surrendered by the owners to get the new stove. This was cross checked by cross checking the project database and sales records at discounted rates.
- j) Adjustment factor for seasonal and weekly variation of biomass fuel consumption (Fvar) – The parameter is calculated annually from Kitchen Surveys. A value of 0.993 and 0.994 was calculated for wood cluster and charcoal cluster respectively for this verification period. In addition, for the new combined cluster, the adjustment factors were 1.319 for Solar+OLI-c and 1.18 Solar+ OLI-b clusters. This was verified from the Kitchen survey reports for 2011 reviewed on site.
- k) Percentage of saved wood used for another purpose (LE,y(wood)) - Value for the parameter are calculated every two years. As per the last Kitchen survey done, 0% of households used saved wood for other purposes, and the value was not updated for this verification period.
- l) Percentage of saved charcoal used for another purpose (LE,y(charcoal)) – Value for the parameter are calculated every two years. As per the last Kitchen survey done, 0% of households used saved charcoal for other purposes and the value was not updated for this verification period.

3.5 Assessment of data and calculation of greenhouse gas emission reductions (209)

The following actions were taken to ensure that the most conservative assumption theoretically possible has been made:

- (a) The lower bound of confidence interval is applied in estimation of emission reductions calculated based on KT results as required by the methodology hence a Lower confidence limit of 90% is applied to both Charcoal and wood clusters



(b) The drop-off rate of 10% for stove sales in 2011 is considered: For every stove being in operation for more than one year, the stove days in its second operational year are reduced by 10%. This provides for every stove the corrected number of stove days in projects second year of operation.

(c) NRB fraction = 72% is applied as per default value for NRB for Madagascar in EB67.

(d) Seasonal / weekly variation factors – An adjustment factor for seasonal and weekly variation of biomass fuel consumption derived from Kitchen Surveys is has been considered. 99.3% and 99.4% are variation factors for wood cluster and charcoal cluster respectively from Kitchen survey (KS) values conducted in 2011. The KS report was verified during site visit.

Appropriate methods and formulae for calculating baseline emissions project emissions and leakage have been followed.

$$ER_y = \sum BE_{i,y} - \sum PE_{i,y} - \sum LE_{i,y}$$

Kitchen Tests were performed with paired samples hence the values of BE and PE are not found for each cluster, but instead are found for each kitchen, giving an emission reduction value for each kitchen and resulting in a value for emission reductions per stove year for each cluster.

Since there is no alternative fuels used, identical emission factors for biomass combustion are used in the baseline and in the project case and since for fuel savings ($B_{bl,y} - B_{pj,y}$) the lower bound of the 90% confidence interval needs to be applied ($\Delta B_{90\%}$) and an adjustment factor for seasonal and weekly variations (F_{var}) is considered in the calculations the formula is modified as;

$$ER_{stove\ year} = X_{nrby} * (\Delta B_{90\%} * F_{var}) * EF_{bio,CO2} + 0 + (\Delta B_{90\%} * F_{var}) * EF_{bio,non-co2,i} + X_{nrby} * (\Delta B_{90\%} * F_{var}) * EF_{bio,prod,co2} + 0 + (\Delta B_{90\%} * F_{var}) * EF_{bio,prod,non-co2\ gas,i} + 0 - LE_{i,y}$$

For the charcoal cluster:

$$\begin{aligned} ER_{stove\ year} (charcoal) &= X_{nrby} * (\Delta B_{90\%} * F_{var}) * EF_{bio,CO2} + 0 + (\Delta B_{90\%} * F_{var}) * EF_{bio,non-co2,i} \\ &\quad + X_{nrby} * (\Delta B_{90\%} * F_{var}) * EF_{bio,prod,co2} + 0 + (\Delta B_{90\%} * F_{var}) * EF_{bio,prod,non-co2\ gas,i} + 0 - LE_{i,y} \\ ER_{stove\ year2011} (charcoal) &= 72.00\% * (0.9021*0.994) * 3.3040 + 0 + (0.9021*0.994) * 0.1330 + \\ &\quad 72.00\% * (0.9021*0.994) * 3.0400 + (0.9021*0.994) * 0.6195 + 0 - 0 \\ &= 4.77\ tCO_{2e} \end{aligned}$$

For the wood cluster:



$$ER_{\text{stove year}}(\text{wood}) = X_{\text{nrby}} * (\Delta B_{90\%} * F_{\text{var}}) * EF_{\text{bio,CO2}} + 0 + (\Delta B_{90\%} * F_{\text{var}}) * EF_{\text{bio,non-co2,i}} + 0 + 0 + 0 + 0 - LE_{i,y}$$

$$ER_{\text{stove year2011}}(\text{wood}) = 72.00\% * (3.1030 * 0.993) * 1.7472 + 0 + (3.1030 * 0.993) * 0.1176 + 0 + 0 + 0 + 0 - 0$$

$$= 3.23 \text{ tCO}_{2e}$$

For the combined application solar+OLI-b an adjustment factor is applied to the emission factors of the wood cluster.

$$ER_{\text{stove year2011}}(\text{solar+OLI-b}) = ER_{\text{stove year2011}}(\text{wood}) * 1.18$$

$$= 3.81 \text{ tCO}_{2e}$$

For the combined application solar+OLI-c an adjustment factor is applied to the emission factors of the charcoal cluster.

$$ER_{\text{stove year2011}}(\text{solar+OLI-c}) = ER_{\text{stove year2011}}(\text{charcoal}) * 1.319$$

$$= 6.29 \text{ tCO}_{2e}$$

Emission reductions have been calculated separately for each cluster by multiplying the number of stove years (including the drop-off rate and adjustment factor for frequency of stove application) with the values for emission reductions per stove years (including lower bound of 90% confidence level and seasonal/weekly variations in fuel consumption). Thus,

Year	2011	
	Stove years	ERs (tCO _{2e})
WOOD Cluster	1,789	5,779
CHARCOAL Cluster	3,474	16,573
Solar+OLI-b	167	638
Solar+OLI-c	178	1,119
Leakage	0	0
TOTAL	5,608	24,110

All the necessary data and all the parameters foreseen to be monitored in the registered GS-VER-PDD were available to the DOE. The assumptions emission factors and default values that were applied in the calculations have been justified. The calculations done in the spreadsheet provided are deemed accurate.



ERs comparison (Registered GS-VER-PDD Vs Actual): According to the registered GS-VER-PDD, the estimated ex-ante Emission reduction for the period of monitoring is 40,602 tCO_{2e}. However, the actual value calculated during the period is 24,110 tCO_{2e}. The variance is 16,492 tCO_{2e}. This is due to the fact that the project is a continuous dissemination of solar and efficient stoves and stove sales are projected to increase over time. If expected number of stove sales is not achieved in earlier years, then this also has implication of emission reductions in later years. In addition, due to the difficult political and economic situation in Madagascar starting from 2009, stove sale was below expectations during the first project years.

3.6 Gold Standard Requirements – Sustainable Development Indicators

The sustainable Development Indicators parameters monitored on an on-going basis included Job Creation, Schools visited and expenses for wood and charcoal.

- a) Jobs created by ADES – ADES offers positions for a variety of qualifications: director, management, secretary, education & training, carpenter, sales animator, CO₂-monitoring, gardener, driver, guard. It has continuously the number of employees from 22 in 2007 to 69 by the end of 2011, out of which 67 are locals. Employee records which included the payment records were reviewed during on-site visit.
- b) Schools visited by ADES - ADES visited a total of 34 schools distributed over the project activity area for cooking demonstrations and animations. During these visits, a total of 8,028 students and teachers were reached. The main objective of such visits was to create awareness for new, clean and more efficient stove technologies and problem of deforestation. The verification team visited a few schools in Tulear and Morondava to interview the head of institutions and verify transfer of knowledge to both staff and students. Records of school visits which included signed visit cards were reviewed
- c) Expenses for Wood and Charcoal - this parameter are monitored every two years using the Kitchen Survey. The Kitchen Surveys conducted in 2011 indicated that on average, a household using the project stove spends around 132,816 Ariary per year (EUR 46.70) on charcoal. From the Kitchen Tests, household using a project stove reduces its charcoal consumption by 47.2% translating to around 118,638 Ariary (EUR 41.75) due to the fuel savings based on estimated charcoal cost of 251,545 Ariary per year (EUR 88.50) prior to project implementation. For wood cluster, the Kitchen Surveys showed that on average households spend between 11.4 and 14.2 hours per months on wood collection. This is slightly less than stated in the Kitchen Surveys 2010, where people stated to collect between 14.3 and 15.1 hours per month on fuel collection. Households that purchase fuel wood spend on average around 11,596 and 11,503 Ariary per month (around EUR 4). This is less than stated in the Kitchen Survey 2010 (18,667 Ariary per month). During on-site visit, the verification team interviewed a number of



charcoal and wood stoves users and confirmed that indeed the use of the efficient stoves saves them money and time in purchases and collection respectively.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the 3rd periodic verification of the Ades Solar and efficient stoves in Madagascar Project in Madagascar, which applies the methodology Gold Standard Methodology for Improved Cook-stoves and Kitchen Regimes version 01. The verification was performed based on the requirements set by the CDM/GS and relevant guidance provided by CMP and the CDM Executive Board.

The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of Association Pour Le Development De'energie solar Suisse-Madagascar (ADES) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring Plan indicated in the registered PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 2.0 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as described in validated and registered project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions

Bureau Veritas Certification can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms the following statement:



Reporting period: From 01/01/2011 to 31/12/2011

Baseline emissions : tCO₂ equivalents(not calculated separately, since paired sample was used).

Project emissions : tCO₂ equivalents(not calculated separately, since paired sample was used).

Leakage emissions : 0 t CO₂ equivalents

Emission Reductions : 24,110 t CO₂ equivalents.

14/09/2012

H.B Muralidhar
Internal Technical Reviewer

14/09/2012

Andrew Kinyanjui
Lead Verifier



5 REFERENCES

Category 1 Documents:

Documents provided by ADES that relate directly to the GHG components of the project.

- /1/ Validation Report No 1237908-GS V1
- /2/ Registered PDD(GS-VER-PDD) v5
- /3/ 120820 ADES Monitoring report 2011 v2.1
- /4/ 120619 ADES project database 2011 v02.xlsx
- /5/ 1112 ADES Customer Database 2011
- /6/ ADES 2nd Verification Report
- /7/ 1206 SD3 Calculation expenses fuel
- /8/ 1102 ADES Usage survey Report 2010

Category 2 Documents:

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

- /1/ 1107 ADES Monitoring report v5
- /2/ 2nd verification report
- /3/ 0910 ADES monitoring plan
- /4/ 1202 Design change ADES GS464
- /5/ 1204 Response Gold Standard
- /6/ 120227 ADES NRB report 2011 Madagascar
- /7/ 120216 ADES NRB Entire Madagascar 2011
- /8/ 1112 ADES Customer database 2011
- /9/ 1201 ADES KT report 2011
- /10/ 1201 List of schools visited
- /11/ 111220 ADES Kitchen survey report 2011
- /12/ 111220 Results ADES KS 2011
- /13/ 120314 ADES project database 2011v01
- /14/ ADES Employees 2011
- /15/ Rapport de test FA OLI-b45 et OLI-b6o
- /16/ List of Employees 31.12.2011
- /17/ 1206 ADES GS-VER-PDD v6.1
- /18/ 1201 ADES monitoring plan v03
- /19/ 120224 ADES NRB Reassessment 2011 v01
- /20/ 120224 ADES NRB Reassessment report
- /21/ 120529 2nd Feedback GS
- /22/ ADES Accord de Siege 2011
- /23/ 2011 ADES flyer
- /24/ Thankyouletter ADES example
- /25/ Thankyouletter ADES 2012 eng template

**Persons interviewed:**

List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

- /1/ Mr. Han Peter Frei(ADES)
- /2/ Mr. Otto Frei(ADES)
- /3/ Mr. Razafinananarantsoa Andriamifidy(ADES)
- /4/ Randrianantenaina Norbert(ADES)
- /5/ Razafindrefeno Amutolie(ADES)
- /6/ Boana Idy(Secretarie General de la Region du Menabe)
- /7/ Rakotoarimanana Josette(Director Regional de t'environnement et des forests Menabe)
- /8/ Mr Lanto(Chief of Forest services)
- /9/ Rabenantoanina Harimahefa Lucie(Director, school of the Deaf)
- /10/ Voahirana Randriambola(WWF Madagascar)
- /11/ Ranivohajaso Elivao(Solar box , OLi-C user)
- /12/ Mrs. Claudina(Solar Parabolic user)
- /13/ Rasolondraibe Aimea Joseph(Solar box user)
- /14/ Isabelle Dinaniaina Ramibon(Oli-c user)
- /15/ Manakany Marie Odette(Oli-b user)
- /16/ Gilberte Ravololowinson(Gasskaly restaurant)
- /17/ Seur Marie Victoire(Amika school)
- /18/ Seur Agnes(Amika school)
- /19/ Raharisoanirina Sandreina(ADES)
- /20/ Rakotoarimavo Levis Joseph(Chef de region Dihorombe)
- /21/ Andriamaharo Samuel Roland(BERMA)
- /22/ Rasuarimalala Ymelda Ella(BERMA)



6. CURRICULA VITAE OF THE DOE'S VERIFICATION TEAM MEMBERS

Lead Verifier – Andrew Kinyanjui

Andrew Kinyanjui – holds Diploma in Chemical Engineering. He had 5 yrs experience in Industrial production before joining BV. He has obtained 7 years experience in management systems audits and training and two years experience in CDM validation /verification at BV. He obtained the certificate of CDM Lead Verifier certificate and Lead auditor for ISO 14001

Verifier – James Chirchir

James Chirchir – holds a Bachelor's degree in Chemical and Process Engineering and had 4 years experience in manufacturing before joining Bureau Veritas. He is Lead Auditor in ISO 9001:2008 and ISO 14001:2004 with over two years in management systems audits. He is a trained CDM Verifier, and has been involved in validation and verification of over seven CDM projects

Internal Reviewer – HB Muralidhar

Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects



VERIFICATION REPORT

APPENDIX A: COMPANY CDM PROJECT VERIFICATION PROTOCOL

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1 Project implementation in accordance with the registered project design document					
It is assessed if the GS VER project activity has been implemented and operated as per the registered PDD*	VVM	195			
a Are all physical features of the proposed GS VER project activity, proposed in the registered PDD, in place?	VVM	195	All the physical features of the GS VER project activity reviewed based on the registered PDD were found in place during the site visit conducted between 28th May and 29th June 2012. The project involved the fabrication and distribution of solar box and solar parabolic stoves, energy efficient charcoal and wood stoves under the brand ADES in Madagascar.		OK
b Have the project participants operated the proposed GS VER project activity as per the registered PDD?	VVM	195	Yes. The project participant has operated the proposed GS VER project activity as per the registered PDD. However, the project activity has been extended other areas outside the registered boundary		OK

* This Q is 'Requirement to be verified' in VVM.



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			area. Request for this extension has been forwarded to GS.		
c Is the proposed GS VER project implemented against the description in the PDD?	VVM	195	The manufacturing and distribution process of solar box and solar parabolic stoves, energy efficient charcoal and wood stoves under the brand ADES was reviewed during the site visit and found to be in place and has been implemented and operated during this monitoring period as described in the registered GS-VER-PDD. Although the target area for the stoves distribution at the time of registration was Southwest Madagascar, the distribution has since expanded to other parts of the country. Hence, request for project expansion to the whole of Madagascar has been made by the PP to the GS (Refer to sp. Doc). In addition, training programs, cooking demonstrations, workshops and publicity programs for the project were planned and implemented as	OK	OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d Was an on-site visit conducted?	VVM	195	per the registered PDD. On-site visit was conducted 28 th May to 2 nd June 2012	OK	OK
e If not, justify the rationale of the decision.	VVM	195	Not applicable	-	
2 Compliance of the monitoring plan with the monitoring methodology					
It is assessed if the monitoring plan of the proposed CDM project activity is in accordance with the applied methodology	VVM	199			
a Is the validated monitoring plan in accordance with the approved methodology applied by the proposed CDM project activity?	VVM	199	A revision of the monitoring plan was done by the PP, and approved by the GS secretariat as per communication (Ref) received and reviewed by the DOE.	~~CL 01~~	OK
b If no, was a request for revision of the monitoring plan was done? (The DOE may request for revision of the monitoring plan covering the monitoring period under verification, for approval by the CDM Executive Board)	VVM	200	A revision of the monitoring plan was done by the PP, and approved by the GS secretariat as per communication (Ref) received and reviewed by the DOE.		OK
c Are there any monitoring aspects of the project activity that are not specified in the methodology, particularly in the case of small-scale methodologies (e.g.	VVM	201	No.		OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
additional monitoring parameters, monitoring frequency and calibration frequency)?					
3 Compliance of monitoring with the monitoring plan					
It is assessed if monitoring of reductions in GHG emissions to result from the proposed GS - VER project activity is implemented in accordance with the monitoring plan contained in the registered PDD or the accepted revised monitoring planError! Bookmark not defined..	VVM	203			
a Have the monitoring plan and the applied methodology been properly implemented and followed by the project participants?	VVM	204	Yes		OK
b Have all parameters stated in the monitoring plan, the applied methodology and relevant GS - VER requirements been sufficiently monitored and updated as applicable, including:	VVM	204	Yes		OK
i Project emission parameters?	VVM	201	Yes		OK
ii Baseline emission parameters?	VVM	201	Yes		OK
iii Leakage parameters?	VVM	201	Yes		OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	VVM	201	Yes		OK
c Is the accuracy of equipment used for monitoring in accordance with the relevant guidance provided by the GS Requirement and are equipment controlled and calibrated in accordance with the monitoring plan?	VVM	204	Calibration of weighing scale Type 150kg/0.1kg serial number PCE-HS150 was checked during the site visit review and calibration status was valid. Control and calibration was as per monitoring plan		OK
i Are monitoring results consistently recorded as per approved frequency?	VVM	204	Yes		OK
ii Have quality assurance and quality control procedures been applied in accordance with the monitoring plan?	VVM	204	Yes		OK
4 Assessment of data and calculation of greenhouse gas emission reductions					
It is assessed if GHG emission reductions achieved by / resulting from the proposed GS - VER project activity are calculated applying the selected methodology	VVM	206			
a Is a complete set of data for the specified monitoring period is available? (If no, i.e.,	VVM	207	Yes. A complete set of data for the specified monitoring period is		OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the DOE shall opt to either make the most conservative assumption theoretically possible in finalizing the verification report, or raise a request for deviation if appropriate).			available. This set of data included Sales data, Kitchen surveys, Kitchen tests, schools visited, Customer databases, 2011 NRB reassessment, ADES employees among others.		
b Has information provided in the monitoring report been cross-checked with other sources such as plant log books, inventories, purchase records, laboratory analysis?	VVM	207	Yes. The information provided was cross checked with sales records, training records, production record, and inventory records.		OK
c Have calculations of baseline emissions, proposed GS - VER project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document?	VVM	207	Yes. The overall ER equation used is $ER_y = \sum BE_{i,y} - \sum PE_{i,y} - \sum LE_{i,y}$ However, i. It is not clear which monitoring report/document this statement references "Based on the monitoring conducted no leakage effect for charcoal and wood clusters was identified".	<u>GL-02</u>	OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			ii. For the calculated values in spreadsheets, please show formulae for ease of verification(eg values in ER per stove calculation) iii. It is not clear how the values for $\Delta B_{90\%}$ and F_{var} were calculated. iv. The value for $EF_{bio, non-co2}$ could not be verified v. Calculations for adjustment factor for Solar+OLI-c(1.319) and Solar+OLI-b(1.18) could not be verified The above issued have been clarified and corrected by the PP		
d Have any assumptions used in emission calculations been justified?	VVM	207	All the calculation formulas used in the calculations and rationale used have been clearly explained.	<u>CL-03</u>	OK
e Have appropriate emission factors, IPCC default values and other reference values been correctly applied?	VVM	207	In 2011, the PP reassessed NRB value calculated as 53.0%. EB 67 default value for NRB for	<u>CL-04</u>	OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			Madagascar is given as 72%. It is not clear whether the PP wishes to use the default values or own calculated NRB value. The PP has revised the calculations to used Madagascar's NRB default values and were appropriately applied.		
5 GS Requirements					
a. Have the social and economic impact of the project been investigated biannually and an assessment made of its contribution, positive or otherwise, to sustainable development in the area as per the frequency defined in the PDD?	GS		Yes. The impacts monitored included the number of employment opportunities created by the project, impacts on both human and institutional capacity improvements and impacts on livelihood of the people using the efficient cook stoves. The impacts are presented in the monitoring report. From the records reviewed, the frequency of monitoring defined in the PDD was observed. It is not clear how the following figures were calculated; Reduced charcoal consumption(47.2%), annual savings 118638 Ar(Monitoring Report page 27).	<u>CL-05</u>	OK



VERIFICATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			Please rearrange excel calculations for ease of reference		
b. Are there any changes to the key sustainable development indicators?			No. There were no changes to the sustainable development indicators		OK
c. Were mitigation/compensation measures achieved and implemented according to the success indicators as established in the monitoring plan(s)?			Not applicable		-

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

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
As per the last verification report, revision of the monitoring plan was recommended. In addition, GS secretariat in correspondence to the project participant was to give a formal response on the amended monitoring plan. The status of the revised monitoring plan is not clear.	CL 01	Revised monitoring plan has been submitted to the GS for approval. The GS has approved the revised monitoring plan (point 5 and 6 of request for design change) as per email communication from 27 May 2012 (see supplied document 120529_2nd_feedback_GS.pdf)	OK. The reference was reviewed and found sufficient. CL 01 is closed out.



VERIFICATION REPORT

i. It is not clear which monitoring report/document this statement references "Based on the monitoring conducted no leakage effect for charcoal and wood clusters was identified". ii. For the calculated values in spreadsheets, please show formulae for ease of verification(eg values in ER per stove calculation) iii. It is not clear how the values for $\Delta B_{90\%}$ and F_{var} were calculated. iv. The value for $EF_{bio, non-co2}$ could not be verified v. Calculations for adjustment factor for Solar+OLI-c(1.319) and Solar+OLI-b(1.18) could not be verified	CL 02	i) Leakage assessment is to be conducted every two years according to the monitoring methodology. Leakage had been assessed in 2010 for 2nd verification and thus next leakage assessment is due in 2012. For this verification (2011) we again refer to the leakage assessment from 2010 (LE_{2010}), since this is the latest assessment available. This showed that $LE_{2010} = 0$. This was confirmed during 2nd verification. See Monitoring Report from 2nd verification (110922_ADES_monitoring_report_2010_V3_1.pdf) in the GS registry.ii) Please see specific spread sheets in the Project Database (120619_ADES_Project_Database_2011_V02.xlsx) for more details: The spread sheet "Explanation" contains all formulae applied for baseline emissions, project emissions and emissions reduction calculation. The spread sheet "ER_per_stove" contains all values used to calculate ER per stove. Moreover, in the spread sheet "Explanation" please see step 1: Calculation of ER per stove for applied formulae and explanations.	i. OK ii. OK iii. OK iv. OK v. OK All the revised calculations and references provided were reviewed and are satisfactory. CL 02 is closed out.
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VERIFICATION REPORT

	CL02	Furthermore, please see section E.4 (p. 28) in the monitoring report for step by step calculation of ER per stove and overall ER. iii) Please see monitoring report 2011 page 15 for information on the parameter $\Delta B_{90\%}$. This is the lower bound of the 90% confidence interval of woody biomass savings per stove year. Please see Customer database "1112_ADES_customer_database_2011.xlsx", spreadsheet "KT results summary" for the specific values and calculations of $\Delta B_{90\%}$. Please see monitoring report 2011 page 23 for information on the parameter F_{var}. This is the adjustment factor for seasonal and weekly variation of biomass fuel consumption. As mentioned, source of data is monitoring kitchen surveys. The latest figures from the kitchen survey is applied. See also Kitchen Survey Report 2011 (111220_ADES_Kitchen_survey_report_2011.pdf) pages 10 and 11.	
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VERIFICATION REPORT

	CL 02	iv) Please see project database (120619_ADES_Project_Database_2011_V02.xlsx) in spread sheet "ER_per_stove", lines 44 and 45 for calculation of $EF_{bio, non-co2}$. v) Please see Customer Database ("1112_ADES_customer_database_2011.xlsx", spreadsheet "KT results summary", cells B114 and B129) and Kitchen Test report 2011 (1201_ADES_KT_report_2011_V01.pdf) for KT results for combined application of solar and efficient stoves, pages 10-12.	
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VERIFICATION REPORT

It is not clear if there are any assumptions and their justifications used in the emission calculation.	CL 03	ER calculations are done according to the formula provided by the applied methodology. ER calculations are based on latest KT results (see Customer Database ("1112_ADES_customer_database_2011.xlsx", spreadsheet "KT results summary") and applying an adjustment factor for seasonal/weekly variation in fuel consumption, which is based on latest KS results. Moreover, as described in the monitoring report pages 18-19, usage parameters are also factored in. If this does not answer your question, could you please be more precise with your question. Thank you!	OK
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VERIFICATION REPORT

In 2011, the PP reassessed NRB value calculated as 53.0%. EB 67 default value for NRB for Madagascar is given as 72%. It is not clear whether the PP wishes to use the default values or own calculated NRB value.	CL 04	The PP is applying the CDM default value for NRB given as 72% for Madagascar. ER calculations and monitoring report have been revised accordingly. Please note that cell C10 in the spreadsheet "ER_calculation_2011" in the project database 2011 contained a wrong formula. This has also been corrected in the revised project database 2011 V02. See 120619_ADES_Project_Database_2011_V02.xlsx and 120619_ADES_monitoring_report_2011_V02.pdf .	OK
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VERIFICATION REPORT

It is not clear how the following figures were calculated; Reduced charcoal consumption(47.2%), annual savings 118638 Ar(Monitoring Report page 27). Please rearrange excel calculations for ease of reference	CL 05	As explained on page 27 in the monitoring report the basis for the calculation are results from the KS 2011. Please see below for further explanations and the excel file (1206_SD3_calculation_expenses_fuel.xlsx) for calculations: From the Kitchen Surveys conducted in 2011 (p. 7) we know that all households purchase charcoal and that on average they spend now using the project stove between 11,068 and 14,625 Ariary per month (approximately EUR 3.90 – 5.20). Conservatively estimated a household spends around 132,816 Ariary per year (=11,068 x 12; EUR 46.70) on charcoal. From the Kitchen Tests we know that a household using a project stove reduces its charcoal consumption by 47.3% (see Customer Database, „KT_results_summary“). Therefore, the expenses for charcoal prior to the project can be estimated to be 252,023 Ariary per year (EUR 88.50; =132,816/(100%-47.3%)*100%). A household thus annually saves around 119,207 Ariary (EUR 41.75; =252,023-132,816) due to the fuel savings from the project stove.	OK
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VERIFICATION REPORT

Section A.4 of MR indicates four stove models are being disseminated, while the listed stoves indicates 5 models(inclusive of OLI-45c) listed as new model in design change request. Please clarify.	CL 06	There are five stove types. This has been corrected on page 3 of the MR	OK
On-site verification outside Tulear: So far, only activities of the distribution centers in Tulear and Ejeda have been verified during on-site visits. For the next verification, the project proponents and the DOE are requested to visit other distribution centres (e.g. Morondava, Morombe) for verifying project implementation, monitoring system and survey data the household level.	FAR 1	Site visit conducted in May/June 2012 included visit of Centres in Tuléar, Morondava and Fianarantsoa.	OK



VERIFICATION REPORT

Revision of monitoring plan and monitoring system: Due to practical adjustments and improvements of the monitoring system over the last years of project implementation, there is now some deviation between monitoring methodology, monitoring plan and monitoring system, which does not increase the number of reported emission reductions. For the next verification, the project proponents shall carry out in-depth revision of monitoring system and monitoring plan and register the new monitoring plan with Gold Standard. In particular project participants shall: · Increase the number of samples in the surveys · Using sampling approaches leading to unbiased results	FAR 2	Revised monitoring plan has been submitted to the GS for approval. Furthermore, number of samples for the surveys has been increased, and another sampling approach for usage survey is applied (see revised monitoring plan 1201_ADES_monitoring_plan_V03; and request for design change 1202_Design_change_ADES_GS464.pdf). The GS has approved the revised monitoring plan (point 5 and 6) as per email communication from 27 May 2012 (see 120529_2nd_feedback_GS.pdf)	OK
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VERIFICATION REPORT

Revision of QC/QA for survey results: There are considerable QC/QA limitations with regard to the credibility of the data collected through interviews with stove users (surveys) which is inherent to the methodology. · Limited credibility of answers (people answer what you want to hear) · Limited ability of independent verification of data Project proponents are requested to improve QC/QA of data collection for the next verification period through stringent QC/QA procedures for the collection and evaluation of survey data and comparison of survey results with other data sources.	FAR 3	A section on QC/QA has been included in the revised monitoring plan (pp. 6-7), which was approved by the GS (see answer CL 01) as well as in the monitoring report (section C, pp.10-11).	OK
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VERIFICATION REPORT

Prevention of double-counting: Private donors of ADES might not be aware that their financial support is not linked to any reduction of greenhouse gas emissions. Project proponents are requested to clearly mention in their communication with donors that ADES is selling emission reductions to the carbon market and that any financial support of ADES is thus not linked to emission reductions.	FAR 4	In the thank you letter sent to donors ADES mentions that the donation is supporting awareness creation and subsidizing stoves in Madagascar. However, it is nowhere mentioned that the donation will reduce or is connected to CO2-reductions. An example of the thank you letter is submitted to the verifier. On the ADES flyer it is stated that donations will help protecting the rainforest and conserve biodiversity in Madagascar. It is not mentioned that donations will contribute to CO2-reductions. In this way ADES gives no reason to donors that they compensate CO2 with their donation. Further, on the ADES flyer it is communicated that ADES is registered as a Gold Standard project. This makes it clear that this project generates emission reductions that are sold to the carbon market (a copy of the flyer is submitted to the verifier). This is also mentioned on the ADES website (only available in German): http://www.adesolaire.org/de/wer-sind-wir/erfolgsbilanz.html Please see Word document (Translation_flyer_website_ADES_2012.docx) with relevant sections translated. For further translations, please use Google translate (http://translate.google.com/) to get an idea about the content of the text in German.	OK



VERIFICATION REPORT

Continuous Kitchen Tests: Reduced biomass savings have been observed in Kitchen Tests in the wood cluster voluntarily conducted by project participants in 2010. Project proponents are requested to continue Kitchen Tests in the wood cluster and to come up with adjustment factors for the subsequent monitoring periods in case discrepancies persist.	FAR 5	KT for the wood cluster have been repeated and new results for fuel consumption is used for ER calculation, which leads to more conservative results. See customer database 2011 (KT_results_summary") and kitchen test report 2011 (p. 7-8).	OK
Discount for efficient charcoal stoves: For the next verification, the DOE shall make sure that the monitoring parameter "impact of incentive scheme" is reported in monitoring report and shall also provide opinion on effectiveness of the incentive scheme in use.	FAR 6	This is reported in the Monitoring report 2011, page 22.	OK