DNV·GL

4 July 14

VERIFICATION REPORT: "KULERA LANDSCAPE REDD+ PROJECT FOR CO-MANAGED PROTECTED AREAS, MALAWI" IN MALAWI

MONITORING PERIOD:
1 OCTOBER 2009 TO 30 SEPTEMBER 2013

REPORT №2014-9303
REVISION NO. 01

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Summary:

Det Norske Veritas (U.S.A.) Inc. (DNV GL) has performed the verification of the emission reductions reported for the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" for the period 1 October 2009 to 30 September 2013, to review and determine the monitored reductions in GHG emissions that have occurred as a result of the project activity.

The verification was performed on the basis of VCSA Programme Guidelines & Standard version 3.2 for the VCS projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. The verification was conducted by means of document review, follow-up interviews and site inspection, and the resolution of outstanding issues.

In our opinion, the GHG emission reductions reported for the project in the monitoring report (version 10) of 3 July 2014) are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved methodology VM0006 (Version 2.0) and the monitoring plan contained in the VCS PD of 3 July 2014.

Hence, DNV GL is able to certify that the net anthropogenic GHG removals by sinks or emissions by sources (i.e. net GHG benefits) from the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" during the period amount to 1 154 957 tonnes CO2 equivalent. DNV GL verified that the non-permanence risk rating of the proposed project activity for this verification is 10% which is to be applied to the change in carbon stocks at this verification (i.e. equal to 102 935 tCO_2e). The amount of VCUs to be issued would be 1 052 022 tCO_2e.

DNV GL does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to DNV GL and the engagement conditions detailed in this report. DNV GL cannot be held liable by any party for decisions made or not made based on this report.

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1 INTRODUCTION

Terra Global Capital, LLC has commissioned Det Norske Veritas (U.S.A.) Inc. (DNV GL) to carry out the verification and certification of emission reductions reported for the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" (the project) in the period 1 October 2009 to 30 September 2013. This report contains the findings from the verification and includes a verification statement for the verified carbon units.

1.1 Objective

Verification is the periodic independent review and *ex-post* determination by an accredited Verification Body (VB) of the monitored emissions by sources and removals by sinks that have occurred as a result of the registered project activity during a defined monitoring period.

A verifications statement is the written assurance by a VVB that, during a specific period in time, a project activity achieved the net anthropogenic GHG removals as verified.

The objective of this verification was to verify the net anthropogenic GHG removals reported for the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" for the period 1 October 2009 to 30 September 2013.

1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG removals and GHG emissions data and express a conclusion with a reasonable level of assurance about whether the reported GHG removals and GHG emissions data is free from material misstatement.
- To verify that reported GHG removals and GHG emissions data is sufficiently supported by evidence.

The verification shall ensure that reported net anthropogenic GHG removals are complete and accurate in order to be certified.

The criteria of the verification are:

- VCS Standard Version 3.4 /19/ and other relevant requirements defined by VCSA.
- AFOLU requirements: VCS Version 3.4 /22/
- AFOLU Non-Permanence Risk tool: VCS Version 3.2 /20/
- The approved methodology VM0006 Version 2.0 /17/

The verification shall ensure that reported emission reductions are complete and accurate in order to be verified.

1.3 Level of Assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported net anthropogenic GHG removals data is free from material misstatement. DNV GL applied a

materiality threshold of 5% with respect to omission or misstatements concerning reported quantities as per VCS standard 5.3.1 4).

1.4 Summary Description of the Project

Project Proponents (Parties):	- Department of Parks and Wildlife (DPWDPW) - Nyika-Vwaza Association (NVA) - Nkhotakota Wildlife Reserve Association (NAWIRA) - Terra Global Capital, LLC (TGC)
Title of project activity:	Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi
Baseline and monitoring methodology	VM0006 Version 2.0
Location of the project activity	The Project Area is located in 5 km zones inside the boundaries of three key protected areas in central and northern Malawi, Nyika National Park, Vwaza Wildlife Reserve, and Nkhotakota Wildlife Reserve.
Project's crediting period:	1 October 2009 to 30 September 2039
Period verified in this verification:	1 October 2009 to 30 September 2013

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification was performed through means of the following three phases in accordance with the requirement of the registered VCS PD /3/, the applied methodology, and the VCS Standard Version 3.4 /19/ and other relevant VCS requirements.

- A desk review of the monitoring report and all support documents.
- Follow-up interviews with project stakeholders and site inspection.
- The resolution of outstanding issues and the issuance of the verification report and statement.

The following sections outline each step in more detail.

The verification of the net GHG removals has assessed all factors and issues that constitute the basis for GHG removals and emissions from the project. These include:

i) Review of the monitoring report, the non-permanence risk assessment and other relevant documentation such as Standard Operating Procedures /2//4/;
ii) Remote verification of the project boundary /5/ using a Landsat satellite imagery of various periods;
iii) Forest inventory field data sheets, forest inventory calculation spreadsheet and carbon calculation spreadsheet /12/;
iv) ESRI Shapefiles with the delineation of the project area, the project boundary, and the location of the permanent sample plots /5/;

Verification team

The validation team is in accordance with the requirements of the ANSI Accreditation.

Role	***Last Name***	***First Name***	***Country***	***Type of involvement***					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA 14.1 competence
Project Manager	Bachamanda	Shruthi	USA				✓		
Team leader (Validator)	Espejo	Andrés Bernabé	Italy	✓	✓	✓			✓
Technical reviewer	Aalders	Edwin	Norway					✓	✓

Duration of verification

Preparations:	From 28 October 2013 to 9 November 2013
On-site verification:	From 11 November 2013 to 16 November 2013

Reporting, calculation checks and QA/QC:	From 18 November 2013 to 04 July 2014

2.2 Document Review

The monitoring report Version 10 dated 3 July 2014 /2/, the net GHG benefits spread sheet of the net anthropogenic GHG removals by sinks /12/, the Standard Operating Procedures (SOP) for forest inventory, the LANDSAT satellite imagery, forest inventory field data sheets, forest inventory and carbon calculation spreadsheet, ESRI Shapefiles with the delineation of the project area, and the ESRI Shapefile with the location of the permanent sample plots were assessed as part of the verification. In addition, the validated VCS PD (in particular the baseline estimations and the monitoring plan contained in the VCS PD) /3/, the final validation report of the registered VCS PD, and the applicable approved methodology VM0006 Version 2.0 were checked.

2.3 Interviews

In the period from 11 November 2013 to 16 November 2013 DNV GL conducted various interviews with the project proponent's staff, staff of other project entities involved in the project, and other stakeholders such as the REDD+ national initiative coordinator. The list of interviewed persons is detailed in section 6.
The following issues were checked during these interviews:

- ✓ The information flows for generating, aggregating and reporting the monitoring parameters were checked. The project proponent has in place a forest inventory system, which has Standard Operating Procedures (SOP) /10/ in place that governs the collection of data and its recording.
- ✓ Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan of the VCS PD /69/.
- ✓ The assumptions of the GHG calculations of the Monitoring Report (MR) /2/ were checked against the information provided in the hard copy inventory information and the inventory excel spreadsheets /12/.
- ✓ The net GHG emission reductions and removals calculations were presented in an excel spreadsheet /12/. The calculations of the spreadsheet were checked during this phase.
- ✓ Quality control and quality assurance procedures as part of their quality management system were checked /10/.

2.4 Site Inspections

On 12-15 November 2013, a field inspection and interviews on-site were carried out in the three different project areas and their surroundings. As part of this inspection the following activities were performed:

- ✓ An assessment of the implementation and operation of the proposed project activity through visual inspection and through interviews with the project proponent's staff. Project boundaries and the stand information were assessed using a Pocket PC with the geographic information uploaded and connected to a GPS receiver.
- ✓ Revisiting of randomly selected 8 inventory sampling plots (>10% of sampling intensity) which were re-measured by the project proponent's staff under observation of DNV GL. While the project proponent was carrying out the re-measurement, DNV GL verified that the operational and data collection procedures were implemented in accordance with the monitoring plan of the VCS PD /3/

and verified the information flows for generating, aggregating and reporting the monitoring parameters. Furthermore, the monitoring equipment was checked in order to confirm that the monitoring practices followed the requirements of the VCS PD /3/ and the applicable methodology. Furthermore, DNV GL performed a consistency check in order to verify the consistency of the previous measurement and the re-measurement, and to verify the correctness of the reported stand growth.

- ✓ Confirmation that the quality control and quality assurance procedures were in place;

2.5 Resolution of Findings

A corrective action request (CAR) is issued, where:

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

A clarification request (CL) shall be raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

As part of the project verification six CARs and three CLs were raised. The CARs were satisfactorily addressed by the project proponent by revising the net emission reductions calculation and the monitoring report (refer to Appendix B).

2.5.1 *Forward Action Requests*

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

3 Forward action requests was identified which is related to the procedures for measurement carbon stocks and the monitoring of the cookstove component. A full description of the FAR may be found in Appendix B.

2.6 Eligibility for Validation Activities

DNV GL has conducted the validation and verification contemporaneously and is accredited under the VCS for Scope 14.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This is not applicable.

3.2 Methodology Deviations

One methodology deviation has been identified.

Requirement VM0006 Version 2.0	Rationale
Since the stoves are in-situ stoves the applicable methodology gives two possible options: 1. An annual Water Boiling Test (WBT) to be conducted or at least biennial provided that the project proponent is able to demonstrate that the efficiency of the cook stove does not drop significantly. 2. if the conservativeness of the used efficiency can be demonstrated, the monitoring frequency can be once every baseline update. Demonstration of the conservativeness must be based on historical efficiency data for the type of stoves showing how efficiency declines from the initial efficiency level through the life of the stoves and the lowest efficiency value must be used for that type of stove.	Since there has only been one WBT carried out during the monitoring period the project proponent proposes to deviate from the methodology in this monitoring period. This has been done through the application of very conservative assumptions: • Stove efficiency: It has been assumed a stove efficiency of 0.2 which is very conservative if compared with the test conducted by Aprovecho center which shows an efficiency closer to 0.3 /15/. The value of 0.2 is provided by default by the applicable methodology for basic improved stoves, while the stove of the project activity is not basic. Moreover, DNV GL was able to confirm that the value of 0.2 is conservative comparing it with other cookstoves projects in the same region /59//60/ which apply similar rocket stoves and show higher efficiencies (0.25). • Efficiency degradation rate: On top of the conservative efficiency, an annual degradation rate of 10% has been assumed. This degradation rate is extremely conservative considering that: a) the stove is handmade so every time it brakes, the user will repair it; b) the GS recommends degradation rates of 1% for micro-scale projects. The reported deviation is acceptable as per §3.5.1 of the VCS Standard as it is a deviation from the criteria and procedures relating to monitoring set out in the methodology and they result in an increased accuracy of such quantification.

3.3 Project Description Deviations

No project description deviations have been identified.

3.4 Grouped Project

No new instances have been presented.

4 VERIFICATION FINDINGS

This section summarises the findings from the verification of the GHG removals reported for the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" for the period 1 October 2009 to 30 September 2013.

4.1 Project Implementation Status

4.1.1 *Implementation status of the project activity(s)*

The VCS PD proposed the implementation of a number of project activities in order to prevent and mitigate deforestation:

1. Strengthening Land tenure and Forest Governance
2. Support for the Development and Implementation of Sustainable Forest and Land Use Management Plans
3. Forest Protection through Patrolling, Social Fencing, and Maintenance of Forest Boundaries
4. Fire Prevention and Suppression Activities
5. Reduce Fuel wood Consumption and Increase Energy Efficiency by Introducing Fuel-Efficient Cook-stoves
6. Creation of Alternative Sources of Fuel wood through Agroforestry and Farm Woodlot Management
7. Sustainable Intensification of Agriculture on Existing Agricultural Lands
8. Development of Local Enterprises Based on Sustainably Harvested Non-Timber Forest Products (NTFPs), Such as Honey, Coffee, Macadamia, and Livestock

DNV GL confirmed that these activities were implemented, at different status of completion as described in the PD. This was confirmed during the site visit through visual inspection and interviews /62//65//67//68//70//71/ and through the annual implementation reports provided by TLC to USAID /8/. Furthermore, the implementation status was confirmed by the evaluation report produced by a third party as requested by USAID /14/.

Furthermore, during the site visit, DNV GL was able to confirm that the project boundary has not changed since validation, and that the project boundary is under control of the project participants as confirmed in the validation report /37/. Therefore, no further check on the project control has to be conducted during the first verification as established by the by paragraph 3.4.2 of AFOLU requirements: VCS Version 3.4 /22/.

DNV GL confirmed during the site visit, that the proposed project activity follows the indications on forest management stated in the registered VCS-PD /3/.

DNV GL confirmed that the implementation is in accordance with that stated in the MR /2/. As part of the site visit DNV GL was able to confirm that the project implementation is in accordance with the project description contained in registered VCS-PD of 3 July 2014.

4.1.2 *Implementation status of the monitoring plan and the completeness of monitoring*

- ***Information (data and variables) provided in the monitoring report that is different from that stated in the registered VCS-PD***

DNV GL checked the monitoring plan contained in the registered VCS-PD of 3 July 2014 /3/ and compared it with the monitoring report version 10 of 3 July 2014 /2/, to verify whether there was any difference that would cause an increase in estimates of the GHG emission reductions in the current monitoring period.

DNV GL confirmed that there is no variation between *ex-ante* estimates and *ex-post* estimated/calculated values/measurements.

- ***Compliance of monitoring with monitoring plan***

The monitoring has been carried out in accordance with the revised monitoring plan and formulae contained in the registered VCS-PD of 3 July 2014 /3/.

As required by the monitoring plan /3/ and the applicable methodology VM0006 Version 2.0 the project proponent effectively monitors the required parameters to determine the project's removals by sinks and emissions by sources.

The parameters reported, including source, frequency and review criteria as indicated in the monitoring plan were verified to be correct and in line with the validated monitoring plan of the VCS-PD. Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PD. Knowledge of personnel associated with the project activity was also found to be satisfactory.

4.1.3 *Remaining issues from previous validation or verification*

This is the first verification which has been carried-out contemporaneously to the project validation. No remaining issues were identified during the validation /37/.

4.1.4 *Previously validated methodology deviations*

This verification is conducted contemporaneously to validation and as part of validation various deviations were identified. Please refer to the VCS PD and the validation report.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Following EQ104 of VM0006 Version 2.0 /17/ and considering that: a) emissions from degradation are not accounted for; b) no harvesting or Assisted Natural Regeneration (ANR) is foreseen in the project scenario; c) emissions from long-lived wood products are not accounted for (c.f. §3.2.3. Project Boundary of the VCS PD); and d) emissions from other secondary sources are not applicable (c.f. §3.2.3. Project Boundary of the VCS PD), the GHG emission reductions would be quantified through the following equation:

Net Emission Reductions (NERs) = ❶ + ❷ + ❸ + ❹

ΔGHG from avoided deforestation which is calculated as the difference between the baseline emissions and the project emissions from deforestation	❶
+ ΔGHG from deforestation due to leakage	❷
+ΔGHG from leakage by unconstrained geographic drivers	❸
+ ΔGHG from improved cook-stoves	❹

4.2.1 *Baseline emissions and removals*

Following the provisions of VM0006 Version 2.0 /17/, baseline emissions would be the sum of baseline GHG emissions from avoided deforestation and baseline net GHG emissions from improved cook-stoves.

Baseline GHG emissions from avoided deforestation

Considering only the baseline emissions from equation EQ106 of the applicable methodology, the baseline emissions would be estimated by the following formula:

$$BE_{DF}(t) = \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} u_{classification} \cdot u_{transition}(i) \cdot \left(-\Delta area_{projectArea,baselineScenario}(t,i)\right) \cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt)\right)$$

Where:

$u_{classification}$	Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types. This discount factor is estimated through the multiplication of two different factors: a) Discount factor based on the number of points in the historical period used to determine the historical baseline deforestation. This is equal to 0.9 since only 3 points in time where used. b) Discount factor based on the accuracy assessment of the LU classification. The methodology requires that the accuracy assessment of all maps is equal or higher to the minimum accuracy observed in the maps of the baseline historical period. The accuracy of the LULC map is above 90% as confirmed by DNV GL through the map processing log files and the confusion matrices provided, therefore no discount factor was required. Hence, the overall discount factor is equal to 0.9 which is the same as the one provided in the VCS PD.
$u_{transition}(i)$	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i. DNV GL confirmed that the same uncertainties applied for the baseline emission factors have been applied for the project scenario and that these are consistent with the validated VCS PD.
$\Delta area_{projectArea,baselineScenario}(t,i)$	Hectares undergoing transition i within the project area under the baseline scenario during year t. [ha yr-1]. DNV GL confirmed that the estimates provided in the VCS PD were used for the GHG benefit calculations.
$EF_{AGL}(i), EF_{AGD}(i,t-tt), EF_{BG}(i,t-tt)$, and $EF_{SOM}(i,t-tt)$	Aboveground live, aboveground dead, belowground, and soil emission factor for transition i, and time after transition $t-tt$. Since the validation these emission factors have not been updated. DNV GL confirmed that the estimates provided in the VCS PD were used for the GHG benefit calculations.

DNV GL reviewed all the assumptions and calculations made and confirmed that they are in accordance to the applicable methodology and that they are correct.

Net GHG emissions reductions from cook-stoves

Considering only the baseline emissions from equation EQ78 of the applicable methodology, the baseline net GHG emissions would be estimated by the following formula:

$$ER_{CFE}(t) = DF_{LeakageCFE} \sum_{i=1}^{nrCFE} HH_{non-CFE}(i,t) \cdot U_{CFE}(t) \cdot Fuel(t) \cdot \left(1 - \frac{\eta_{old}}{\eta_{new}}\right) \cdot NCVfuel \cdot (EF_{non-CO2,fuel} + proportion_{DG,fuel} \cdot EF_{CO2,fuel})$$

Where

$ER_{CFE}(t)$	Emission reduction from CFE activities during year t from cook stoves in the project area. [t CO2e]
$DF_{LeakageCFE}(t)$	Leakage discount factor [Proportion]. A default factor from AMS.II.G of 0.95 has been used.
$U_{CFE}(t)$	Fraction of cumulative usage rate for technologies in project scenario in year t based on cumulative adoption rate and drop off rate revealed by usage surveys [Proportion].The project proponent has assumed an annual drop-off rate of 0.979 which is the drop-off rate assumed by a project in Kenya which employs a similar technology /1/.
$Fuel(t)$	Average annual volume of biomass fuel consumed by households in the absence of the project activity at time t for cooking purpose. [t yr^{-1} HH^{-1}]. This is consistent with the VCS PD; it is sourced from the household surveys and PRAs /9/. This is equal to 2.72 [t yr^{-1} HH^{-1}].
$HH_{non-CFE}(t,i)$ $nrCFE$	Total number of households in the project area that collect biomass fuel from the project area and use i number of efficient or alternative appliances under the project scenario and do not use Cook stove and Fuel Efficiency activities (CFE) under the baseline at time t. [Count] and total number of number of improved cook-stoves and/or fuel efficient appliances [Count].The project proponent has assumed a total of 27 474 stoves implemented as part of their program during the monitoring period /8/. During the site visit DNV GL checked that cookstoves were implemented in all villages visited. DNV GL further confirmed that the project has in place procedures that rule the collection of the data from village level up to project level, and that are then used for reporting purposes /8/. Since DNV GL could not apply a statistical valid sampling plan for verifying the implementation, it reached the reasonable level of assurance through additional means: • DNV GL checked the implementation results at a zone level for some periods and zones /16/ and compare them with the annual reports /8/ and found that all are consistent; • Moreover, the project proponent has assumed a drop-off rate, which DNV GL deems to be conservative as in the case of damages in the stoves, households are trained to make the necessary reparations; • The project implementation has been controlled by USAID. A third party conducted a sound sample of households and confirmed that

	the cookstove component was adequately implemented /14/.
η_{old}	Efficiency of the baseline cook stoves or appliances being replaced. [Fraction].The project proponents has assumed a default value of 0.1 as prescribed by the applicable methodology.
η_{new}	Efficiency of the project CFE appliances deployed. [Fraction].The value of 0.26 has been applied as sourced from the ad-hoc measurements reported in the report from Aprovecho Research Center /15/. An efficiency decay annual rate of 10% has been adopted for conservativeness purposes.
$proportion_{DG}(fuelwood)$	The default proportion of degradation related carbon loss from fuelwood collection activities [Fraction].The project proponent has assumed a value of 0.95 which is deem reasonable according to DNV GL .
NCV_{fuel}	Net calorific value of non-renewable biomass that is substituted. [TJ (Mg DM)$^{-1}$]. This is equal to 0.015 as sourced from the 2006 IPCC GL /34/.
$EF_{non-CO2,fuel}$	Non-- - CO2 emission factor of the fuel that is reduced. [MgCO2 TJ^{-1}]. This is equal to 30.3 as sourced from the 2006 IPCC GL /34/.
$EF_{CO2,fuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. [MgCO2 TJ^{-1}]. This is equal to 122.22 as sourced from the 2006 IPCC GL /34/.

DNV GL reviewed all the assumptions and calculations made and confirmed that they are in accordance to the applicable methodology and that they are correct.

DNV GL checked the GHG calculations spreadsheet and confirmed that the values provided in the VCS PD were used in the ex-post calculations /12/. DNV GL confirmed that the estimation of baseline emissions were determined correctly and that the data measured was accurate.
The baseline emissions considering also the cookstove component would be **= 1 743 807 tCO_2.**

4.2.2 *Project emissions and removals*

Considering only the project emissions from equation EQ106 of the applicable methodology, the baseline emissions would be estimated by the following formula:

$$PE(t) = \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} u_{classification} \cdot u_{transition}(i) \cdot \left(-\Delta area_{projectArea,projectScenario}(t,i)\right) \cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt)\right)$$

Where:

$u_{classification}$	Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types. The value used would be the same as the one used for the baseline emissions (c.f. §4.2.1 baseline emissions).
$u_{transition}(i)$	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i.

$\Delta area_{projectArea,projectScenario}(t,i)$	Hectares undergoing transition i within the project area under the project scenario during year t. [ha yr-1]. Different scenes from LANDSAT 8 imagery for Nkhotakota and Vwaza (i.e. 20130602 and 20130530) and THEOS imagery for Nyika (i.e. 20130818) were used. A post-classification change detection technique was used in order to determine the land use change in the monitoring period, consisting in producing one independent LULC cover map per epoch per site and determining a posteriori the land transitions. LULC maps were produced through a machine learning algorithm (i.e. Random Forests) using overall spectral information, other ancilliary data and using as training data from more than 1000 points. This is the same algorithm used for the baseline. These reference points were visually interpreted by six different interpreters and constituted only those points were 70% agreement between interpreters was reached. The machine learning randomly selected 66% of the points for calibration purposes, using the remaining 33% for internal validation (out of the bag error). The resulting product was post-processed through the application of different filters to ensure compliance with the forest definition. DNV GL confirmed that SOPs were in place in order to ensure the correct implementation of the procedure and the quality in the classification /10/ and ensure through interviews the correct implementation of these /64/. Resulting products were inspected visually in order to confirm the overall classification coherence /5/ and the coherence in the transitions
$EF_{AGL}(i), EF_{AGD}(i,t-tt), EF_{BG}(i,t-tt)$, and $EF_{SOM}(i,t-tt)$	Aboveground live, aboveground dead, belowground, and soil emission factor for transition i, and time after transition $t-tt$. The value used would be the same as the one used for the baseline emissions (c.f. §4.2.1 baseline emissions).

Therefore project emissions **= 588 850 tCO_2.**

4.2.3 *Leakage*

According to the applicable methodology VM0006 Version 2.0 /17/ there are three possible leakage sources: a) Geographically constraint drivers; b) Geographically unconstraint drivers; c) Market leakage. Market leakage is not applicable as no timber products sourced from the project area in the baseline or project scenario are supplied to a national or international market.

Leakage emissions from geographically constrained drivers

According to equation EQ107 of the applicable methodology this is estimated as follows:

$$Leakage(t) = \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} u_{classification} \cdot u_{transition}(i) \cdot \begin{pmatrix} +\Delta area_{leakageArea,projectScenario}(t,i) \\ -\Delta area_{leakageArea,baselineScenario}(t,i) \end{pmatrix} \cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt)\right)$$

Where:

$u_{classification}$	Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types. The value used would be the same as the one used for the baseline emissions (c.f. §4.2.1 baseline emissions).
$u_{transition}(i)$	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i. The value used would be the same as the one used for the baseline emissions (c.f. §4.2.1 baseline emissions).
$-\Delta area_{leakageArea,baselineScenario}(t,i)$	Hectares undergoing transition i within the leakage area under the baseline scenario during year t. [ha yr-1]. The value used would be the same as the one reported in the VCS PD.
$\Delta area_{leakageArea,projectScenario}(t,i)$	Hectares undergoing transition i within the leakage area under the project scenario during year t. [ha yr-1]. The same methods were used as described for $\Delta area_{projectArea,projectScenario}(t,i)$.
$EF_{AGL}(i), EF_{AGD}(i,t-tt), EF_{BG}(i,t-tt)$, and $EF_{SOM}(i,t-tt)$	Aboveground live, aboveground dead, belowground, and soil emission factor for transition i, and time after transition $t-tt$. The value used would be the same as the one used for the baseline emissions (c.f. §4.2.1 baseline emissions).

During this period transitions from non-forest to forest were above transitions from forest to non-forest.

Leakage emissions from geographically un-constrained drivers

The analysis of drivers of deforestation made as part of the PRA and household survey /9/ did not show the existence of un-constrained drivers. During the site visit DNV GL held a number of interviews with local stakeholders and confirmed that in the project areas there is not a large migration such as happens in other countries /62//65//68//71/. New habitants arriving from other areas in Malawi integrate in existing populations upon being authorized by the village chief and other traditional authorities. Once this is authorized a piece of land is allocated to the new family and they become part of the existing community, becoming part of the constrained driver's emission source. Any increase in deforestation from these populations will be factored in the monitoring of the deforestation in the leakage area. Hence, no emissions from geographically un-constrained drivers are applicable in the context of the present project.

Therefore, the leakage emissions **= 0 tCO_2.**

4.2.4 *Net anthropogenic GHG emissions*

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of net GHG emission reductions (i.e. GHG benefits) of

1 154 957 tCO_2e in total for the monitoring period. Considering the risk rating of the proposed project activity (i.e. 10%), the total buffer credits would be equal to 102 935. The buffer credits are calculated out from the NERs from deforestation (changes in carbon stocks), being 10% of 1 029 346 = 102 935 tCO_2.

This would give a total of 1 052 022 VCUs issued in the monitoring period.

No significant reporting risks have been identified for the data reported. All the data required for net anthropogenic GHG removals or emissions calculations are obtained following the Standard Operating Procedures /10/ and in line with the procedures provided in the VCS PD /3/. There are QA/QC measures in place to check the consistency and the correctness of the collected data /10/. After these checks, data is then transferred to specific databases in which a new quality check is done. All reported and consolidated data from the inventory database is processed in order to calculate the net anthropogenic GHG removals by sinks. Data collection procedures, QA/QC procedures and its implementation, and the specific databases were verified by DNV GL.

As outlined above, the input data for calculating the net anthropogenic GHG removals, the calculating process and the result are complete and transparent /2/. Therefore, DNV GL is able to confirm the accuracy of the estimation of VCUs to be issued.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

The project proponent has established management procedures and implemented the same effectively to ensure that the process is consistent. The procedures /3//10/ cover: management responsibilities, data monitoring procedures, training procedures, periodical internal audits, management reviews and corrective actions in case of any deviations effectively. Quality control and quality assurance measures processes are followed as per defined procedures and carried out periodically.

Responsibilities for the different aspects of the project monitoring are clearly defined in the SOPs and the monitoring plan provided in the VCS PD.

The net anthropogenic GHG emission reductions in the monitoring period 1 October 2009 to 30 September 2013 was verified to be 1 154 957 tCO_2e while the total VUCs would be equivalent to 1 052 022 tCO_2e.

Sufficient evidence was presented for the reported net anthropogenic GHG emission reductions. The project entity has in place a monitoring system which has specific procedures for the main activities in which are defined responsibilities for the supervision of the activity, a description of the activity, the QA/QC measures in place, and the recording and archiving of the relevant information. As part of the quality system periodical internal audits are carried out by the quality management responsible to ensure the transparency and accuracy of the data being monitored and recorded. DNV GL verified that this system is in place and confirms the existence of a clear audit trail.

4.4 Non-Permanence Risk Analysis

Following the provisions of paragraph 3.19.2 of the VCS Standard Version 3.4, the project participant has conducted a non-permanence risk assessment /4/ following the provisions of the AFOLU Non-Permanence Risk tool: VCS Version 3.2. According to this assessment /4/ the overall non-permanence risk rating of the proposed project activity is 10%**.**

Risk Category	Rating

a) Internal Risk	5
b) External Risk	0
c) Natural Risk	5
Overall Risk Rating (a + b + c)	10%

DNV GL confirmed that the non-permanence assessment has been carried adequately and applying conservative assumptions where needed. A detailed assessment of the risk analysis carried out by the project proponent in the non-permanence report /4/ can be found in Table 2 of Appendix A of this report.

Therefore, considering only the changes in carbon stocks which are equal to 1 029 346 tCO_2e in the monitoring period, the total buffer credits foreseen in the proposed project activity are: Buffer credits = 1 029 346 x 10% = 102 935 tCO_2e in the monitoring period.

5 VERIFICATION CONCLUSION

Det Norske Veritas (U.S.A.) Inc. (DNV GL) has performed the verification of the net anthropogenic GHG removals that have been reported for the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" for the period 1 October 2009 to 30 September 2013.

The project proponents are responsible for the collection of data in accordance with the monitoring plan and the reporting of the net anthropogenic GHG removals from the project.

It is DNV GL's responsibility to express an independent verification statement on the reported net anthropogenic GHG removals from the project. DNV GL does not express any opinion on the selected baseline scenario or on the validated and registered VCS-PD.

DNV GL conducted the verification on the basis of VCS requirements, the monitoring methodology VM0006 Version 2.0, the monitoring plan contained in the registered VCS-PD of 3 July 2014, the monitoring report (version 10) dated 3 July 2014 and the non-permanence risk report (version 6) dated 3 July 2014. The verification included: i) Checking whether the project has been implemented in accordance with the project description; ii) checking whether the provisions of the monitoring plan were consistently and appropriately applied; iii) the collection of evidence supporting the reported data; and iv) the assessment of the non-permanence risk analysis.

DNV GL 's verification approach draws on an understanding of the risks associated with reporting of GHG removals and GHG emissions data and the controls in place to mitigate these. DNV GL planned and performed the verification by obtaining evidence and other information and explanations that DNV GL considers necessary to give reasonable assurance that reported net anthropogenic GHG emission reductions are fairly stated.

In our opinion the net anthropogenic GHG removals of the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" for the period 1 October 2009 to 30 September 2013 are fairly stated in the monitoring report (version 10) dated 3 July 2014.

The net anthropogenic GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology VM0006 Version 2.0 and the monitoring plan contained in the registered VCS-PD of 3 July 2014.

DNV GL verified that the net anthropogenic GHG removals from the "Kulera Landscape REDD+ Project for Co-Managed Protected Areas, Malawi" in the reporting period from 1 October 2009 to 30 September 2013 are:

GHG Emission Reductions or Removals	tCO_2e
Baseline Emissions or Removals (including emission reductions from cookstoves)	1 743 807 tCO_2e
Project Emissions or Removals	588 850 tCO_2e
Leakage	0 tCO2e
Net GHG emission reductions or removals	**1 154 957**
Buffer (10%)	102 935
VCUs	**1 052 022**

DNV GL verified that the non-permanence risk rating of the proposed project activity for this verification is 10% which is to be applied to the change in carbon stocks at this verification giving a total buffer equal to 102 935 tCO_2e. The amount of VCUs to be issued would be **1 052 022 tCO_2e.**

Oslo, 04 July 2014.

Andrés Espejo
VCS Verifier
DNV GL

Dave Knight
Approver
Det Norske Veritas (U.S.A.) Inc.

6 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the periodic verification conclusions, and are usually further checked through interviews with key personnel.

Ref.	Document name
/2/	Terra Global Capital, LLC: *VCS Monitoring Report (MR) for project activity "Kulera Landscape REDD+* Project for Co-Managed Protected Areas, Malawi*" in Malawi, v*ersion 01 dated 5 November 2013 reviewed during the desk review and *v*ersion 10 dated 3 July 2014 verified by DNV GL .
/3/	Terra Global Capital, LLC: *VCS-PD for project activity "Kulera Landscape REDD+* Project for Co-Managed Protected Areas, Malawi*" in Malawi, v*ersion 1.0 dated 1 September 2013 first version received from the project proponent and version 13 dated 3 July 2014
/4/	Terra Global Capital, LLC: *Non-permanence risk report: VCS version 3*, version 6, 3 July 2014
/5/	Terra Global Capital, LLC. GIS data and information: - ESRI Shapefiles of general geographical information (i.e. roads, rivers, political limits, protected areas, etc.) - ESRI Shapefiles with limits of project boundary, leakage area and reference region. - LULC Maps for Nyika, Vwaza and Nkhotakota project areas for three historical periods (2000, 2002/2003 and 2009).
/6/	Various entities. Signed contracts and agreements: - Co-Management Agreement between Department of Parks and Wildlife and Nyika Vwaza Association - Agreement for the carbon development, carbon rights and benefits sharing with respect to emission reductions for the Kulera biodiversity landscape REDD+ project in co-managed national protected areas in Malawi by and between the Government Of Malawi; the Nkhotakota Wildlife Reserve Association; and Terra Global Capital, LLC, 20 September 2013 - Agreement for the carbon development, carbon rights and benefits sharing with respect to emission reductions for the Kulera biodiversity landscape REDD+ project in co-managed national protected areas in Malawi by and between the Government Of Malawi; the Nyika-Vwaza Association; and Terra Global Capital, Llc, 20 September 2013
/7/	Terra Global Capital, LLC. Various financial information and data: - Carbon Development Costs, v8-0 Kulera v0-4 - Financial Projections v8-0 Kulera v0-4 - Kulera REDD Project Implementation Budget - 60 years for PD v0-2
/8/	Total Land Care. Annual and quarterly reports on project implementation issued to USAID. - Year 1 Annual and 4th Quarter Report, October 2010 - Year 2 Annual Report, October 2011 - Year 3 Annual and 4th Quarter Report, October 2012 - Year 4 Quarter 3 Quarterly Report April -June 2013, July 2013
/9/	Total Land Care. Information on local stakeholder consultations, surveys and Participatory Rural Appraisal. - Summary of Consultations, September 2013

Ref.	Document name
	- HH Survey Report v2, 10 June 2011 PRA Field Report, 22 July 2012
/10/	Terra Global Capital, LLC. Standard Operating Procedures (SOPs): - SOP Biomass Inventory v7-0, May 2012 - SOP Bunda College Walkley Black Procedure, Year 2012 - SOP for Boundary Demarcation - Kulera v11-1, May 2012 - SOP PRA Kulera v6-0, May 2012 - SOP Terralytics Classification Manual Kulera v1-1, September 2011
/11/	Terra Global Capital, LLC. Field Inventory data sheets: - Plots visited: NFOR_008, NFOR_009, NFOR_021, NFOR_008, NKHT_011, NKHT_106, NYKA_039, VWZA_016 - Additional data transfer check: NYKA – 220, NYKA – 221, NYKA – 223, NYKA - 239
/12/	Terra Global Capital, LLC. ER and Forest Inventory spreadsheet: - Gross Emission Reductions for Nyika, Vwaza and Nkhotakota, Year 2013 - Combine calcs overview tables, Year 2013 - Kulera Biomass Data, Year 2013
/13/	Dr Chimwemwe Mawaya (Team Leader), Dr Marlene Chikuni, Mr. James Chimphamba and Mr. Zuze Dulanya. Bio-Physical Inventory For The Kulera Biodiversity Project Final Copy: Volume I. Year 2011.
/14/	ECODIT: USAID Evaluation Report - Malawi Biodiversity Projects Evaluation, June 2013
/15/	Aprovecho Research Center: Consultancy report on possible improvements in the cookstove component of the REDD Kulera project. Year 2012
/16/	Total Land Care: Monitoring and Evaluation (E&M) spreadsheets which evidences cookstove monitoring: - RU consolidated Kulera data base by EPA and district - Nkhotakota kulera consolidated cook stoves data 2010-13 - Kasungu Kulera consolidated cook stoves - RUMPHI ZONE KULERA REPORT (OCT 2010-JUNE 2011) - Kasungu REPORT JAN-MARCH 2013 - KK TLC KULERA BY SITE 2012 3rd quarter revised 2

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

Ref.	Document name
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/18/	VCSA: VT0001 – "Tool for the Demonstration and Assessment of Additionality in VCS AFOLU project activities" (Version 3.0), 1 February 2012
/19/	VCSA: VCS standards: VCS Standard Version 3.4, 8 October 2012
/20/	VCSA: AFOLU Non-Permanence Risk tool: VCS Version 3.2, 4 October 2012

Ref.	Document name
/21/	VCSA: 'Program Definitions: VCS Version 3.5', 8 October 2012
/22/	VCSA: AFOLU requirements: VCS Version 3.4, 8 October 2012
/23/	ISO 14064-3:2006: Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions, First edition, 1 March 2006
/24/	ISO 14065:2007: Greenhouse gases — Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognitions, First edition, 15 April 2007
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/26/	VCSA: *Validation and Verification Manual* Version 3.0
/27/	Government of Malawi. Applicable legislation: - National parks and wildlife act (1992), 4 May 1992 and modifications made in 2004 - Customary Land Bill, 2012
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/29/	ESRI : Change matters – On-line visor showing NDVI change between 1975 and 2000, http://changematters.esri.com/compare
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Persons interviewed during the initial verification, or persons who contributed with other information that are not included in the documents listed above.

Ref.	Date	Name	Organization	Topic
/62/	11 November 2013	James Sadrack (Chairman)	NAWIRA	- Organisation of association - FPIC - Agents and drivers of deforestation
	11-14 November 2013	Duncan Mkandawire (Chairman)	NVA	
/63/	11-16 November 2013	Blessings Mwale (Chief of Party – Kulera Biodiversity Project)	TLC	- Project description and project's history - Baseline scenario (Drivers of deforestation) - Implementation of project activities - Monitoring of project activities
	11 November 2013	Trent Bunderson (Executive Director)		
	11 November 2013	Zwide D. Jere (Managing Director)		
/64/	11-16 November 2013	Erica Meta (Forester)	TGC	- Forest inventory - GHG accounting - Other carbon aspects
	11-16 November 2013	Leslie Bolick (Consultant)		
	11 November	Cheri Sugar		- Project description and

Ref.	Date	Name	Organization	Topic
	2013	(Director)		project's history - Institutional arrangements
/65/	11 November 2013	Brighton Kumchedwa (Director – Chair)	NDPW	- History of protected areas - Applicable Laws and regulations - Drivers of deforestation
		Ramosh Jiah (Deputy Director)		
/66/	11 November 2013	Alexander Phiri (Head of Department)	Faculty of Development Studies	- PRA - Drivers of deforestation
/67/	12-13 November 2013	Obedi G. Mkandawire (Zone Manager)	TLC	- Implementation and monitoring of project activities - Drivers of deforestation - Validity of reference region
		ThomasMilanue (Field coordinator)	TLC	- Implementation and monitoring of project activities
/68/	12-14 November 2013	Henry Kadauma (Extension Officer – Nyika and Vwaza)	DPWDPW	- Past trends in deforestation - Drivers of deforestation - Validity of reference region
	14 November 2013	George Banda (Vwaza Wildlife Reserve Manager having worked previously in Nyika National Park)	DPWDPW	- Past trends in deforestation - Drivers of deforestation - Validity of reference region - System of grievances
	15 November 2013	Mutheto Ndhlamini (Extension Officer Nkhotakota having worked previously in Nyika and Vwaza)	DPW	- Past trends in deforestation - Drivers of deforestation - Validity of reference region - System of grievances
/69/	13-15 November 2013	Twalibu Tandwe (Team Leader Forest Inventory)	Biological Sciences Department – Chancellor College	- Forest inventory
		Makina Mawaya (Team Leader Forest Inventory)		
	15 November 2013	Cmwe Mawaya (Head of Department / Lecturer)		
/70/	11 November 2013	John Kerkering (REDD National	Forestry Department	- Drivers of deforestation - Validity of reference region

Ref.	Date	Name	Organization	Topic
		Coordinator)		- REDD institutional arrangements - Data availability (i.e. allometric equations, etc.)
/71/	12-16 November 2013	Members of 4 villages and members of PRA of villages within the same group of villages: 1. Nkchamayamaji (Nyika) 2. Chimlu (Nyika) 3. Kapatakafinye (Nyika) 4. Bongowongo (Vwaza) 5. Mphalamando (Nkhotakota)	Local communities	- Drivers of deforestation - Validity of reference region - Past trends in deforestation - Impacts of project activity - FPIC - Complaints and grievances

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APPENDIX A

VCS NON-PERMANENCE RISK ASSESSMENT

VCS Non-Permanence Risk assessment checklist

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
1 Internal Risks				
1.1 Project Management				
a) Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located (Score 2).	0	The project is an REDD project implemented in natural forest. Hence this risk is not applicable to the project activity. OK.		0
b) Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued (Score 2).	2	The project is an REDD project implemented in natural forest. Enforcement is required to protect the carbon stocks. OK.		2
c) Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years experience in the area) (Score 2).	0	The project proponents have significant experience and skills to successfully undertake the project activity. Hence, it is demonstrated that experience in management and these types of project activities. OK.		0
d) Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area (Score 2).	0	As DNV GL was able to confirm during the site visit that DPW and the associations have presence in the country and are close to the project area.. OK.		0
e) **Mitigation:** Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully	-2	The management team includes staff from Carbon Conservation with significant experience in AFOLU project design and implementation as evidenced by the numerous projects registered by TGC.		-2

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs (Score -2).		OK.		
f) **Mitigation:** Adaptive management plan in place (Score -2).	0	Not argued by the project proponent.		0
Total Project Management (PM)	0	The total risk is 0-		0
1.2 Financial viability				
a) Project cash flow breakeven point is greater than 10 years from the current risk assessment b) Project cash flow breakeven point is between 7 and up to 10 years from the current risk assessment c) Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment d) Project cash flow breakeven point is less than 4 years from the current risk assessment	d) 0	As justified in the validated IRR analysis, the breakeven point would be within four years of the project implementation /7/.		0
e) Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven f) Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven g) Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven h) Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	e) 3	As justified in the validated IRR analysis, less than 15% of funding needed to cover the cash out has been secured /7/.		3

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
i) **Mitigation:** Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven	0	Not argued by the project proponent.		0
Total Financial Viability (FV)	3	The total risk is 3		3
1.3 Opportunity Cost				
a) NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated b) NPV from the most profitable alternative land use activity is expected to be between 50% and up to100% more than from project activities c) NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities d) NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated e) NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity f) NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	e) 0	Baseline activities are subsistence-driven and net positive community impacts are demonstrated.		0
g) **Mitigation:** Project proponent is a non-profit	0	Not argued by the project proponent.		0

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
organization				
h) **Mitigation:** Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period	0	Not argued by the project proponent.		0
i) **Mitigation:** Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over at least 100 years	-8	The proposed project activity is located within national parks so there is a legally binding commitment to continue management practices. Furthermore Associations are also committed legally to respect the Wildlife act. **CAR3** **Requirement:** ¶2.2.3 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) The project proponent has argued that the Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years as the areas are located in a protected area so these are protected by the existing laws. However, the project proponent has to consider that the proposed project consists in further protection of these areas in comparison with historical levels of protection against external agents of deforestation, so this additional conservation shall be analysed here. Hence the project proponent is requested to further elaborate how the local communities which are responsible of past deforestation are committed to continue management practices for 100 years.	~~CAR3~~	-8

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
Total Opportunity Cost (OC)	0		~~CAR3~~	0
1.4 Project Longevity				
a) Without legal agreement or requirement to continue the management practice (Score is 24 - (project longevity/5) b) With legal agreement or requirement to continue the management practice (Score is 30 - (project longevity/2)	0	**CAR4** **Requirement:** ¶2.2.4 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) According to ¶2.2.4 2) the right of use has to be secured for the whole project longevity. However, the REDD+ agreements have a validity of 30 years renewable 20 years, and a 60 year longevity is being argued. b) According to ¶2.2.4 3) the project longevity has to be covered by financial plans or management plans, however, in the REDD+ agreements activities are only planned for 30 years.	~~CAR4~~	0
Total Project Longevity (PL)	0		~~CAR4~~	0
1.5 Total Internal Risk				
Total Internal Risks (PM+FV+OC+PL)	3		~~CAR3~~ ~~CAR4~~	3
2 External Risks				
2.1 Land Ownership and Resource Access/Use Rights				
a) Ownership and resource access/use rights are held by same entity(s)	a) 0	The project is located inside three protected areas. OK.		0

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
b) Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)				
c) In more than 5% of the project area, there exist disputes over land tenure or ownership	0	**CL5** **Requirement:** ¶2.3.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and clarification**: a) During the site visit (interview in Vwaza wildlife reserve) DNV GL confirmed that in an area of Vwaza encroachment inside the protected area will probably cause a redefinition of the protected area, yet seems to be not formalised. This seems to be a dispute between the DPW and local communities. The project proponent is requested to clarify whether this represents more than 5% and to discuss whether this is a dispute.	~~CL5~~	0
d) There exist disputes over access/use rights (or overlapping rights)	0	DNV GL confirmed during the meeting held with the REDD national coordinator /70/ that the land tenure ownership is clear and that no disputes exist in the project area, including overlapping rights.		0
e) WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	0	Not applicable to this project.		0
f) Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement	-2	The project proponent has a legally binding commitment with the DPW and Associations to continue management		-2

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period		practices that protect the credited carbon stocks over 30 years of crediting period.		
g) Mitigation: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	0	Not argued by the project proponent.		0
Total Land Tenure (LT)	0	The total land tenure risk is zero.		0
2.2 Community Engagement				
a) Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	0	No households live within the project area.		0
b) Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	0	Households living within 20 km of the project boundary have been consulted.		0
c) **Mitigation:** The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5	The project is seeking the CCBS validation.		-5
Total Community Engagement (CE)	-5			-5
2.3 Political Risk				
a) Governance score of less than -0.79 (Score 6) b) Governance score of -0.79 to less than -0.32 (Score 4) c) Governance score of -0.32 to less than 0.19 (Score	c) 2	**CAR4Requirement:** ¶2.3.3 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) Governance indicators for 2012 are available.	~~CAR4~~	2

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
2) d) Governance score of 0.19 to less than 0.82 (Score 1) e) Governance score of 0.82 or higher (Score 0)				
f) Mitigation: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	-2	**CAR4Requirement:** ¶2.3.3 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: b) Malawi has not entered in any bilateral or multilateral agreement for developing its REDD initiative.	~~CAR4~~	-2
Total Political Risk (PC)	0	The total political risk is 0.		0
2.4 Total External Risk				
Total External Risk (LT+CE+PC)	0		~~CAR5~~	0
3 Natural Risks				
3.1 Fire (F)				
3.1.1 Significance and Likelihood (LS)	0	The project proponent has selected a Likelihood of once every 10 years and minor significance. DNV GL deems that this is reasonable considering the documentation provided and the information gathered during the site visit. OK.		5
3.1.2 Mitigation (M)	0.5	This has been set to 0.5. **CAR4Requirement:** ¶2.4.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) As stated in various parts of the VCS PD, no fire management plans are in place in the project areas.	~~CAR4~~	0

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
		Furthermore, as confirmed during the interviews held with members of DPNW, fires are an issue and DPW does not have enough resources in order to combat these fires or prevent them. OK.		
3.1.3 Score (LSxM)	0	The total fire risk is 5	~~CAR4~~	5
3.2 Pest and Disease Outbreaks (PD)				
3.2.1 Significance and Likelihood (LS)	0	The project proponent has selected a Likelihood of Once every 10 years and insignificant. **CAR4Requirement:** ¶2.4.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: b) The project proponent has selected for pest and disease outbreaks a Likelihood of Once every 10 years and insignificant. This is equivalent to a risk of 1; however, the project proponent has written 2.	~~CAR4~~	0
3.2.2 Mitigation (M)	1	**CAR4Requirement:** ¶2.4.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: c) The project proponent has selected a mitigation of 0.25 for pest and disease outbreaks. However, in the same document it is written that this is not relevant and that no mitigation is being applied.	~~CAR4~~	0

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
3.2.3 Score (LSxM)	0		~~CAR4~~	0
3.3 Extreme Weather (W)				
3.3.1 Likelihood (LS)	0	**CAR4Requirement:** ¶2.4.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: d) The project proponent has not discussed extreme droughts as part of the extreme whether risk category.	~~CAR4~~	0
3.3.2 Mitigation (M)	1	This is not relevant as the LS is zero. OK.		0
3.3.3 Score (LSxM)	0		~~CAR4~~	0
3.4 Geological Risk (G)				
3.4.1 Likelihood (LS)	0	The project proponent has selected no loss significance. DNV GL deems that this is reasonable as no significant geological risks have been identified.		0
3.4.2 Mitigation (M)	1	This is not relevant as the LS is zero. OK.		0
3.4.3 Score (LSxM)	0	The total geological risk is 0.		0
3.5 Other Natural Risk (ON)				
3.5.1 Likelihood (LS)	0	There would not be other risks applicable to the project area.		0
3.5.2 Mitigation (M)	0	Not applicable.		0
3.5.3 Score (LSxM)	0	The total natural risk is 0.		0
3.6 Total Natural Risks				
Total Natural Risks (F + PD + W + G + ON)	0		~~CAR4~~	0

Checklist Question	Value report	Assessment by DNV GL	Draft Conc.	Final Concl.
4 Total Risk				
Overall Risk Rating	17			10

APPENDIX B

CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Corrective action requests and clarification requests

CAR ID	Corrective action request	Response by project proponents	DNV GL 's assessment of response by project proponents
CAR1	**Requirement:** VCS MR template **Evidence:** VCS MR Version 1.0 **Non-Conformity**: a) The VCS MR template used is not in line with the latest version of the official VCS template. b) Tables with parameters provided in section 3.1 and 3.2 are not in line with the VCS MR template (you may ask to the VCSA Secretariat for a deviation). c) Parameters which are not applicable to the project are provided in the VCS MR while they should be deleted.	a and b) As we discussed on the phone we are using the correct template. c) These are removed from the monitoring report.	a) The VCS MR is still valid until April. Therefore there is no need to change it – OK. b) The VCS MR is still valid until April. Therefore there is no need to change it – OK. c) The same parameters provided in the VCS PD have been provided in the VCS MR – OK. **CAR1 is closed.**
CAR2	**Requirement**: §8.1.1.6 of VM0006 Version 2.0 **Evidence:** VCS MR Version 1.0 **Non-Conformity:** a) As part of validation DNV GL processed the final LULC maps provided for each epoch in the historical period and analyzed the transition information per pixel. The results indicate that the deforestation/reforestation rates of the two periods include areas that are temporarily unstocked (e.g. pixels that transition from forest to non-forest and transition again to forest) and the reforestation rates include areas that cannot be classified really as reforestation due to the short time period (e.g. in less than 2 years land transits from non-forest to forest and it is assumed that forest reach the equilibrium in carbon stocks (carbon stocks equivalent to those measured within protected areas) which for these dry ecosystems it seems to be inaccurate). The project proponent is requested to: a) clearly define temporal rules for transitions; b) if necessary correct the final output. b) DNV GL checked the final LULC maps and confirmed that some group of pixels that cover less than 0.5 ha, i.e. forest definition, are present in these maps. These areas should be extracted from the LULC maps.	a) and b)This has been clarified in the PD.	a) DNV GL checked the procedures to provide the 2013 LULC map and confirmed that it has been produced following the same procedures – OK. b) DNV GL checked the LULC maps and confirmed that any areas that were non-forest have been excised – OK. **CAR2 is closed**.
CAR3	**Requirement:** ¶2.2.3 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) The project proponent has argued that the Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years as the areas are located in a protected area so these are protected by the existing laws. However, the project proponent has to consider that the proposed project consists in further protection of these areas in comparison with historical levels of protection against external agents of deforestation, so this additional conservation shall be analysed here. Hence the project proponent is requested to further elaborate how the local communities which are responsible of past deforestation are committed to continue management practices for	This was updated in the revised Risk Assessment	DNV GL confirmed that the REDD+ agreement signed between the associations, DPW and TGC specifically states that the Associations and their member communities "For a period of 30 years beyond the Crediting Period, a period sufficient to minimize the risk of the Project according to the VCS non-permanence risk tool, agrees to implement those management practices necessary to maintain carbon stocks on which GHG credits have previously been issued during the Crediting Period." **CAR is closed.**

CAR ID	Corrective action request	Response by project proponents	DNV GL 's assessment of response by project proponents
	100 years.		
CAR4	**Requirement:** ¶2.2.4 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) According to ¶2.2.4 2) the right of use has to be secured for the whole proejct longevity. However, the REDD+agreements have a validity of 30 years renewable 20 years, and a 60 year longevity is been argued. b) According to ¶2.2.4 3) the project longevity has to be covered by financial plans or management plans, however, in the REDD+agreements activities are only planned for 30 years.	This has been assessed in out=r response to CAR13 in the Validation Findings. We believe this CAR to be closed.	a) According to the REDD+ agreement, parties agree "to implement those management practices necessary to maintain carbon stocks on which GHG credits have previously been issued during the Crediting Period". Furthermore, the validity of the contract is for 30 years or the project longevity whichever is later, covering the right of use of Associations and TGC– OK. b) The REDD+ Agreement Schedule B and C cover 60 years which are the documents "*submitted to local government or financial institutions*". Other evidences have been provided but it cannot be confirmed that these have been approved by the local government – OK. **CAR is closed.**
CAR5	**Requirement:** ¶2.3.3 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) Governance indicators for 2012 are available. b) Malawi has not entered in any bilateral or multilateral agreement for developing its REDD initiative.	This has been revised due to Validation findings. Please see the updated Kulera REDD Risk Assessment Verification v2-0.docx.	a) The report has been updated. The used indicator is correct. – OK. b) The requirement states "The country is receiving REDD+ Readiness funding from the World Bank Forest Carbon Partnership Facility, UN-REDD or other bilateral or multilateral donors, **and** is implementing a REDD+ policy framework covering key components such as GHG credit ownership, clear government authority over REDD+ projects, and/or national measurement, reporting and verification systems.". Regarding the first part of the requirement, during the meeting with the REDD focal point from the USDA FS DNV GL was informed that the US support is linked to the development of the programme but that the next stage would be the contact with different potential donors for the REDD programme implementation. Regarding the second part, DNV GL was given a copy of the Malawi REDD+ Draft Workplan: 2013-2014 which provide an overview of the actions to be implemented from September 2013 to 2014 and an overview of the status of the Malawian REDD initiative confirming that the Malawian government is committed to develop their REDD initiative, thus mitigating the governance risk. **CAR is closed.**
CAR6	**Requirement:** ¶2.4.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and non-conformity**: a) As stated in various parts of the VCS PD, no fire management plans are in place in the project areas. Furthermore, as confirmed during the interviews held with members of DPNW, fires are an issue and DPW does not have enough resources in order to combat these fires or prevent them. b) The project proponent has selected for pest and disease outbreaks a Likelihood of Once every 10 years and insignificant. This is equivalent to a risk of 1; however, the project proponent has written 2. c) The project proponent has selected a mitigation of 0.25 for pest and disease outbreaks. However, in the same document it is written that this is not relevant and that no mitigation is being applied.	This has been revised due to Validation findings. Please see the updated Kulera REDD Risk Assessment Verification v2-0.docx.	a) As stated, during the site visit staff of the DPW confirmed the lack of resources to combat or prevent fires. Hence, today, the DPW does not have the capability to contain this natural risks above historical levels as no additional efforts have been made. Therefore, a mitigation factor in order to mitigate the LS observed in the past, cannot be justified. The NPR report has been revised accordingly – OK. b) The report has been updated – OK. c) The risk due to pests and diseases has been set to no loss, which is reasonable as natural forests with no past disturbance of this kind is not expected to see losses in the future. DNV GL deems that this is reasonable. – OK. c) This risk is integrated in other risks factors – OK. **CAR6 is closed.**

CAR ID	Corrective action request	Response by project proponents	DNV GL 's assessment of response by project proponents
	d) The project proponent has not discussed extreme droughts as part of the extreme whether risk category.		
CAR7	**Requirement**: §9.2.3 of VM0006 Version 2.0 **Evidence:** VCS MR Version 2.0 and "Malawi TLC Report_final-mh" **Non-Conformity:** DNV GL checked the "Malawi TLC Report_final-mh" and found the following non-conformities: a) Results on stove efficiency provided in table "WBT results: 16 Brick Rocket wih Skirt, Grate and Shelf" refer to a prototype which consisted in the inclusion of basic features to improve efficiency. This is not the initial design as described in the report and observed on-site. b) Results on efficiency of the previously promoted TLC stove are provided in page 6 but they seem to refer to one stove and to only one test. The WBT requires at least 3 tests in order to have a valid figure and for ex-post purposes a representative sample of stoves is requried. c) WBT results provided seem to be a one-time test. However, the applicable methodology requires an annual WBT to be conducted or at least biennial provided that the project proponent is able to demonstrate that the efficiency of the cook stove does not drop significantly. d) It has been assumed a Fraction of cumulative usage rate for technologies in project scenario in year t of 100%. No evidence is provided of such a high usage rate. According to the methodology this has to be sourced from social assessments or wood energy statistics applicable to the project. e) It is not clear where the values of $HH_{non-CFE}(t)$ are sourced from as the values in the excel spreadsheet are not consistent with the annual reports.	a) and b) We propose that the efficiency be reduced based on stove life. The Aprovecho Research Center stated that the live of these stoves indoors is about 7 years. Both projects "Wood Improved Domestic Stoves, Shimoni, Kenya" and the project "Energy Efficient Cook Stoves for Siaya Communities, Kenya" have stove life of 7 years. As thermal efficiency monitoring did not happen on a biennial schedule, but once during the monitoring period, we propose using the expected life of a cookstove (7 years), and we introduce a factor that would degrade linearly from 25.777 to 10 over 7 years. (A three stone hearth has a thermal efficiency of 10%). That is at the end of the seven years the stove is expected to be so degraded that the operator starts using three stones again. This is conservative as the project proponents teach stove up-keep and maintenance that is expected to keep the stove highly functioning at all times. d) and e): Usage rate. The project proponents report a usage rate of 100%. Spot checks, field reports and repeat visits show that all stoves built through the project are continually in use. In addition, TLC checks on "secondary stoves" in use and reports none. *Often if an operator does not like a new stove and they will have another stove that they will use for some meals, or some situations*. Often this is not taken into account when assessing stove use. In addition, cooperatives build the stoves, and the design is promoted within the communities themselves and to other communities. Hence the project has in fact reached beyond the number of stoves that is counted, providing a use rate of greater than 100%. Because no strict monitoring takes place a more conservative number is desired for a usage rate. We compare this project to similar projects under similar conditions in East Africa using the same stationary rocket design. Two projects are compared: Energy Efficient Cook Stoves for Siaya Communities, Kenya andAberdares Improved Cook Stoves. All projects have dry deciduous forests where native communities deeply rely on forest biomass for fuelwood. Prior to project start all projects faced a similar problem with vanishing forest cover, and the use of the three stone hearth at project start. All projects use stationary stoves with "rocket" design where the stove is built within the kitchen of the user. In the Aberdares Improved Cook Stoves project the usage survey revealed that 99% of the surveyed beneficiaries stated that their cookstoves were working correctly (see verification report). The project proponents in the Siaya Communities project reported a use rate of 97.9% (see validation report or verification report). To be the most conservative, the usage rate of 97.9% was used. **Background**: In the beginning of the Kulera project TLC had originally partnered with Hestian Innovation a carbon developer with interest in fuel efficient cookstoves. Hestian Innovation uses carbon financing to fund the construction of cookstoves in communities in Malawi where Hesitanbuilds stoves for users. TLC ended up not partnering with Hestan as TLC believes in	a), b), c) and d) **Efficiency**: The audit team agrees that the "ChanguChangu Moto" stove seems to be comparable to the stove of the project activity. According to the PD of this project the efficiency is 0.25. The project proponent has adopted a value of 0.2 which is conservative as it is the default value prescribed by the methodology. The adoption of this value is also conservative considering that at the end of the monitoring period improved stoves with grate and shelf were provided. Therefore, this non-conformity remains open. **Usage rate:** The project proponent has proposed a deviation consisting **Stove degradation:** The eproject proponent has assumed a very conservative degradation rate sourced from another project. DNV GL deems that this degradation rate is appropriate considering that the GS allows for a degradation rate of 1% by default. Hence the assumption made is conservative. e) The project proponent has assumed a total of 27 474 stoves implemented as part of their program during the monitoring period /8/. During the site visit DNV GL checked that cookstoves were implemented in all villages that visited. DNV GL further confirmed that the project has in place procedures that rule the collection of the data from village level up to project level, and that then are used for reporting purposes /8/. Since DNV GL could not apply a statistical valid sampling plan for verifying the implementation, it reached the reasonable level of assurance through additional means: • DNV GL checked the implementation results at a zone level for some periods and zones /16/ and compare them with the annual reports /8/ and found that all are consistent; • Moreover, the project proponent has assumed a drop-off rate, which DNV GL deems it is conservative as in the case of damages in the stoves, households are trained to make the necessary reparations; • The project implementation has been controlled by USAID. A third party conducted a sound sample of households and confirmed that the cookstove component was adequately implemented /14/. Hence this issue may be closed – OK. f) The project proponent has assumed a value of 112 Mg/TJ sourced from the 2006 IPCC GL - OK. g) The value of 0.95 of "default proportion of degradation related carbon loss from fuelwood collection activities [-]" provided by the methodology is a default value –OK.

CAR ID	Corrective action request	Response by project proponents	DNV GL 's assessment of response by project proponents
		empowering communities to build stoves themselves. Hestian has a very high understanding cooking practices in Malawi. The Hestian project has gone through validation and two verifications under the Gold Standard. TLC adopted a stove constructed of mud-and-brick that functions similarly to a Hestian Esperanza stove, but is made out of local material and is constructed by the user. The exact design is modified as the technology improves. The exact same design of the mud-and-brick stove promoted by TLC is also being promoted by Ripple Africa, a local NGO in the Nkhata Bay Region. The Ripple Africa project is under validation under the CDM. In project year 1 no stoves were promoted by TLC while research was being carried out. In years 2, 3, and 4 of the Kulera Project the mud-and-brick stoves were being built under the Kulera project. From August 2013 to October 2013, TLC worked on training and production of the 16 Brick Rocket stove with skirt, shelf and grate. Though the rocket stove has a much higher fuel efficiency rating then the mud-and-brick stove we conservatively calculate that all stoves promoted under the Kulera project for all years are the mud-and-brick stove. For calculations of cookstove efficiency, cookstove use and cookstove degradation we will use data gathered from the project proponents, the Ripple Project and the Hestian project. a) and b) We propose a methodology deviation, as the option we choose is different than option 1. and option 2. listed above. As thermal efficiency monitoring did not happen on a biennial schedule, we introduce a using a conservative degrading cookstove efficiency used by Hestian Innovation and Ripple Africa **for this monitoring period only**. For future monitoring we plan to monitor annually or at least biennial provided that we are able to demonstrate that the efficiency of the cookstove does not drop significantly. **Efficiency**: Ripple Africa is using identical stoves promoted by the Kulera Project as it is an easy stove to build with local materials. In their CDM Project Document Ripple Africa reported a thermal efficiency of 25% for their "ChanguChangu Moto" stoves. The test was carried out by the Malawi Bureau of Standards following the Shell Foundation Water Boiling Test Protocol, version 3.0. This test is the most accurate as it was carried out by third party experts in Malawi under an international standard. The stove design was built off of many years of research to have the most efficient stove completely made with local materials that can be found by the operator. The value of 25% for the "ChanguChangu Moto" stove is a conservative value. The methodology VM0006 allows for a cookstove efficiency default value of 20% to be used for any conventional stove that lacks improved combustion air supply mechanism and flue gas ventilation systems. The mud-and-brick stoves with continued maintenance are much more efficient than any conventional stove that lacks improved combustion. **Usage Rate:**Hestian reports a usage rate of 94.8% after 6 months, 85.6% after 18 months, and 76.3% after 30 months. This usage rate is appropriate to use as the operators of the stove live in identical conditions (social and environmental) to those in the project area. The project proponents in the Kulera Project report a usage rate of 100%. Spot checks, field reports and	**CAR7 is closed.**

CAR ID	Corrective action request	Response by project proponents	DNV GL 's assessment of response by project proponents
		repeat visits show that all stoves built through the project are continually in use. In addition, TLC checks on "secondary stoves" in use and reports none. *Often if an operator does not like a new stove and they will have another stove that they will use for some meals, or some situations*. Often this is not taken into account when assessing stove use. In addition, cooperatives build the stoves, and the design is promoted within the communities themselves and to other communities. Hence the project has in fact reached beyond the number of stoves that is counted, providing a use rate of greater than 100%. Because no strict monitoring takes place, we propose using the Hestian rate for a decreased use of the stove. **Stove Degradation:** Hestian Innovation reports a reduction in stove efficiency over time. A new stove has a thermal efficiency of 31%, but degrades as follows; years 0-1 is 26%, years 1- 2 is 21% and years 2-3 have a thermal efficiency of 22%. We propose using these same values for the potential reduction of stove efficiency over time. Hence at the end of year 1, the efficiency rate will be 84% of what they were when they were installed, etc. For the mud-and-brick stoves in Kulera, at the end of the first year the stoves would degrade as follows: at the end of year 1 efficiency is 21%, at the end of year 2 the efficiency is 17%. Stove degradation values from Hestian are conservative as the Esperanza stoves are installed by Hestian and not maintained by the operator. Under the Kulera project the operator is trained to have continued stove maintenance. The constant maintenance keeps the stove running at high efficiency continually, so the Hestian assumptions are very conservative. Please see the workbook 2.calculate emission sources v0-14 PD and MN1" for details on all cookstove calculations. f) We propose the conservative value from 2006 IPCC GL of 112 Mg/TJ. **Efficiency** : Please note that the mud-and-brick stoves promoted through Kulera have an improved combustion air supply mechanism and flue gas ventilation system. The fuel magazine is horizontal, (wood fuel is added manually). As the wood burns at the end of the elbow-shaped combustion chamber, convection pulls air through the wood hole opening and into the combustion chamber. Smoke and concentrated heat is drawn up through the vertical chimney. Fort the mud-and-brick stove both the height and width of the elbow are strategically built be the correct ratio in order to maximize performance. The pot sits on top of the chimney where the heat is concentrated. The default value for these kinds of stoves (i.e., the stoves that do not lack improved combustion air supply mechanism and flue gas ventilation systems) is considered to have an efficiency rating of 0.2 per applicable to the default stove in the methodology. Additions such as grate, shelf, and skirt greatly improve the efficiency of these basic mud-and-brick models, which could potentially bring the efficiency even higher. Therefore, the applied default value for efficiency is conservative. Changes were made to the workbook 2. Calculate Emission Sources v0-19 PD and MN1.xlsm, and within the monitoring report. e) Waiting to hear back from project partners on further documentation. Please see updated cookstove workbooks by region and workbook "2. Calculate emissions sources v0-19 PD and MN1"	

Clarification requests

CL ID	Clarification request	Response by project proponents	DNV GL 's assessment of response by project proponents
CL1	**Evidence and clarification** The project proponent is requested to provide a GHG ER calculation spreadsheet with the final results of the monitoring period.	Please see the 1. Gross Emission Reductions Workbooks, now ending in "PD and MN1.xlsm"	The GHG ER Sheet has been provided. **CL1 is closed.**
CL2	**Evidence and clarification** The project proponent is requested to clarify in the VCS MR the methods employed for pre-processing, processing and post-processing of THEOS Satellite imagery.	Please see the revised Monitoring Report. Please see the revised Monitoring Report v3-0	DNV GL checked the revised VCS MR and confirmed that it has been revised with updated documentation on the pre-processing, processing and post-processing of THEOS imagery. **CL2 is closed.**
CL3	**Requirement:** §8.1.4 of VM0006 Version 2.0 **Evidence:** ER calculation spreadsheet, tab "4c. Project - DF, RF, DG, RG" and "6c. Leakage - DF, RF, DG, RG" **Clarification:** a) It is not clear why pixels that show classes that are similar as the class cloud cover from the point of view of data availability (i.e. presence of BRN, SHD, BKR) haven't been treated as cloud pixels. b) It is not clear why in "Section 4. Transition Rates (ha/yr), cloud corrected, annualized" the annual rates are increased by the % of cloud cover.	All classes that are neither forest nor non-forest have been removed from calculations.	a) DNV GL checked the GHG Emissions spreadsheet and confirmed that have been removed from the calculations – OK. b) DNV GL checked the GHG Emissions spreadsheet and confirmed that the cloud correction has been deleted – OK. **CL3 is closed.**
CL4	**Requirement:** §8.2.5 of VM0006 Version 2.0 **Evidence:** Document not provided **Clarification:** a) The project proponent is requested to provide the calculation spreadsheet for the cookstove project activity. b) The project proponent is requested to provide the supporting evidence for the monitored values of the following parameters: i) Fraction of cumulative usage rate for technologies in project scenario in year t $U_{CFE}(t)$; ii) Efficiency of the baseline cook stoves or appliances. η_{new};	Please see the updated wokbook "2. Calculate emissions sources" this has the ex-post cook-stoves Please see "Malawi TLC Report_final-mh" table WBT Results: 16 Brick Rocket with Skirt, Grate and Shelf" for the results of the water boiling test. This WBT report was conducted by Aprovecho Research Center (ARC). The number of cook-stoves and the adoption rate was monitored by TLC and can be found in the Performance Monitoring and Evaluation Plan.	a) The spreadsheet has been provided – OK b) After receiving the evidence, **CAR7** is open. **CL3 is closed.**
CL5	**Requirement:** ¶2.3.1 of AFOLU Non-Permanence Risk tool: VCS Version 3.2 **Evidence and clarification**: a) During the site visit (interview in Vwaza wildlife reserve) DNV GL confirmed that in an area of Vwaza encroachment inside the protected area will probably cause a redefinition of the protected area, yet seems to be not formalised. This seems to be a dispute between the DPW	We believe this CL to be closed as it was responded to in the Validation finding CL2.	The NPR report has been revised. Although there is an intention to revise the boundaries, this has not yet become effective as confirmed by DPW-Vwaza, so the project proponents still can demonstrate the right of use on the encroached areas. These areas do not represent a formal dispute but encroachment by drivers of deforestation and the intention of DPW to update the leagal status of those areas.

CL ID	Clarification request	Response by project proponents	DNV GL 's assessment of response by project proponents
	and local communities. The project proponent is requested to clarify whether this represents more than 5% and to discuss whether this is a dispute.		Hence DNV GL accepts that cannot be considered a dispute. **CL5 is closed.**

Forward action requests from previous verification

FAR ID	Forward action request	Response by project proponents	DNV GL 's assessment of response by project proponents
FAR1	As this is the first verification, no Forward Action Requests were identified from the previous verification process.	Not applicable.	Not applicable.

Forward action requests from this verification

FAR ID	Forward action request	Response by project proponents	DNV GL 's assessment of response by project proponents
FAR1	**Requirement:** ¶9.2.4 of VM0006 Version 2.0 **Evidence**: Site visit **Forward Action Request:** During the site visit DNV GL confirmed that SOPs for field measurements were adequate and were implemented correctly. Furthermore, enough QA/QC procedures are in place in order to ensure that the risk of material misstatement is reduced to the minimum. However, the following issues were identified in the field and lab methods which should be addressed by the project proponent: a) Volume of coarse soil fragments (i.e. stones >2 mmm) were not estimated and discounted from the volume of soil. The project proponent should establish methods in order to ensure that the volume of stones is estimated and that these are subtracted from the total volume of soil. A recommended reference is the FAO Forestry Paper 168. b) Coarse soil fragments (i.e. stones > 2mm) were not discounted in the bulk density determination. The common lab practice is to extract the stones from each sample, and then to weight them and determine the volume through immersion. The resulting weight and volume is discounted from the weight and volume of the core. c) In order to estimate the wet/dry ratio of non-woody biomass, the samples were dried at 25ºC. The temperature for fruits and leaves should be 70ºC while for wood should be 105ºC as prescribed by the methodology and in line with other authors. Although this mistake will not lead to material misstatements, this should be considered in the future revisions of the SOPs. d) QA/QC procedures: It is recommended to include in the future additional QA/QC procedures such as re-measurements of the sample PSPs by different teams and re-measurements of same soil	Not applicable.	Not applicable.

FAR ID	Forward action request	Response by project proponents	DNV GL 's assessment of response by project proponents
	samples by different labs in order to confirm the adequate calibration of teams and labs.		
FAR2	**Requirement:** §8.1.2.7 ofVM0006Version 2.0 **Evidence:** VCS PD Version 5.0 **Forward Action Request**: According to the applicable methodology "it is allowed to only use biomass inventories that are located within the project area on conditions that these plots do not cause any bias and that these plots are representative of the stratum and/or LULC of the reference region". The carbon stocks of the forest classes are based on an inventory of the project area. During the site visit and through other evidence it was seen that carbon stocks in forests within protected areas are less degraded than out of the protected areas. In order to confirm whether bias may exist, the audit team checked the forest inventory information and found that only 6 of the 67 plots in Miombo are located out of the protected area (1 in Nkhotakota). The average aboveground biomass of both subsamples differ (71 vs 51 MGDM ha-1), yet the number of samples out of the protected area are not enough to conclude if these averages are statistically different. This is relevant in the case of the project activity as the main drivers of deforestation are not area-based (i.e. conversion to cropland) but are resource-based (i.e. units of wood product). Even if it is assumed that bias exists in the location of PSPs and that this could represent an overestimation in emission reductions, there are two issues that would make this bias to be compensated and not to affect the emission reductions: a) one is the fact that leakage will be overestimated, so if during a monitoring period, leakage emission exist, the result would be a conservative leakage accounting as the forest would not have as many as carbon stocks. This is not relevant for this monitoring period as no leakage occurs; b) The fact that afforestation/reforestation is accounted in the model, would make removals to be overestimated (with one reforestation event, carbon would transit in one year from no carbon stocks to high carbon stocks of almost an intact forest) which would compensate a potential overestimation of deforestation emissions in the baseline scenario. In order to confirm the effect of these impacts in the first monitoring period, the emission factors for leakage were changed considering a carbon density of 51 MgDM ha-1 and the reforestation was affected by a factor of 1/10 assuming that it takes 10 years to reach the average carbon density (which it is still conservative is it should take more time to reach those levels). Based on these assumptions DNV GL modelled the baseline emissions and estimated the project emissions using the data available for the first verification and found that no overestimation occurs; in fact the assumption that reforestation reaches the average carbon density immediately is extremely conservative and it causes in the end an	Not applicable.	Not applicable.

FAR ID	Forward action request	Response by project proponents	DNV GL 's assessment of response by project proponents
	underestimation of emission reductions for the first monitoring period. This occurs in the first monitoring period when no leakage occurs; in the case leakage occurs the emission reductions would be even more underestimated. Although it has been confirmed by DNV GL that this issue does not cause any over estimation of emission reductions in the monitoring period, and probably in the whole crediting period, this could potentially not be the case in future monitoring periods. Hence, the project proponent should further analyse in future monitoring periods: a) whether the above represents a real bias and plots should be distributed also out of the project areas; b) whether the above may cause an overestimation of emission reductions in future monitoring periods considering the observed reforestation. The project proponent should note that there is potential to overestimate leakage emissions, so this could be very relevant in the future as emission reductions could be highly underestimated.		
FAR3	**Requirement**: §9.2.3 of VM0006 Version 2.0 **Evidence:** VCS MR Version 2.0 and "Malawi TLC Report_final-mh" **Forward Action Request:** In order to estimate emission reductions from the cookstove component the applicable methodology requires to the project activity to: a) Monitor the number of stoves that are actually in operation. This is estimated through the monitoring of parameters $HH_{non-CFE}(t,i)$ and $nrCFE$; b) Monitor the stove efficiency through annual WBT to be conducted or at least biennial provided that the project proponent is able to demonstrate that the efficiency of the cook stove does not drop significantly, or if the conservativeness of the used efficiency can be demonstrated, the monitoring frequency can be once every baseline update. Demonstration of the conservativeness must be based on historical efficiency data for the type of stoves showing how efficiency declines from the initial efficiency level through the life of the stoves and the lowest efficiency value must be used for that type of stove. Regarding a), DNV GL reached a reasonable level of assurance in the verification of the reported value through different means and confirmed that the monitoring system was well established. However, DNV GL identified some issues related to the lack of archiving procedures which caused an incomplete set of raw and intermediate data. The project must correct this for future monitoring periods as evidence has to be archived and ready to support any claims made in the monitoring report. It is also encouraged to use other means to derive the estimates such as independent household surveys and not only the M&E system in place.	Not applicable.	Not applicable.

FAR ID	Forward action request	Response by project proponents	DNV GL 's assessment of response by project proponents
	Regarding b), DNV GL confirmed that no energy efficiency measurements of a representative number of samples were conducted in a biennial basis as required by the applicable methodology. In the monitoring period this was corrected through the application of very conservative assumptions such as a low stove efficiency (0.2) and a conservative degradation rate of 10%. DNV GL was able to verify with a reasonable level of assurance that the application of this very conservative values will not lead to an overestimation of emission reductions. However, for future monitoring periods it cannot be confirmed that these assumptions will still be conservative. Hence, the project proponent must ensure that proper measurement of a representative number of samples is conducted in the next monitoring period.		

APPENDIX C

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS

Andrés Espejo

Mr. Espejo is a DNV GL Natural Resource Engineer with 10 years' work experience in Europe (UK, Spain and Portugal), South America (Brazil, Guatemala, Chile, Colombia, Argentina) and Africa (Republic of Congo, Uganda, South Africa, Mali, Senegal, Mozambique, Morocco, Kenya, Ethiopia, Tanzania, Botswana, Zambia, …). He has extensive and direct experience in managing teams involved with forestry, natural resource valuations, forest inventory and cruising, logistics, biomass valuation and projects & domestic CO2 offset projects.

Mr. Espejo has worked as a forestry engineer for local operations in Galicia - Spain (Forest to Mill and Biomass procurement), operations in Congo Brazzaville, and maritime logistics: Forestry Inventory, valuation and appraisal of forest resources, Forest management, sylvicultural systems, Sylvicultural operations (afforestation, fertilization, liming, soil improvement,), harvesting planning, and ship fixing. Mr. Espejo also provided a FSC controlled wood audit reports of Eucalyptus Fibre Congo made for Portucel Soporcel Group. Mr. Espejo developed a Forest Management plan of HUNOSA's rural land (2.500 ha) and proposal for the creation of a CO2 DOP project.

Mr. Espejo is a senior CDM / VCS validator and verifier and has Technical Area competence in Forestry (Technical Area 14.1) and Agriculture (Technical Area 15.1) under the CDM. He has been involved in the management of more than 30 validations/verifications. Mr. Espejo has been following very closely the development of the different REDD initiatives and negotiations and has a profound knowledge of the main approved REDD/IFM methodologies, DNV GL has also followed closely the development of a system for the integration of REDD sub-national initiatives with a main REDD national initiative (i.e. nested approach) and has followed closely the development of the VCS Jurisdictional and Nested REDD+ requirements, and knows the requirements of the recently approved standard "Jurisdictional and Nested REDD+ (JNR) Requirements" (Version 3.0). Projects he has been involved with include:

- Verification of Interim REDD+ Performance indicators under the Guyana-Norway REDD+ partnership: Team Leader
- Pre-audit of regional SADC MRV system developed by GIZ
- Second periodical verification of REDD Kasigau project – Phase I (VCS Nº562) and II (VCS Nº612). Leader auditor of REDD project applying AM0009.
- First verification of CDM A/R project "Reforestation as Renewable Source of Wood Supplies for Industrial Use in Brazil" (CDM Nº2569). Leader auditor of A/R project applying AR-AM0005.
- VCS validation and verification of Mali Jatropha Curcas Plantation Grouped project (VCS Nº829). Leader auditor of A/R project applying AR-AMS0006.
- VCS validation and verification of Bukaleba Forest project (VCS Nº799). Leader auditor of A/R project applying AR-ACM0001.

Edwin Aalders

Mr Aalders has 20 years of experience as an assessor in Environmental Auditing and Policy and Management and in particular related to Climate Change. Mr Aalders started his career in SGS in 1992 were he quickly became involved in the development of new environmental certification & control services from 1999 ran the Climate Change programme of SGS. In 2004 he became the Director of the International Emission Trading Association (IETA). He acted as the first CEO for the Verified Carbon Standard Association (VCSa) between November 2007 and October 2008 and after leaving IETA Mr Aalders in 2010, became a Partner with IDEAcarbon before joining DNV GL as at their Climate Change and Sustainable Development Department in 2011.

Mr Aalders has extensive experience with developing Climate Change strategies and International Climate Change negotiations, which saw him being involved in the development of earlier programmes such as the ERUPT, EU ETS, CDM/JI and the more resent NAMAs. During the implementation of the EU ETS Mr Aalders was lead author in the drafting group of the EA-06 developed for the EU ETS MRV system. As Director of IETA Mr Aalders authored numerous publications and position papers in relation to the different market based instruments. Since joing DNV GL Mr Aalders authored the various manuals on NAMA MRV and team member in the various climate change projects implemented under the different programmes i.e. CDM,JI,VCS, various ETS' and REDD+.

Mr Aalders is and has been an elected member of roster of experts for the Methodology & Accreditation Panel Expert of the CDM & JI, member of the JI Accreditation Panel, and is currently member of the VCSa AFOLU Steering Committee and the Pacific Carbon Trust Advisory Panel.