



POA VALIDATION REPORT

“DELAGUA PUBLIC HEALTH PROGRAM IN EASTERN AFRICA”

REPORT NO. 2012-9603

REVISION NO. 02

DET NORSKE VERITAS



POA VALIDATION REPORT

Date of first issue: 25 Sept 2012	ConCert Project No.: PRJC-388168-2012-CCS-USA	DNV CLIMATE CHANGE SERVICES AS Veritasveien 1, 1322 HØVIK, Norway Tel: +47 67 57 99 00 Fax: +47 67 57 99 11 http://www.dnv.com Org. No: NO 994 774 352 MVA
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Client: Manna Energy	Client ref.: Evan Thomas	

Summary:

Title of PoA: DelAgua Public Health Program in Eastern Africa

Country: Rwanda

Methodology: AMS-III.AV, Low greenhouse gas emitting water purification systems, **Version:** 04
AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass, **Version:** 05

GHG reducing Measure/Technology: Zero-energy water filters & High-efficiency cook stoves

ER estimate of PoA: 1,058,106 tCO₂e per year (average during the first crediting period)

Size

☐ Large Scale

☒ Small Scale

Validation Phases:

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Submission for registration

☐ Rejected

In summary, it is DNV's opinion that the programme of activity "DelAgua Public Health Program in Eastern Africa" in Rwanda, as described in the PoA-DD, version 2.4 of 11 November 2013, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology AMS-III.AV, Low greenhouse gas emitting water purification systems, version 04 and AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass, version 05. The report has been revised to address the issues raised in the incompleteness message received. Hence DNV requests the registration of the project as a CDM programme of activity.

Report No.: 2012-9603	Subject Group: Environment	Indexing terms Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism ☒ No distribution without permission from the client or responsible organisational unit ☐ free distribution within DNV after 3 years ☐ Strictly confidential ☐ Unrestricted distribution
Report title: "DelAgua Public Health Program in Eastern Africa" in Rwanda		
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Date of this revision: 19 November 2013	Rev. No.: 02	Number of pages: 17

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CME	Coordinating/Managing Entity
CPA-DD	CDM component project activity design document
CH ₄	Methane
CHW	Community Health Workers
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPA	Component project activity
DHS	Demographic and Health Survey
DNV	Det Norske Veritas
DNA	Designated National Authority
EIA	Environmental Impact Assessment
EWSA	Energy Water and Sanitation Authority
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HH	Households
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
LSHTM	London School of Hygiene and Tropical Medicine
LoA	Letter of approval
LSC	Local Stakeholder Consultation
MDG	Millennium Development Goals
MoH	Ministry of Health
N ₂ O	Nitrous oxide
NISR	National Institute of Statistics of Rwanda
NGO	Non-governmental Organisation
MoC	Modalities of communication
NAMA	Nationally Appropriate Mitigation Activity
ODA	Official Development Assistance
PoA	Programme of activities
PoA-DD	CDM programme of activities design document
POE	Point-of-Entry
POU	Point-of-Use
PP	Project Proponent
PS	Clean Development Mechanism Project Standard
RBS	Rwandan Bureau of Standards
RDB	Rwandan Development Board
SDW	Safe Drinking Water
SIDS	Small Island Developing States
SME	Small and Medium Enterprises
tCO ₂ e	Tonnes of CO ₂ equivalents



UNFCCC

United Nations Framework Convention on Climate Change

VVS

Clean Development Mechanism Validation and Verification Standard

WHO

World Health Organization



1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the programme of activity (PoA) “DelAgua Public Health Program in Eastern Africa” in Rwanda including generic information relevant to all component project activities (CPAs) to be included in this PoA. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfillment of stated criteria.

The host Party is Rwanda. This Party fulfills the participation criteria and has approved the PoA and authorized the project participant DelAgua Health Rwanda Limited. The DNA from Rwanda confirmed that the project assists in achieving sustainable development.

The PoA correctly applies the baseline and monitoring methodologies “AMS-III.AV, Low greenhouse gas emitting water purification systems,” version 04 and AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass,” version 05.

Project activities under the PoA will distribute zero-energy water filters and/or high-efficiency cook stoves to households in Rwanda. Water filters will replace the common practice of treating water by boiling using fossil fuels and non-renewable biomass. High efficiency cook stoves will reduce the combustion of fossil fuel for cooking. As a result, the PoA results in reductions of CO₂ emissions that are real, measurable, and give long-term benefits to the mitigation of climate change. It is demonstrated that the PoA and typical component project activities (CPAs) are not a likely baseline scenario. Emission reductions attributable to the PoA are hence additional to any that would occur in the absence of the project activity.

The total emission reductions of all CPAs expected to be included to the PoA are estimated to be on the average 1,058,106 tCO₂e per year.

The monitoring plan provides for the monitoring of the PoA’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the PoA design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.

In summary, it is DNV’s opinion that the PoA “DelAgua Public Health Program in Eastern Africa” in Rwanda, as described in the PoA-DD, version 2.4 dated 11 November 2013 meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology “AMS-III.AV, Low greenhouse gas emitting water purification systems,” version 04, and AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass,” version 05. Hence, DNV requests the registration of the PoA as a CDM PoA.

Portland and Oslo, 19 November 2013

Kyle Silon
Validator
DNV San Francisco, USA

Michael Lehmann
Director of Services and Technologies
DNV Climate Change Services AS



2 INTRODUCTION

Manna Energy has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the proposed small-scale CDM Programme of Activities (PoA) “DelAgua Public Health Program in Eastern Africa” in Rwanda (hereafter called “project”). Manna Energy is a consultant to DelAgua Water Testing Limiting, which is the parent company of the coordinating/managing entity (CME), DelAgua Health Rwanda Limited. DNV has reviewed the consulting agreement between Manna Energy and DelAgua /53/ and confirmed that Manna Energy was authorized by the CME to contract with DNV for this validation.

This validation report summarises the findings of the validation of the PoA including generic information relevant to all component project activities (CPAs) to be included in this PoA, performed on the basis of UNFCCC criteria for CDM PoAs, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

2.1 Objective

The purpose of a validation is to have an independent third party assess the small-scale PoA design document (PoA-DD), including the description of the generic component project activity (CPA) with generic information relevant to all CPAs to be included in this PoA. In particular, the eligibility criteria for inclusion of CPAs, the programme’s baseline determination, monitoring plan, and the programme’s compliance with relevant UNFCCC criteria are validated in order to confirm that the programme design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM PoAs and is seen as necessary to provide assurance to stakeholders of the quality of the programme and its intended generation of certified emission reductions (CERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the PoA-DD including the description of the generic component project activity (CPA) with generic information relevant to all CPAs to be included in this PoA. The PoA-DD was reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities, Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities /16/, and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodologies “AMS-III.AV, Low greenhouse gas emitting water purification systems” (version 04) and AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass,” version 05.

The validation of the programme has also considered the completed CPA-DD for the CPA with the title “DelAgua Rwanda Public Health Program Area 1” submitted together with the PoA-DD

The validation was carried out in accordance with the principles and the requirements for validation contained in the Validation and Verification Standard /13/.



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



3 METHODOLOGY

The validation consisted of the following three phases:

- I document review
- II follow-up actions (e.g. on-site visit and telephone or email interviews)
- III the closing out of validation findings and the issuance of the final validation report and opinion

The following sections outline each step in more detail.

3.1 Document review

The following tables list the documentation that was reviewed during the validation.

3.1.1 Documentation provided by the project participants

/1/	DelAgua: CDM-SSC-PoA-DD for project activity “DelAgua Public Health Program in Eastern Africa” in Rwanda, Version 1.0 dated 01 October 2012 and version 2.4 dated 11 November 2013
/2/	DelAgua: CDM-SSC-CPA-DD for CPA titled “DelAgua Rwanda Public Health Program: Rubavu District, Western Province, Republic of Rwanda”, Version 2.4 dated 11 November 2013
/3/	DelAgua: Emission Reduction Calculations for PoA, Version 3, 11 November 2013 (filename: SamplePoACERCalcs_23april2013.xls)
/4/	DelAgua: Emission Reduction Calculations for CPA 1, Version 3, 11 November 2013 (filename: SampleCPACERCalcs_23april2013.xls)
/5/	DelAgua: Gold Standard Local Consultation Report - DelAgua Public Health Program in Eastern Africa, version 1.0 dated 19 December 2012
/6/	DelAgua: Gold Standard Passport - DelAgua Public Health Program in Eastern Africa, version 1.0 dated 19 December 2012
/7/	DelAgua: Baseline Stove and Water Practices Survey Individual Questionnaire, dated 4 June 2012
/8/	DelAgua: Baseline Stove and Water Practices Survey Individual Questionnaire- Results & Analysis, dated 27 September 2012
/9/	DelAgua: Training Program, 27 September 2012
/10/	DelAgua: Modalities of Communication, 24 April 2013
/11/	Memorandum of Understanding between The Government of Rwanda Represented by the Ministry of Health and DelAgua Health Rwanda (Implementation) LTD., December 2012

3.1.2 Letters of approval

/12/	Rwanda Environment Management Authority (REMA) (DNA of Rwanda): Letter of approval, initial version dated 10 September 2012, and final version dated 10 October 2012
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3.1.3 Methodologies, tools and other guidance by the CDM Executive Board

/13/	CDM Executive Board: <i>Clean Development Mechanism Validation and Verification Standard</i> , version 05.0
/14/	CDM Executive Board: <i>Clean Development Mechanism Project Standard</i> , version 05.0
/15/	CDM Executive Board: <i>Clean Development Mechanism Project Cycle Procedure</i> , version 05.0
/16/	CDM Executive Board: <i>Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities</i> , version 03.0
/17/	CDM Executive Board: <i>Standard for sampling and surveys for CDM project activities and programme of activities</i> , version 04.0
/18/	CDM Executive Board: <i>Baseline and monitoring methodology AMS-III.AV, Low greenhouse gas emitting water purification systems</i> , version 04
/19/	CDM Executive Board: <i>Baseline and monitoring methodology AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass</i> , version 05.
/20/	CDM Executive Board: <i>Guidelines on the Demonstration of Additionality of Small-Scale Project Activities</i> , version 09.0
/21/	CDM Executive Board: <i>Assessment of debundling for SSC project activities</i> , version 03.
/22/	CDM Executive Board: <i>Guidelines for completing the programme design document form for small-scale CDM programmes of activities</i> , version 03.0
/23/	CDM Executive Board: <i>Guidelines for completing the component project design document form for small-scale component project activities</i> , version 01.0
/24/	CDM Executive Board: <i>Information Note, Default Values of Fraction of Non-Renewable Biomass for Least Developed Countries and Small Island Developing States</i> , (Version 01.0)
/25/	CDM Executive Board: <i>Guidelines for Sampling and surveys for CDM project activities and programme of activities</i> , version 3.0
/26/	CDM Executive Board: <i>General Guidelines to SSC CDM methodologies</i> , version 20.0
/27/	CDM Executive Board: <i>Procedures for requests to the executive board for deviations from an approved methodology</i> , version 01
/28/	CDM Executive Board: <i>Baseline and monitoring methodology AMS-I.E, Switch from non-renewable biomass from thermal applications by a user</i> , version 5.0
/29/	CDM Executive Board: <i>Guidelines on the consideration of suppressed demand in CDM methodologies</i> , version 02.0.
/30/	UNFCCC Secretariat: Email approval of M-DEV0481, 10 April 2013

3.1.4 Documents used by DNV to validate / cross-check the information provided by the project participants

/31/	Energy Water and Sanitation Authority (EWSA), "Biomass Use Survey in Urban and Rural Areas in Rwanda", Contract No. 11.07.054/24C/11/EARP-DIR/EK/sm, May 2012
/32/	National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH)



	[Rwanda], and ICF International. Rwanda Demographic and Health Survey 2010. Calverton, Maryland, USA: NISR, MOH, and ICF International, February 2012
/33/	Eaton, A. D., L. S. Clesceri, E. W. Rice, A. E. Greenberg, and M. A. H. Franson. 2005. Standard methods for the examination of water and wastewater: Centennial edition. Washington DC: American Public Health Association. 1368 p.
/34/	World Health Organization, Evaluating Household Water Treatment Options: Health – based targets and microbiological performance specifications. WHO, 2011.
/35/	Narajo, J., & Gerba, C. (2011). Assessment of the LifeStraw Family Unit using the World Health Organization Guidelines for “Evaluating Household Water Treatment Options: Health-based Targets and Performance Specifications”. University of Arizona, Department of Soil, Water and Environmental Science.
/36/	Vestergaard Frandsen, Certificate of Quality, available at: http://www.vestergaard-frandsen.com/lifestraw/lifestraw-family/certificate-of-quality . Assessed 19 November 2012.
/37/	Vestergaard Frandsen, LifeStraw Family Product Details, available at http://www.vestergaard-frandsen.com/lifestraw/lifestraw-family/features , Assessed 19 November 2012
/38/	IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Japan.
/39/	Det Norske Veritas, Gold Standard Validation Report: Sustainable Deployment of the LifeStraw Family in Rural Kenya, 18 November, 2010
/40/	ERM Certification and Verification Services, Gold Standard Verification Report: Sustainable Deployment of the LifeStraw Family in Rural Kenya, 14 February 2012
/41/	Clasen, T. et al. 2009. Laboratory assessment of a gravity-fed ultrafiltration water treatment device designed for household use in low-income settings. Am. J. Trop. Med. Hyg., 80(5), 2009, pp. 819–823
/42/	Aprovecho Research Center, Results of WBT 4.1 Testing of the EcoZoom Dura Stove, 12 May 2012
/43/	Rwanda Bureau of Standards: Lifestraw Family Test Report, 22 August 2012
/44/	Rwanda Bureau of Standards: EcoZoom Test Report, 22 October 2012
/45/	Rwanda Environment Management Authority: General guidelines and procedure for environmental impact assessment, November 2006
/46/	Ndayambaje, J.D., and GMJ Mohren, Fuelwood demand and supply in Rwanda and the role of agroforestry, Agroforestry Systems, 2011, volume 83, issue 3, pp. 303-320
/47/	Evan Thomas: CV, 10 November 2012. Demonstration of qualifications to fulfill CME responsibilities
/48/	Det Norske Veritas, Gold Standard Validation Report: Sustainable Deployment of the LifeStraw Family in Rural Kenya, 18 November, 2010 ERM Certification and Verification Services, Gold Standard Verification Report: Sustainable Deployment of the LifeStraw Family in Rural Kenya, 14 February 2012
/49/	Rwanda Bureau of Standards: Rwanda Standard – Potable Water Specification, RS 435:2009, Rev 1: 2011,
/50/	American Military Standard and tables for Inspection by Attributes (MIL-STD-105DE)



	Level II, Single Sample for normal inspection
/51/	Det Norske Veritas, Deviation from approved methodology request form – Proposed method to account for cross-effects between water purifiers distributed under AMS-III.AV, and cook stoves distributed under AMS-II.G distributed in a PoA, 7 December 2012
/52/	Rwanda Development Board: <i>Environmental impact assessment clearance</i> , 12 September 2012
/53/	Consulting agreement between Manna Energy Limited and DelAgua Water Testing Limiting, 3 August 2012

3.2 Follow-up actions

On 20 September 2012 to 26 September 2012, DNV visited Rwanda and performed interviews with project stakeholders.

	Date / Type of interview	Name / Organization	Topic
/54/	20 September 2012 ☐ On-site ☒ Face-to-face at office ☐ Telephone ☐ E-mail	<u>DelAgua</u> • Evan Thomas • Josh Kefauver • Jean Ntazinda • Niko Kalinic	• Review of Site Visit objectives and agenda • Review of pilot project implementation • Review of CME database • Selection of verification sample
/55/	20 September 2012 ☒ On-site ☐ Face-to-face at office ☐ Telephone ☐ E-mail	<u>Environmental Health Desk</u> • Joseph Katabarwa, Officer in Charge of Water and Air Quality • Mukamunana Alphonsino – Head of the Environmental Health Desk <u>DelAgua</u> • Evan Thomas • Josh Kefauver • Jean Ntazinda	• EHD programs to encourage water treatment • HH access to piped water • EHD programs to reduce indoor air pollution
/56/	21 September 2012 ☒ On-site ☐ Face-to-face at office ☐ Telephone ☐ E-mail	<u>Energy Water and Sanitation Authority (EWSA)</u> • Ngirumpatse Mugiraneza (Viateur), CDM-CFLs Project Coordinator & Carbon Market <u>DelAgua</u>	• Discussion of programs targeted at increasing supply of cook stoves • Methods of water treatment • Access to treated water • Ministry of Health programs targeting safe



		• Josh Kefauver • Jean Ntazinda	drinking water
/57/	21 September 2012 ☒ On-site ☒ Face-to-face at office ☐ Telephone ☐ E-mail	<u>REMA</u> • Janvier Kabananiye, Renewable Energy & Energy Efficiency Promotion Officer • Yves TUYISHIME, Carbon Market Promotion Officer <u>DelAgua</u> • Josh Kefauver • Jean Ntazinda	• Host country regulations • Sustainable development requirements • EIA requirements • Stakeholder consultation requirements
/58/	24 September 2012 ☒ On-site ☐ Face-to-face at office ☐ Telephone ☐ E-mail	<u>DelAgua</u> • Evan Thomas • Josh Kefauver • Jean Ntazinda • Niko Kalinic • Christina Barsto	• Observation of training of community health workers for distribution and monitoring
/59/	25,26 September 2012 ☒ On-site ☐ Face-to-face at office ☐ Telephone ☐ E-mail	<u>Household Interviews</u> <u>DelAgua</u> • Innocent Nsekeyukunze	• Source of drinking water • Water treatment method • Stove/fuel combination • Access to public distribution network

As required by the “Standard for sampling and surveys for CDM project activities and programme of activities” /17/, DNV conducted acceptance sampling to validate the results of the PPs baseline survey. The baseline survey consisted of a sample size of 531 households (HHs), and data was collected for the following parameters:

- Household size (HH_{size})
- Efficiency of baseline system (η_{wb}/η_{old})
- Check for public distribution network of safe drinking water (SDW)
- Quantity of drinking water consumed per person (QPW_y)
- The fraction of the population for which the baseline fuel displaced is biomass (BS)
- The proportion of total population for which the common practice of water boiling is or would have been water boiling (X_{boil})

As described in sections 4.14 and 4.15, DNV confirmed that the baseline results met the required 90/10 confidence/precision. DNV’s sample size was therefore 80, based on sampling guidance from the American Military Standard and Table for Inspection by Attributes Level II, Single Sample for normal inspection /50/. DNV randomly selected 80 HHs from the 531 baseline sample, and the results of the survey for these HHs were checked against the data input into the PPs baseline analysis. DNV can confirm that all data was accurately transcribed. DNV further conducted HH visits to a subset of these 80 HHs, to



confirm the accuracy of the survey results. Given the survey design discussed above, it was not possible to visit all 80 HHs. Therefore, DNV randomly selected 3 districts from those represented in the verification sample, and spent 2 days visiting HHs in the area. Given the dispersed nature of the umudugudu (villages) within each district, and the fact that only one HH was surveyed in an umudugudu, DNV was able to visit 12 HHs within the selected districts. DNV can confirm that the HH responses matched the recorded responses from the PPs baseline survey.

3.3 Closing out of validation findings

The objective of this phase of the validation was to resolve any issues which needed be clarified prior to DNV's conclusion on the PoA's compliance with applicable CDM requirements. In order to ensure transparency a validation protocol was customised for the project. The protocol shows, in a transparent manner, the criteria (requirements), means of verification, and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a PoA is expected to meet;
- It ensures a transparent validation process, where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of four tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project activity "DeLaqua Public Health Program in Eastern Africa" in Rwanda is enclosed in Appendix A to this report.

Table 2 of the validation protocol documents the findings of the desk review of the project design documentation and follow-up interviews with project stakeholders. Any findings raised in Table 2 are listed in Table 3 of the protocol, and changes to the description of the project design as a result of these findings are addressed in Table 3. Table 2 thus may not reflect all aspects of the project as described in the final PoA-DD submitted for registration.

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

- (a) The project participants have made mistakes that will influence the ability of the PoA to achieve real, measurable additional emission reductions;
- (b) Applicable CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

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

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of CPAs of the PoA. FARs shall not relate to the CDM requirements for registration.

The validation identified seventeen CARs and three CLs, but no FARs. The CARs and CLs were satisfactorily addressed by the project participants by revising the PoA-DD (please refer to Table 3 in Appendix A for further details). In addition to the changes made to the PoA-DD as a result of the validation findings, the following changes were made in response to the issues raised on 3 October 2013 as part of the UNFCCC's completeness check:



- Start date of the CPA crediting period was revised to 12 May 2013.
- The sampling plan was revised to clarify that simple random sampling will be applied to each sampling frame.
- The sampling plan was revised to clarify that the technology type/vintage are considered in the sampling plan.
- A subscript was added to the “Operational Check” parameter to clarify that sampling will be carried out for both filters and stoves.
- The parameter $\eta_{\text{new},y}$ was included in the list of monitored parameters.



Validation Protocol Table 1: Mandatory Requirements for CDM programme of activities (PoA)		
Requirement	Reference	Conclusion
The requirements the PoA must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK) or a corrective action request (CAR) if a requirement is not met.

Validation Protocol Table 2: Requirement Checklist				
Checklist question	Reference	Means of verification (MoV)	Assessment by DNV	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the PoA should meet. The checklist is organised in different sections, following the logic of the PoA-DD	Gives reference to documents where the answer to the checklist question or item is found.	Means of verification (MoV) are document review (DR) , interview (I) or any other follow-up actions (e.g., on site visit and telephone or email interviews) and cross-checking (CC) with available information relating to projects or technologies similar to the proposed CDM PoA under validation.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A corrective action request (CAR) is raised when project participants have made mistakes, the CDM requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A forward action request (FAR) during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Corrective action and/or clarification requests	Ref. to checklist question in table 2	Response by project participants	Validation conclusion
The CARs and/ or CLs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The validation team's assessment and final conclusions of the CARs and/or CLs.

Validation Protocol Table 4: Forward Action Requests		
Forward action request	Ref. to checklist question in table 2	Response by project participants
The FARs raised in Table 2 are repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by project participants on how forward action request will be addressed prior to first verification.

Figure 1: Validation protocol tables



3.4 Internal quality control

The validation report underwent a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation team

Role	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA 3.2 competence
Team leader (Validator)	Silon	Kyle	USA	✓	✓	✓	✓		✓
Assessor under Training	Yang	Weidong	USA	✓	✓	✓			
Technical reviewer	Seshan	Ranganathan	India					✓	
Person with sectoral competence assisting technical reviewer	Little	Grant	South Africa					✓	✓

The qualification of each individual validation team member is detailed in Appendix C to this report.



4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the PoA design as documented and described in the PoA-DD, version 2.4 dated 11 November 2013.

4.1 Comments by Parties, stakeholders, and NGOs

The PoA-DD, version 1.0 dated 01 October 2012 /1/ was made publicly available on the CDM website and Parties, stakeholders, and NGOs were invited to provide comments through the CDM website during a 30 day period from 02 August 2012 to 31 August 2012. It should be noted that the date on the webhosted document (01 October 2012) was incorrect; the correct date of the webhosted version was 10 July 2012.

<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/32Z3TT7LC70PMDWOEW1706HJ0ZJLN7/view.html>

No comments were received.

4.2 Approval, authorization and contribution to sustainable development

The coordinating/managing entity of the PoA is DelAgua Health Rwanda Limited, which is the entity that communicates with the Board.

The project participant is DelAgua Health Rwanda Limited of host Party of Rwanda. The host Party (Rwanda) meets all relevant participation requirements.

A letter of approval (LoA) /12/ was issued by the DNA of Rwanda on 10 October 2012, authorizing DelAgua Health Rwanda Limited as project participant and confirming that the project assists in achieving sustainable development.

The coordinating/managing entity has obtained a letter of authorization of its coordination of the proposed CDM PoA from the host Party.

The letter of approval was received from the project participant. The PP received an initial LoA from the Rwandan DNA on 10 September 2012, authorizing DelAgua Health and Development Program as a project participant. During the site visit, DNV met with the Rwandan DNA and confirmed the authenticity of the document /57/. The LoA was subsequently reissued to reflect a change in the PPs name on 10 October 2012. The revised letter of approval was also received directly from the project participant. Following the previous confirmation of the authenticity of the LoA, DNV does not doubt the authenticity of the final letter of approval. DNV considers the letters are in accordance with paragraphs 39-42 of the VVS /13/.

4.3 Modalities of communications

DNV has performed due diligence on the Modalities of Communications (MoC) statement submitted by the project participants /10/ in accordance with applicable requirements in the VVS as documented in section A.4 of Table 2 in the validation protocol in Appendix A to this report. DNV was able to confirm the information contained in the MoC /14/ and that the MoC complies with all relevant forms and requirements /13//14/.



4.4 PoA design and description of each generic CPA

DNV considers the project description of the project contained in the PoA-DD to be complete and accurate, as confirmed during the site visit conducted between 20 September 2012 and 26 September 2012. The PoA-DD complies with the relevant forms and guidance for completing the CDM-SSC-PoA-DD /22/.

The boundary of the PoA is the country of Rwanda. In establishing this boundary, the PP has taken all applicable national and/or sectoral policies and regulations, as confirmed during in-person interviews with the Rwandan DNA /57/ and the Environmental Health Desk within the Ministry of Health /55/.

The objective of the PoA is to reduce household energy consumption and improve health, through the distribution of zero-energy water filters and high-efficiency cook stoves /1/. The PoA establishes the standards that technologies distributed within each CPA must meet (as described in section 4.7), but allows each CPA to select the individual technology (ies) that are most appropriate for the CPA region. The first CPA will distribute Lifestraw Family water filters and the EcoZoom Zoom Dura and Zoom Global high-efficiency cook stoves /2/.

CPAs may be implemented directly by the CME or in collaboration with local partners, including host country governments. These partners may contribute financially to support the project through various means, including tax waivers, or by providing warehousing, transport, and/or human resources. In addition, the CME is seeking bilateral support in the form of Nationally Appropriate Mitigation Actions (NAMAs). As required by the CPA eligibility criteria, evidence will be provided to demonstrate that any public funding is not a diversion of official development assistance (ODA).

The CME will train local partners on the proper use and maintenance of the project technologies, and also on delivery of the baseline and monitoring surveys.

Distribution under each CPA will target select villages within the host country. Two distribution methods will be followed:

- **Centralized Distribution:** The initial distribution of technologies will occur at a centralized location, where HH end-users will be trained en masse on proper use and maintenance.
- **Retail Distribution:** Project technologies may be sold directly to customers. Retailers will provide training directly to purchasers.

HH end-users will then provide the necessary contact details, including their name, address, and phone number, before receiving the project technologies. Trained staff will then follow-up with an in-home demonstration on use and maintenance, so that the entire HH receives the training. This initial follow-up will occur shortly after the initial distribution. Follow-up visits will then be conducted by trained staff to ensure that the units are being used, are working properly, and to address maintenance concerns /1/. The CME is collaborating with the Ministry of Health (MoH) for the distribution in the first CPA; furthermore, the CME will train MoH Community Health Workers (CHWs) on the proper use and maintenance of the project technologies, as well as on delivery of the baseline and monitoring surveys /2/.

Validation activities commenced on 2 August 2012 with the publication of CDM-PoA-DD for the global stakeholder consultation. Therefore, the start date of the PoA is 2 August 2012 /1/, as it was prior to the first real action under the PoA (the first real action being the distribution of technologies under the first CPA). The start date of the first CPA was 3 October 2012, which corresponds to the date of distribution, and falls after the start date of the PoA /2/ and



the commencement of validation of the PoA. The length of the PoA is 28 years, which is in accordance with the CDM Project Standard /14/. The start date of the crediting period for the PoA and first CPA will be the date of complete submission to the UNFCCC /1//2/. The project start date for subsequent CPAs will be the first date of distribution under the CPA, which will not be earlier than the registration of the PoA /1/. The start date of subsequent CPAs shall be the first date of product distribution under the CPA /1/, while the crediting period start date shall be later than the date of distribution, or the date of inclusion in the PoA /1/, which is in accordance with the CDM Project Standard /14/.

As a small-scale PoA, each CPA must respect the small-scale thresholds defined in the CDM Project Standard /14/. High-efficiency cook stoves qualify as type (ii): energy efficiency project activities with maximum annual thermal energy savings of 180 GWh, while water filters qualify as type (iii): other project types with maximum annual emission reductions of 60,000 tonnes CO₂. As stated above, the PoA creates a framework for the technologies distributed within each CPA, but does not specify the exact make/model to be distributed. The inclusion criteria require that the technologies distributed under each CPA meet their respective small-scale size limit /1/.

The first CPA has decided to distribute Lifestraw Family water filters and EcoZoom Zoom Dura stoves. According to the calculations and parameter values reviewed in section 4.14, each water filter is expected to reduce emissions by 0.66 tonnes CO₂ per year /4/. The first CPA can therefore distribute up to 122,112 water filters without exceeding this threshold. This value will be adjusted annually based on on-going monitoring to ensure continued compliance with the small-scale threshold.

According to the calculations and parameter values reviewed in section 4.14, each cook stove is expected to save 1.04 tonnes of NRB annually /4/. Assuming a net calorific value (NCV) of 0.015 TJ/tonne (the IPCC default for biomass) and a conversion factor of 0.278 TJ/GWh, each cook stove will save 0.004 GWh of energy annually. The first CPA can therefore distribute up to 41,564 cook stoves without exceeding this threshold. This value will be adjusted annually based on on-going monitoring to ensure continued compliance with the SSC threshold.

Therefore, DNV confirms that, from an ex-ante perspective, the first CPA meets the small-scale requirements.

According to paragraph 7 of the Guidelines on the Assessment of Debundling for SSC Project Activities (Version 03) in Annex 13 of EB 54 /21/, an SSC project activity is exempt from performing a debundling check:

“if each of the independent subsystems/measures...included in one or more CDM project activities is no greater than 1% of the small scale thresholds defined by the applied methodology and the subsystems/measures are indicated in the PDDs to be each implemented at or in multiple locations (e.g. installed at or in multiple homes), then these CDM project activities are exempted from a debundling check and is not considered a component of a large scale activity.”

As described above, the PoA creates a framework for the technologies distributed within each CPA, but does not specify the exact make/model to be distributed. The inclusion criteria require that the technologies distributed under each CPA are no greater than 1% of the appropriate small-scale threshold /1/.



DNV can confirm that the first CPA meets the above definition. The emission reductions generated from each water filter is expected to be 0.66, while each stove is expected to generate energy savings of 0.004 GWh (note that these values will be updated based on the results of ongoing monitoring).. As each of these values are less than 1% of their respective small-scale thresholds, no debundling check is required /1//21/.

4.5 Demonstration of additionality for PoA

The PoA is confirmed to be a voluntary activity that would not have been implemented. While the host country does have programs targeting increasing HH water quality and other programs encouraging reduced HH energy consumption, there are no regulations requiring the distribution of water filters and/or cook stoves. This was confirmed during in-person interviews with the Rwandan DNA /57/ and the Environmental Health Desk within the Ministry of Health /55/ during the site visit.

As required by the “Standard for the demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” /16/, additionality of the PoA is demonstrated by establishing that in the absence of CDM, none of the implemented CPAs would occur. As discussed below, inclusion criteria require each CPA to demonstrate additionality using the “Guidelines for demonstrating additionality of small-scale project activities” /20/. Compliance with these guidelines demonstrates that they would not occur in the absence of CDM, and therefore, DNV confirms that the PoA is additional.

4.6 Demonstration of additionality of each generic CPA

Small-scale CPAs shall demonstrate additionality by a barrier analysis, according to the provisions of the Guidelines on the Demonstration of Additionality of Small Scale Project Activities /20/.” In accordance with paragraph 2 (c) of this guideline, “documentation of barriers...is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list is comprised of inter alia; project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises and where the size of each unit is no larger than 5% of the small-scale CDM thresholds /20/. The first CPA has demonstrated these three criteria as follows:

1. Isolated units are distributed
 - (a) As demonstrated by the manufacturer’s specifications /42//37/, the technology distributed under this project consists of isolated units.
2. Users of the technology are households or communities or SMEs
 - (a) As stated in the CPA-DD /2/, the target population is HHs within the CPA region. DNV reviewed the product specifications, which demonstrate that the technologies are meant for HH use.
3. The size of each unit is no larger than 5% of the small-scale CDM threshold
 - (a) As demonstrated in section 4.4, each individual unit distributed under the CPA must be less than 5% of the appropriate small-scale CDM threshold.



As the first CPA meets these three criteria, DNV can confirm that it is automatically additional and not required to provide further documentation of barriers. Additionality - Conclusion

The demonstration of additionality of typical CPAs to be included to the PoA is in accordance with section A of the PoA Standard /16/, and it is demonstrated that in the absence of CDM, none of the CPAs would occur.

The following eligibility criteria ensure that a CPA meets the conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as described above (refer to section 1.1 for the complete list of eligibility criteria).

- Isolated units are distributed
 - This is required by inclusion criterion #14 (water filters) and #20 (for cook stoves).
- Users of the technology are households or communities or SMEs
 - This is required by inclusion criterion 6.
- The size of each unit is no larger than 5% of the small-scale CDM threshold
 - This is required by inclusion criterion #14 (water filters) and #20 (for cook stoves).



4.7 Eligibility criteria for including CPAs to the PoA

The eligibility criteria for including CPAs are in accordance with section B of the “Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities” /16/.

#	Type	Criterion	Documentation & Assessment
1)	Geographical Boundary	Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages) within Rwanda.	Required Documentation: The boundary will be stated in the CPA DD and checked by the DOE. Documentation for first CPA: The boundary of the first CPA is the Rubavu District in the Western Province of the Republic of Rwanda /2/. During the site visit, DNV confirmed that this district is located in Rwanda, and therefore confirms that the first CPA meets the criterion.
2)	Avoid Double Counting of CPAs	All CPAs will be owned / operated / managed by the CME, ensuring that the operator is aware of and agrees that the CPA is included in the PoA and that all emission reduction benefits are exclusively assigned to this PoA.	Required Documentation: Statement by CPA Implementer in each CPA-DD. Documentation for first CPA: As stated in the first CPA-DD /2/, the CPA Implementer is the CME. DNV thus confirms that the first CPA meets the eligibility criterion.
3)	Avoid Double Counting of Technology	Each technology distributed by a CPA will contain a unique identification number	Required Documentation: Unique barcodes attached to each technology will be traceable through the CME database and will identify which measure, CPA, and POA it is attached to, and the date of installation. Documentation for first CPA: DNV observed the distribution of project technologies for the first CPA /59/, and spot-checked a sample of the technologies distributed, and can confirm that they contained a unique barcode. DNV thus confirms that the first CPA meets the eligibility criterion
4)	Performance Specification	All technologies distributed shall receive approval from the host country government, if required,	Required Documentation: Approval letter from appropriate government agency



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		and will comply with criterion #12 (for water filters) and/or criterion #21 (for cook stoves).	Documentation for first CPA: The first CPA has provided letters of approval from the Rwandan Bureau of Standard for the LifeStraw /44/ and Ecozoom /43/ products that will be distributed. DNV thus confirms that the first CPA meets the eligibility criterion.
5)	Start Date	Each CPA must confirm that its start date is not prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The date of webhosting of the CDM-PoA-DD is no later than August 2, 2012.	Required Documentation: The CME database will be reviewed to ensure that no products for a CPA were distributed prior to 2 August 2012. Documentation for first CPA: DNV reviewed the CME database during the site visit /54/ and can confirm that no products that are linked to the first CPA were distributed prior to 2 August 2012. DNV thus confirms that the first CPA meets the eligibility criterion.
6)	Additionality – Target Group	End-users receiving project technologies are households or communities or Small and Medium Enterprises (SMEs). CPA shall define the metric for determining the socio-economic status of the end-user, if HH or communities are targeted, or will define the type of SME targeted.	Required Documentation: Section A.3 of the CPA-DD shall provide the following: - reference to national or international standards for determination of socio-economic status, if HH or community is targeted. - statement as to type of establishments targeted, if SMEs are targeted. Manufacturers specifications or literature demonstrating the target group for the technology, will be provided to support the statement in section A.3. Documentation for first CPA: As stated in section A.3 of the CPA-DD, the target group is households in the CPA boundary. The socioeconomic status of each household will be defined relative to the Rwandan Ubudehe categorization, which classifies households into one of six categories, including: 1. Umutindi nyakujya (those in extreme poverty) 2. Umutindi (the very poor) 3. Umukene (the poor) 4. Umukene wifashije (the resourceful poor)



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			5. Umukungu (the food rich) 6. Umukire (the money rich) The CME signed an MOU with the Rwandan Ministry of Health /11/, stating that the CPA will target households in level 1 (Umutindi nyakujya) and level 2 (Umutindi). As the Rwandan MOH has accepted use of the Ubudehe categorization, DNV concludes that it is an acceptable metric to track socio-economic status. DNV reviewed the product specifications for the Ecozoom /42/ and Lifestraw /37/, and can confirm that they are intended for household use. Thus, DNV confirms that the first CPA meets the eligibility criterion
7)	LSC	An LSC must be conducted that is appropriate for the region and target group of the CPA, and that meets host country and CDM requirements.	Required Documentation: LSC report - Unless otherwise required by the host country, a CPA may reference an LSC from a previous CPA, if the LSC is from the same region and includes the target group. Documentation for first CPA: DNV reviewed the LSC report /5/ for the first CPA, and can confirm that it meets host country /45/ and CDM requirements (this is described in detail in the first CPA-DD validation report). Thus DNV confirms that the first CPA meets the eligibility criterion.
8)	EIA	Each CPA must reference an Environmental Impact Assessment approval that is appropriate for the region and technology, or cite relevant regulations that exempt the project proponent from conducting an EIA.	Required Documentation: EIA approval or waiver, or relevant national regulation demonstrating that an EIA is not required. Unless otherwise required by the host country, a CPA may reference an EIA received from a previous CPA, if the EIA is in the same region and utilizes the same technology. Documentation for first CPA: Ministerial order N0042008 establishes the list of project types that are required to conduct an EIA /45/. Water filters and cook stove projects are not included on this list and therefore an EIA is not required. However, as part of the LoA process, the DNA requires the project to be submitted to RDB for review and confirmation that the project will not have a negative environmental impact. The project received an EIA clearance letter on 5 September 2012 /52/. DNV thus confirms that the first CPA meets the eligibility criterion.
9)	ODA	The CME shall confirm that there is no public funding from an	Required Documentation: Statement by CME in CPA-DD that there is no public funding, or attestation from Annex I party



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		Annex I party. If funding is received from an Annex I party, the donor shall provide confirmation that this funding is not a diversion of official development assistance (ODA).	that funding is not a diversion of ODA. Documentation for first CPA: DNV reviewed the CPA-DD /2/ and can confirm that the CME attests that there is no public funding used for the CPA. DNV thus confirms that the first CPA meets the eligibility criterion.
10)	Distribution Method	Project technologies are directly distributed to end-users	Required Documentation: The CPA-DD specifies the distribution method in section A.3. Documentation for first CPA: According to section A.3 of the CPA-DD /2/, project technologies will be distributed at a centralized distribution point. DNV thus confirms that the first CPA meets the eligibility criterion.
11)	Sampling Requirements	Each CPA must follow the sampling guidelines as described in section B.7.2 (of the PoA-DD).	Required Documentation: The monitoring plan in the CPA-DD follows the approved monitoring plan in the PoA-DD Documentation for first CPA: DNV reviewed the monitoring plan in the CPA-DD /2/ and can confirm that it follows the monitoring plan in the PoA-DD /1/, and that the monitoring plan in the PoA-DD meets all CDM requirements /17/. DNV thus confirms that the first CPA meets the eligibility criterion.
Criteria specific to AMS-III.AV			
12)	AMS-III.AV Applicability Condition	Zero energy water purifiers are distributed that achieve water quality that meets the “protective” performance target specified by WHO (2011).	Required Documentation: Third party evaluation of filter technology and/or manufacturer attestation and/or certification by host government authority. Documentation for first CPA: DNV reviewed the product specifications /37/ and can confirm that the water purifiers distributed under the first CPA are gravity fed and do not require energy. Third-party studies shall be referenced to demonstrate compliance with the protective performance target. The protective performance target is defined by a 2 log ₁₀ reduction of bacteria, a 3 log ₁₀ reduction of viruses and a 2 log ₁₀ reduction of protozoa /34/. Several independent studies have been conducted on the LifeStraw Family water filter that is distributed under this project activity, and all have found that the performance exceeds the WHO’s protective target. Specifically, a study conducted by the



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			University of Arizona Department of Soil, Water and Environmental Science /35/ found log ₁₀ reductions exceeded 6 logs E. coli, exceeded 5 logs for MS-2 virus, exceeded 5 logs for Rotavirus SA-11 and exceeded 4 logs for Cryptosporidium. This exceeds the WHO protective criteria. Furthermore, a separate study of the efficacy of the LifeStraw Family water filter conducted by independent experts, and published in a peer-reviewed journal /41/, found average log ₁₀ reductions exceeded 6 logs (99.9999%) of the test organism for bacteria, 4 logs (99.99%) of the test organism for virus, and 3 logs (99.9%) of the test organism for protozoan cysts. These results also exceed the WHO protective target. Therefore, DNV can confirm that CPAs distributing Lifestraw Family water filters exceed the protective performance target specified by the methodology. The first CPA provides reference to the Arizona Department of Soil, Water and Environmental /35/ to demonstrate compliance with this requirement.
13)	AMS-III.AV Applicability Condition	Project technologies are point-of-use or point-of-entry treatment systems	Required Documentation: Manufacturer specifications or product information sheets. Documentation for first CPA: DNV reviewed the product specifications for the Lifestraw water filter /37/ and can confirm that it is a point of use treatment system. DNV thus confirms that the first CPA meets the eligibility criterion.
14)	AMS-III.AV Applicability Condition	Prior to implementation of the project activity, a public distribution network of safe drinking water does not exist within the CPA total project area, and any SDW is produced by consumers using POU or POE water purifiers. The CPA total project area is defined by the project proponent to be households within a delineated geographical boundary within a country, minus those households that have running water within their households. Surveys will	Required Documentation: Government reports and/or surveys will be provided, demonstrating that a public distribution network of safe drinking water does not exist in the CPA region. Documentation for first CPA: Official government data from the DHS 2010 show that 4.5% of household have access to a public distribution system /32/. DNV cross-checked this information during the site visit, and can confirm that no HHs in the verification sample had access to a public distribution system. To ensure that emission reductions are conservatively stated, the CPA will monitor the fraction of project HHs that have access to the public distribution network, and will discount emission reductions by this percentage /1/. DNV thus confirms that the CPA meets the inclusion criterion.



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		establish the proportion of households that have running water, and are therefore excluded from the total CPA project area.	
15)	AMS-III.AV Applicability Condition	In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.	Required Documentation: Each CPA shall specify the following: 1. Each water filter that is distributed is logged in an electronic database that records the time and date of distribution, the name of the recipient, the number of people in their family, the location of the house by village, district and/or GPS coordinates, and a picture of each recipient. 2. Each distribution of the water filter will be accompanied by an education campaign, describing how the unit is used, maintained, and how to identify if a repair or replacement is needed, and how to obtain such repair/replacement. 3. When a repair or replacement is needed, the water filter recipient will bring their old filter to a local repair/replacement facility managed by DelAgua. In order to receive a new or repaired filter, the recipient must provide their old unit. 4. A new or repaired filter is issued to the recipient, and their contact information and date of re-issuance is recorded in the same electronic database. 5. The old filter is repaired, recycled, or disposed of safely, such that it will not be burned or pollute locally. Documentation for first CPA: DNV can confirm that these measures are sufficient to demonstrate compliance with the requirement. The filters become clogged from use as they reach the end of their useful lifetime, making it impossible for water to pass through. The reduced flow-rate provides a signal to the end-users that the filter must be replaced. The distribution of the LifeStraw Family water filter will be associated with information on how to obtain a replacement filter from a local repair/replacement facility. These facilities will be managed by VFG S.A., ensuring that replacement filters are of comparable quality. Filters that are in need of replacement will be identified based on calculation of the expected useful lifetime of each filter. Ongoing monitoring will ensure that emission reductions are not claimed for filters that are in operation longer than their useful lifetime. For instance, if 10 percent of units surveyed during ongoing monitoring are found to be past their useful lifetime, then 10% of all emission reductions will be discounted.



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			DNV can further confirm that the first CPA is designed to implement the 5 measures identified above /2/.
16)	AMS-III.AV Applicability Condition	Prior to the start of the crediting period, it will be assessed whether the CPA will be: (Case 1) implemented in rural areas of countries with proportion of rural population using an improved drinking-water source equal to or less than 60% confirmed by option ii: Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; or (Case 2) implemented in areas not included in Case 1.	Required Documentation: Each CPA shall select one of the following options: (i) Proportion of populations using an improved drinking-water source for the most recent year for which data is available from WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation shall be used (<http://www.wssinfo.org/data-estimates/table/>) for this purpose. Definition of improved and unimproved drinking water source shall be as per the information provided by JMP; OR (ii) Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; (iii) Using survey methods (use 90/10 confidence/precision for sampling) Documentation for first CPA: The first CPA has selected option (ii). As described in the CPA-DD /2/, the PP commissioned a study by the London School of Hygiene and Tropical Medicine, led by Dr. Thomas Clasen. The study focused on three villages in the region of the PPs baseline study that were selected to be representative of the entire CPA region, and collected water samples from each HH in the villages. A total of 562 samples were collected. During the site visit, DNV confirmed with local experts that the villages in the LSHTM study are representative of the baseline survey region /55/. The 562 samples were assayed for thermotolerant coliforms (TTC), a WHO-approved indicator of fecal contamination /34/ using the membrane filtration method in accordance with the Standard Methods /33/. The results were compared to the Rwanda Standard for Potable Water /49/, and it was found that 81.1% of households did not meet the Rwandan government standard, and therefore the region can be considered Case 1. DNV reviewed the raw data and can confirm that the results met 90/10 confidence/precision. As the LSHTM team is well respected in the field of waterborne disease and impact assessment, and the study design meets CDM requirements for the determination of unbiased values, DNV accepts the study results and confirms that the first CPA is Case 1. Thus DNV confirms that the first CPA meets the eligibility criterion.
17)	SSC Limit	If water filters are distributed, the CPA shall demonstrate that it meets Type III SSC threshold of	Required Documentation: Emission reduction estimates following the calculations described in section B.6.3 of the PoA-DD.



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		60,000 tCO ₂ e per year.	Documentation for first CPA: The first CPA is estimated to generate 23 133 tCO ₂ e per year /2//4/ from water filters. DNV can confirm that these reductions are accurately and conservatively calculated in accordance with the PoA and AMS-III.AV (version 2) requirements.
18)	Debundling Check	Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	Required Documentation: Calculation using debundling equations provided in PoA-DD. Documentation for first CPA: DNV has reviewed the calculations for the first CPA /2//4/ and can confirm that each water filters results in less than 600 tonnes of emission reductions (or 1% of the small-scale threshold)
19)	Additionality – Size Threshold	Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds.	Required Documentation: Ex-ante estimates shall be provided following the procedure outline in section B.1 of the PoA-DD, with parameter values that are appropriate for the CPA region. Documentation for first CPA: DNV has reviewed the calculations for the first CPA /2//4/ and confirmed that each water filter is expected to generate 0.66 tonnes of emission reductions annually; this is less than 3000 tonnes of emission reductions (or 5% of the small-scale threshold).
Criteria specific to AMS-II.G			
20)	Applicability Condition – AMS-II.G	Appliances displace use of non-renewable biomass.	Required Documentation: 1. Reference to surveys or government statistics showing that biomass is consumed in the baseline. 2. $f_{NRB,y}$ value shows that biomass consumption is considered non-renewable. Documentation for first CPA: The first CPA is located in Rwanda, where the Demographic and Health Survey 2010 /32/ shows that 98% of households use biomass for cooking. Furthermore, the default $f_{NRB,y}$ value /24/, of 98%, demonstrates that this biomass consumption is considered non-renewable. DNV thus confirms that the first CPA meets the eligibility criterion.
21)	Applicability	Project technologies include	Required Documentation:



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	Condition – AMS-II.G	single pot or multi pot portable or in-situ cook stoves with specified thermal efficiency of at least 20%.	Third party reports or manufacturer specifications. Documentation for first CPA: DNV reviewed the manufacturer's specifications for the first CPA /42/, which show that the EcoZoom stove is a single pot cook stove with an expected efficiency of 38.1%. DNV thus confirms that the CPA meets the eligibility criterion.
22)	Applicability Condition – AMS-II.G	NRB has been used since 31 December 1989.	Required Documentation: Reference to 3 rd party literature demonstrating that NRB has been used since 31 December 1989. Documentation for first CPA: According to 3 rd party, peer reviewed, published literature /46/, wood consumption has exceeded sustained wood removals since at least 1960. DNV thus confirms that the first CPA meets the eligibility criterion.
23)	SSC Limit	If efficient cook stoves are distributed, the CPA shall demonstrate that it will remain under the Type II SSC energy savings threshold of 180 GWh per year.	Required Documentation: Manufacturing specifications, demonstrating product efficiency improvement and ex-ante emissions reduction calculations according to the calculations described in section B.6.3 of the PoA-DD. Documentation for first CPA: DNV has reviewed the calculations for the first CPA /2//4/ which demonstrate that the energy savings expected from cook stoves is 0.004331 GWh per stove, which is less than the Type II SSC energy savings threshold. The CPA can therefore distribute up to 41,564 stoves without exceeding the Type II energy savings threshold (though this value will fluctuate based on monitored parameters). DNV thus confirms that the CPA meets the eligibility criterion.
24)	Debundling Check	Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	Required Documentation: Manufacturers specifications or product sheets, demonstrating product efficiency improvement, and ex-ante debundling calculations following the procedure described in Section B.7.3 of the PoA-DD Documentation for first CPA: DNV reviewed the manufacturer's specifications for the Ecozoom stove distributed under the first CPA /42/ and can confirm that the efficiency is 0.381. Based on this value, the expected energy savings per stove is 0.004331 GWh annually, which is less than 1.8 GWh savings /2//4/ (or 1% of



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			the small-scale threshold).
25)	Additionality – Size Threshold	Project technologies consist of isolated units that are no larger than 5 percent of the small-scale CDM thresholds)	Required Documentation: Ex-ante estimates shall be provided following the procedure outlined in section B.1 of the PoA-DD, with parameter values that are appropriate for the CPA region. Documentation for first CPA: DNV reviewed the manufacturer's specifications for the Ecozoom stove distributed under the first CPA /42/ and can confirm that the efficiency is 0.381. Based on this value, the expected energy savings per stove is 0.004331 GWh annually, which is less than 9 GWh savings (or 5% of the small-scale threshold).



4.8 Application of methodologies

CPAs implemented under the PoA will use the approved baseline and monitoring methodologies AMS-III.AV, Low greenhouse gas emitting water purification systems (version 04) /18/ and AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass (version 05) /19/. The following combinations of methodologies are permissible in CPAs implemented under this PoA:

- AMS-III.AV in isolation
- AMS-II.G in isolation
- AMS-III.AV and AMS-II.G in combination

As the combination of technologies and methodologies may vary across CPAs of the PoA, the CME must demonstrate that the implementation of the activities is integrated through the design of the programme. The objective of the program is to reduce HH energy consumption and improve health. Water filters eliminate HH consumption of biomass and/or fossil fuels for boiling water, while delivering safe drinking water and reducing indoor air pollution. High-efficiency cook stoves reduce HH consumption of biomass and/or fossil fuels for cooking purposes, while reducing indoor air pollution. Further, the program design, including distribution and monitoring framework, is identical for each measure. As the implementation of activities is integrated through the design of the programme, this combination is eligible under the PoA Standard /16/.

Cross-effects can exist between cook stoves and water filters if a single household receives a water purification technology distributed under AMS-III.AV and an improved cook stove distributed under AMS-II.G and if energy consumption for water treatment is not separated from energy consumption for cooking. Following the PoA Standard, the CME proposed a method to account for cross effects using the “Procedures for requests to the executive board for deviation from an approved methodology” /27/ so as to ensure that the calculation of emission reductions is accurate. This method is as follows (note that all parameter values are specific to the first CPA):

Based on a literature review, the CME has determined the baseline per capita total consumption to be 377.6 kg biomass per year per person /31/ (Step 1). A survey conducted by the CME found 529.25 liters of water is consumed annually per person /1//7//8/ (Step 2). The specific energy consumption (SEC) required to boil one liter of water is calculated according to AMS-III.AV /18/, which requires the project participant to establish the type of baseline water boiling system. The same survey by the CME that estimated annual drinking water consumption found the baseline water boiling system to be a conventional system lacking an improved combustion air supply mechanism and flue gas ventilation system. Therefore the assumed baseline efficiency according to AMS-III.AV is 10%, and the SEC is calculated as 3574.8 kJ/L (Step 3). Boiling all drinking water would require 0.0019 TJ annually per person (Step 4), or 126.13 kg of biomass based on the IPCC default net calorific value of 0.015 TJ/tonne (Step 5) /38/. However, the survey conducted by the CME also found that only 38.40% of the population boils water in the baseline, while the remaining 61.60% do not boil water for a variety of reasons, including lack of access to wood and lack of awareness of the need to treat water /7/. Taking this into account, an average of 203.23 liters of water is boiled per person, requiring 48.43 kg of biomass (Step 6). Subtracting biomass consumption for water boiling (48.43 kg) from total consumption (377.6 kg) yields 329.17 kg of biomass consumed per person for cooking (See Step7). This approach is, in DNV’s opinion, adequate



as it subtracts the estimated amount of biomass that is used for boiling water (determined from the results of survey on actual water use and actual share of water being boiled prior to be used) from the total amount of biomass used by a household (as determined from a literature review).

Therefore, in the first CPA, emission reductions from cook stoves will be quantified according to AMS-II.G using baseline biomass consumption of 329.17 kg per person, while emission reductions related to water filters will be quantified according to AMS-III.AV based on per capita water consumption (529.25 liters), for which biomass consumption has been removed from total consumption. Per capita consumption will be translated to household consumption based on the average number of household occupants, which will be monitored annually.

DNV submitted the deviation request form on 11 December 2012 /51/ and received approval from the Executive Board on 10 April 2013 /30/. This approval is contingent on validation of the “correct application of AMS-II.G and AMS-III.AV, as well as the appropriateness of any ex-ante input values required by the application of the proposed deviation.” DNV’s review of the application of each methodology and the ex-ante input values is below.

4.9 Management system of the PoA

The management system of the proposed PoA is in accordance with the “Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities” /16/. According to this standard, the CME must develop and implement a management system that includes the following:

- A clear definition of roles and responsibilities of personnel involved in the process of CPA inclusions
 - The PoA-DD specifies that the Program Director of DelAgua shall be responsible for the review/approval of new CPA inclusions. DNV has reviewed the CV of the current program director /47/ and can confirm that he possess the capabilities necessary for the role.
- Records of arrangements for training and capacity development for personnel
 - The CME is responsible for training any contractors used during distribution, education and monitoring. DNV reviewed the training manuals for each activity /9/, and observed the training of contractors for the first CPA /58/ and can confirm that the training is sufficient to ensure adherence to the monitoring plan.
- Procedures for technical review of inclusion of CPAs:
 - All CPAs will be owned and managed by the CME directly/1/. Documentation required for CPA inclusion will be developed by CME staff, and reviewed/approved by the Program Director. DNV has reviewed the CV of the Program Director /47/, as well as previous DelAgua experience implementing carbon projects /48/, and is confident that the procedures are adequate to ensure that CPAs will be properly included.
- A procedure to avoid double counting of CPAs
 - All CPAs shall be implemented by the CME /1/, thus ensuring that the operator is aware that the water filter and/or high efficiency stove distribution is



included in this PoA, and avoiding double counting of CPAs between different projects/PoAs.

- Measures for continuous improvement of the PoA management system
 - The Program Manager is responsible for ensuring that any CARs/CLs/FARs raised during verifications are effectively addressed /1/.
- Any other relevant elements
 - DNV can confirm that the management system provides comprehensive guidelines for operation of the PoA.

4.10 Environmental impacts

Environmental impacts will be assessed at the CPA level /1/. A single EIA may be used for several CPAs, if the EIA is in the same region and utilizes the same technology.

4.11 Application of selected baseline and monitoring methodology(ies) by each generic CPA

The assessment of the generic CPA's compliance with the applicability criteria of AMS-III.AV, Low greenhouse gas emitting water purification systems (version 04) are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report.

The following eligibility criteria (refer to section 1.1 for the complete list of eligibility criteria) ensure that a CPA meets the conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as described above (DNV's review of the evidence provided can be found in section 4.7):

Applicability Criteria	Eligibility Criteria
AMS-III.AV	
1. Water purification technologies involve point-of-use or point-of-entry treatment systems	Eligibility criterion #13 requires CPAs to provide manufacturers specifications or product information sheets will be provided by each CPA to demonstrate compliance with the criterion
2. Water treatment systems are distributed for residential or institutional applications	Eligibility criterion #6 requires CPAs to provide manufacturers specifications or literature to demonstrate the target group for the technology.
3. Prior to the implementation of the project activity, a public distribution network of safe drinking water (SDW) does not exist within the total project area.	Eligibility criterion #14 requires CPAs to provide government reports and/or surveys, demonstrating that a public distribution network of safe drinking water does not exist in the CPA region. HHs that are found to have access to a public distribution network of safe drinking water prior to CPA inclusion will be excluded from the total project area of the CPA.
4. The project technology shall achieve compliance with "protective" performance target as per WHO (2011) or a comparable national standard or guideline.	Eligibility criterion #12 requires CPAs to provide third party evaluation of filter technology and/or manufacturer attestation and/or certification by host government authority shall be provided by each CPA.
5. In cases where the lifespan of the technology is shorter than the crediting period of the project activity, there must be documented measures in place to ensure end-users have access	According to eligibility criterion #15, the following steps shall be followed by each CPA. 1. Each water filter that is distributed is logged in an electronic database that records the time and date of distribution, the name of the recipient, the number of people in their family,



to replacement purification systems of comparable quality	the location of the house by village, district and/or GPS coordinates, and a picture of each recipient. 2. Each distribution of the water filter will be accompanied by an education campaign, describing how the unit is used, maintained, and how to identify if a repair or replacement is needed, and how to obtain such repair/replacement. 3. When a repair or replacement is needed, the water filter recipient will bring their old filter to a local repair/replacement facility managed by DelAgua. In order to receive a new or repaired filter, the recipient must provide their old unit. 4. A new or repaired filter is issued to the recipient, and their contact information and date of re-issuance is recorded in the same electronic database. The old filter is either repaired, recycled, or disposed of safely, such that it will not be burned or pollute locally.
6. The project activity will determine the proportion of the population using an improved drinking water source	Eligibility criterion #16 requires each CPA to provide the following: 1. The definition of an improved drinking water source shall be defined based on relevant government standards, or the JMP definition. 2. Each CPA shall reference official data, such as publicly available statistical data from a government agency, or an independently commissioned study by an international organization or university, or a survey commissioned by the CME that meets 90/10 confidence/precision.
AMS-II.G	
1. Appliances displace use of non-renewable biomass.	Inclusion criterion #20 requires CPAs to provide the following evidence; 1. Reference to surveys or government statistics showing that biomass is consumed in the baseline. 2. $f_{NRB,y}$ value shows that biomass consumption is considered non-renewable.
2. Project technologies include single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.	Inclusion criterion #21 requires CPAs to provide third party reports or manufacturer specifications to demonstrate compliance with the applicability criterion
3. NRB has been used since 31 December 1989.	Inclusion criterion #22 requires CPAs to provide reference to 3 rd party literature demonstrating that NRB has been used since 31 December 1989.

4.12 Project boundary of each generic CPA

The project boundary includes the physical, geographical site of the water filter and/or high-efficiency cook stove installed by the project activity. The GHGs included in the project boundary are limited to CO₂. The identified boundary and selected sources and gases are justified for the generic CPA /1/, as determined through a review of the PoA-DD and through observations made during the site visit. The validation of the generic CPA did not reveal other greenhouse gas emissions occurring within the proposed CPA boundary as a result of the implementation of the proposed project activity, which are expected to contribute more than



1% of the overall expected average annual emission reduction, which are not addressed by AMS-III.AV, Low greenhouse gas emitting water purification systems (version 04) or AMS-II.G, Energy efficiency measures in thermal applications of non-renewable biomass (version 5).

	GHGs involved	Description
Baseline emissions	CO ₂	Emissions associated with the consumption of NRB and fossil fuels for the purpose of treating water. Emissions associated with the consumption of NRB for the purpose of cooking.
Project emissions	CO ₂	Emissions associated with the consumption of NRB for cooking. No project emissions associated with water filters.
Leakage	CO ₂	Use/diversion of NRB saved under the project activity by non-project households/users that previously used renewable energy sources must be assessed. Leakage is considered through use of a default factor of 0.95, the default value specified in AMS-I.E, as allowed in AMS-II.G /19/ and AMS-III.AV /18/

4.13 Baseline scenario identification and description for each generic CPA

According to AMS-II.G /19/, the baseline is assumed to be the use of NRB for cooking purposes. This baseline scenario is correctly identified in the description of the generic CPA /1/. As the baseline scenario is specified in the methodology, no assumptions or data were necessary.

According to AMS-III.AV /18/, it is assumed that fossil fuel or NRB is used to boil water as a means of water purification in the absence of the project activity. Each CPA shall specify the baseline fuel in use in the CPA region prior to inclusion, through reference to 3rd party literature or surveys. For instance, the first CPA is located in Rwanda, where the Demographic and Health Survey 2010/32/ reports that 98% of households use biomass for cooking. According to the default NRB values /24/, 98% of biomass use in Rwanda is considered non-renewable. Therefore, the baseline for CPAs in Rwanda is the use of NRB to boil drinking water.

All the assumption and data used by the project participants are listed in the PoA-DD and/or supporting documents. All documentation relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA-DD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD.

4.14 Algorithms and/or formulae used to determine emission reductions of each generic CPA

4.14.1 Explanation of methodological choices

AMS-III.AV



Baseline Emissions

Baseline emissions associated with water filters will be calculated according to the following three equations:

Equation 1:

$$BE_{y, \text{water_treatment}} = BE_{y,i} * N_{y,i}$$

Where:

$BE_{y, \text{water_treatment}}$	=	Baseline emissions during the year y in (tCO ₂ e). <i>Calculated</i>
$BE_{y,i}$	=	Baseline emissions per water filter of type i, <i>calculated as shown in equation 2 below</i>
$N_{y,i}$	=	Number of project devices of type i operating in year y, <i>monitored</i>

Equation 2:

$$BE_{y,i} = QPW_y * SEC * f_{NRB,y} * EF_{\text{projected_fossil fuel}} * 10^{-9} * (1 - SDW_{\text{frac}}) * X_{\text{BOIL}} * BS * OC * OF$$

Where:

$BE_{y,i}$	=	Baseline emissions from filters of type i during the year y in (tCO ₂ e). <i>Calculated.</i>
QPW_y	=	Quantity of purified water (liters) in year y. <i>Monitored via surveys</i>
SEC	=	Specific energy consumption required to boil one liter of water (kJ/L). <i>Calculated (see equation 3 below)</i>
$f_{NRB,y}$	=	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable as per the relevant provisions of AMS-I.E “Switch from Non-Renewable Biomass for Thermal Applications by the User”. <i>Default value defined ex-ante</i>
$EF_{\text{projected_fossil fuel}}$	=	Emission factor of displaced fuel. <i>Default value defined ex-ante</i>
SDW_{frac}	=	Proportion of CPA population served by public safe drinking water distribution system, <i>monitored.</i>
X_{boil}	=	The proportion of total population for which the common practice of water boiling is or would have been water boiling. <i>Determined at the CPA level for Case 2 CPAs only.</i>
BS	=	Fraction of population for which the baseline fuel displaced is biomass, <i>monitored.</i>
$OC_{y,i}$	=	Operational check, or fraction of filters of type i distributed that are operational in year y, <i>Monitored.</i>
OF	=	Fraction of the monitoring period that the stove was deployed, <i>monitored.</i>

Equation 3:

$$SEC = [WH * (T_f - T_i) + 0.01 * WHE] / \eta_{wb}$$

Where:

SEC	=	Specific energy consumption required to boil one liter of water
WH	=	Specific heat of water (kJ/L °C). <i>Default value</i>
T_f	=	Final temperature (°C)
T_i	=	Initial temperature of water (°C)
WHE	=	Latent heat of water evaporation (kJ/L).
η_{wb}	=	Efficiency of the water boiling systems being replaced



Project Emissions

According to AMS-III.AV /18/, project emissions must be considered if operation of the water purification system involves consumption of fossil fuels and/or electricity. As required by inclusion criterion #12, water filters distributed under the PoA will require zero-energy. Therefore, project emissions = 0.

Leakage Emissions

AMS-III.AV /18/ requires that leakage be calculated in accordance with AMS-I.E. According to AMS-I.E /29/, leakage from the use/diversion of NRB saved under the project activity by non-project households/users that previously used renewable energy sources must be assessed. This assessment can be done via survey, or by assuming a default leakage factor of 0.95. The project has elected to apply the default leakage factor.

Based on these equations and parameter values for the first CPA (parameter values are reviewed below), the calculation of emission reductions from water filters is as follows:

Variable	Value	Unit
WH, the specific heat of water	4.186	kJ/L °C
T _f , the final temperature of water	100	°C
T _i , the initial temperature of water	20	°C
WHE, the latent heat of water evaporation	2260	kJ/L
η _{wb} , the efficiency of the water boiling system being replaced	10%	Fraction
SEC	3,574.8	kJ/L °C
QPW _{pp} , the per capita quantity of purified water	1.45	liters/person/day
HH _{size} , the average HH size	5.41	person/household
QPW	2,863	liters/filter/year
f _{NRB,y} , the fraction of biomass used in the absence of the project activity in year y that can be established as non-renewable biomass.	98%	fraction
EF _{projected_fossilfuel} , the emission factor for the projected fossil fuel consumption in the baseline, when NRB is displaced.	81.60	CO ₂ /TJ
SDW _{frac} , the proportion of CPA population served by a public distribution network of safe drinking water.	0%	Fraction
X _{boil} , the proportion of total population for which the common practice of water treatment is or would have been water boiling. (This parameter is only relevant for Case 2 CPAs.	100%	Fraction
BS, the fraction of population for which the baseline fuel is biomass	100%	Fraction
OF	100%	Fraction
OC, Fraction of water filters and/or stove units that are still in service	85%	Usage fraction
BE _{y,i}	0.6957	Tonnes CO ₂
PE _{y,i}	0	Tonnes CO ₂
LF, the leakage factor applied to account for increase in NRB use outside the project boundary	0.95	Fraction
Ly _i	0.03479	Tonnes CO ₂



ER_{y,i}	0.66	Tonnes CO₂
N _{y,i} , or the total number of filters of particular type that are distributed.	35,000	Water filters
Baseline	24,351	Tonnes CO₂
Project	0	Tonnes CO₂
Leakage	1,218	Tonnes CO₂
ER_{y, watertreatment}	23,133	Tonnes CO₂

AMS-II.G

CPAs will calculate emission reductions through application of the following equations:

$$ER_{y, \text{cook_stoves}} = ER_{y,i} * N_{y,i} \quad (\text{Equation 1})$$

Where:

ER _{y, cook_stoves}	=	Total emission reductions from cook stoves during the year y in (tCO ₂ e).
ER _{y,i}	=	Emission reductions per cook stove, calculated below.
N _{y,i}	=	Number of project devices operating per year, Monitored

$$ER = B_{\text{adj}} * NCV_{\text{biomass}} * EF_{\text{projected_fossilfuel}} \quad (\text{Equation 2})$$

Where:

ER _{y,i}	=	Emission reductions from cook stove model <i>i</i> per year (tCO ₂ e).
B _{adj}	=	Adjusted quantity of NRB that is saved in tonnes, after consideration of various discount factors. Calculated in Equation 3.
NCV _{biomass}	=	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne). <i>The IPCC default value for wood, 0.015 TJ/tonne, is used.</i>
EF _{projected_fossil fuel}	=	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO ₂ /TJ.

$$B_{\text{adj}} = B_{\text{NRB}} * OF * U * OC * BS \quad (\text{Equation 3})$$

Where:

B _{adj}	=	Adjusted quantity of NRB that is saved in tonnes, after consideration of various discount factors. Calculated.
B _{NRB}	=	Quantity of NRB that is saved in tonnes
U	=	Fraction of cooking that utilizes project cook stoves, monitored
OC _{y,i}	=	Operational check, or fraction of filters of type <i>i</i> distributed that are operational in year <i>y</i> , Monitored.
OF	=	Fraction of the monitoring period that the stove was deployed, <i>monitored</i> .
BS	=	Fraction of population for which the baseline fuel displaced is biomass, <i>monitored</i> .

$$B_{\text{NRB},y,i} = B_{y, \text{savings}} * f_{\text{NRB},y} \quad (\text{Equation 4})$$



Where:

$B_{NRB, y, i}$	=	Quantity of NRB that is saved in tonnes
$B_{y, savings}$	=	Quantity of woody biomass that is saved in tonnes. <i>Calculated below.</i>
$f_{NRB, y}$	=	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass. <i>Default values are used as published in EB 67 Annex 22 "Default Values for Fraction of Non-Renewable Biomass for Least-Developed Countries and Small Island Developing States"</i>

The methodology /19/ provides two methods for estimating the quantity of woody biomass that is saved. The quantity of woody biomass that is saved is calculated using option 2 as follows:

$$B_{y, savings} = B_{old} * (1 - \eta_{old} / \eta_{new, y}) \quad (\text{Equation 5})$$

Where:

$B_{y, savings}$	=	Quantity of woody biomass that is saved in tonnes. <i>Calculated below.</i>
B_{old}	=	Quantity of woody biomass used in the absence of the project activity in tonnes. Calculated as described below.
η_{old}	=	Efficiency of the systems being replaced. <i>Determined at the CPA level</i>
$\eta_{new, y}$	=	Efficiency of the system being deployed as part of the project activity in year y, as determined using the Water Boiling Test (WBT) protocol. <i>Determined at the CPA level.</i>

B_{old} is calculated as follows:

$$B_{old} = B_{old, PP} * HH_{size} * LF \quad (\text{Equation 6})$$

Where:

B_{old}	=	Quantity of woody biomass used in the absence of the project activity in tonnes. Calculated as described below.
$B_{old, PP}$	=	Per capita quantity of woody biomass used in the absence of the project activity in tonnes. Determined at the CPA level.
HH_{size}	=	Average household size in the CPA region. Monitored
LF	=	Leakage factor, fixed at .95

Based on these equations and parameter values for the first CPA (parameter values are reviewed below), the calculation of emission reductions from cook stoves is as follows:

Variable	Value	Unit
$B_{old, PP}$, or the per capita quantity of woody biomass used in the absence of the project activity in tonnes.	329.17	kg / PP / year
HH_{size} , or the average household size in the region	5.41	persons
LF , leakage factor	0.95	Leakage fraction
B_{old}	1.69	Tonnes CO ₂



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η_{old} , the efficiency of the systems being replaced.	10%	Fraction
$\eta_{new,y}$, or the efficiency of the system being deployed as part of the project activity in year y	38.1%	Fraction
$B_{y,savings}$	1.25	Tonnes CO ₂
$f_{NRB,y}$, the fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass.	98%	Fraction
B_{NRB}	1.22	Tonnes CO ₂
BS , the fraction of population for which the baseline fuel displaced is biomass,	100%	Fraction
OF , the Fraction of water filters and/or stove units that are still in service	85%	Fraction
U , the fraction of cooking that utilizes project cook stoves	100%	Fraction
$OC_{y,i}$, the fraction of filters of type i distributed that are operational in year y	100%	Fraction
$B_{adjusted}$	1.04	Tonnes CO ₂
$NCV_{biomass}$, the net calorific value of the non-renewable woody biomass that is substituted	0.015	TJ/tonne
$EF_{projected_fossilfuel}$, the emission factor for the substitution of non-renewable woody biomass by similar consumers.	81.60	CO ₂ /TJ
ER	1.27216	tCO ₂
N , the total number of devices of a particular type that are distributed.	35,000	cookstoves
$ER_{y,cookstoves}$	44525.76	Tonnes CO ₂

4.14.2 Parameters determined ex-ante

Parameters common to AMS-III.AV & AMS-II.G

The following parameters that are relevant for both AMS-II.AV and AMS-II.G, are determined ex-ante:

- 1 $EF_{projected_fossilfuel}$, the emission factor for the projected fossil fuel consumption in the baseline, when NRB is displaced, is fixed at 81.6 tCO₂/TJ. This is a default value specified in AMS-II.G /19/ and AMS-III.AV /18/.
- 2 LF , or the leakage fraction, is fixed at 0.95. This is a default value specified in AMS-II.G, as allowed in AMS-II.G /19/ and AMS-III.AV /18/.
- 3 $f_{NRB,y}$ is the fraction of biomass used in the absence of the project activity in year y that can be established as non-renewable biomass. CPAs shall fix this value based on the default values published in the “Default value of f_{NRB} for LDCs and SIDs” /24/ For instance, the $f_{NRB,y}$ value for the first CPA in Rwanda is 0.98.
- 4 η_{wb}/η_{old} is the efficiency of the baseline water boiling system / cook stove being replaced, and shall be fixed at the CPA level prior to inclusion. The value shall be established by one of the following three methods:
 - measured using representative sampling methods,
 - based on reference literature, or
 - a default value of 0.10 may be optionally used if the replaced device is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used.



The PP has conducted a baseline survey covering the Western Province of Rwanda /1//8//7/. The survey results found that 98% of HHs used conventional stoves lacking improved combustion air supply mechanisms and flue gas ventilation systems. The results meet the required 90/10 confidence/previous requirement. As described in section 3.2, DNV validated the baseline survey during the site visit, and can confirm that it was conducted in accordance with the sampling guidance. DNV further reviewed the raw data and calculations /7//8/, and can confirm that the results meet the required 90/10 confidence/precision. Therefore, all CPAs located entirely within the Western Province can apply a value of 0.1 for the efficiency of the baseline system.

AMS-III.AV

The following parameters that are relevant for AMS-III.AV are determined ex-ante:

- 1 $EF_{\text{projected_kerosene}}$, the emission factor for kerosene consumed in the baseline, is set at 71.9 tCO₂/TJ. This value is an IPCC default value /38/.
- 2 WH , the specific heat of water, is fixed at 4.186 kJ/L °C. This is a default value specified in AMS-III.AV /18/.
- 3 T_i is the initial temperature of water, set at 20 °C. This value is a default value specified by AMS-III.AV /18/.
- 4 T_f is the final temperature of water, set at 100 °C. This value is a default value specified by AMS-III.AV /18/.
- 5 WHE is the latent heat of water evaporation, set at 2260 kJ/L. This value is a default value specified by AMS-III.AV /18/.
- 6 X_{boil} is the proportion of the total population for which the common practice of water treatment is or would have been water boiling, and shall be fixed at the CPA level prior to inclusion. The value shall be established by reference to 3rd-party literature or via surveys conducted according to the sampling plan described below.
 - The PP has conducted a baseline survey covering the districts of the Western Province of Rwanda /1//8//7/. The survey results found that 74.34% of HHs either did boil or would have boiled their water. To determine this value, the PP administered a HH survey consisting of two questions. Respondents were asked if they treated drinking water, and if so, how. 57.25% of the population was found to treat water and 42.56% of those who treated water did so by boiling. To account for suppressed demand, as is allowed by the methodology /18/ and CDM guidance on suppressed demand /29/, the PP has applied the ratio of water boilers to water treaters ($42.56/57.25 = 0.7434$) to the entire population. The assumption is that HHs that do not currently treat water face a barrier that, if removed, would result in water treatment habits that are similar to the current population of water treaters.
 - As described in section 3.2, DNV validated the baseline survey during the site visit, and can confirm that it was conducted in accordance with the sampling guidance. DNV further reviewed the raw data and calculations /8/ and can confirm that the results meet the required 90/10 confidence/precision. Therefore, all CPAs located entirely within the Western Province of Rwanda (the region of this baseline study) can apply a value of 74.34% for X_{boil} .
- 7 IMP_{frac} , or the proportion of the population not using an improved drinking-water source, is established at the CPA level prior to inclusion via surveys that comply with



the sampling plan discussed in section 4.15. Based on the results, the CPA will be labeled as Case 1 (if IMP_{frac} is not less than 40%) or Case 2 (if IMP_{frac} is less than 40%) /18/. For CPAs located in Rwanda, an improved drinking-water source is defined as a water supply that meets/exceeds the Rwanda Standard for Potable Water /49/. For CPAs located in other countries, improved water supply will be defined by a relevant national standard or the JMP definition of improved if a national standard does not exist.

- The PP commissioned a study by the London School of Hygiene and Tropical Medicine (LSHTM), led by Dr. Thomas Clasen. The study focused on three villages in the region of the PPs baseline study that were selected to be representative of the entire CPA region, and collected water samples from each HH in the villages. A total of 562 samples were collected. During the site visit, DNV confirmed with local experts that the villages in the LSHTM study are representative of the baseline survey region /55/. The 562 samples were assayed for thermotolerant coliforms (TTC), a WHO-approved indicator of fecal contamination /34/ using the membrane filtration method in accordance with the Standard Methods /33/. The results found that 81.1% of households did not meet the Rwandan government standard, and therefore the region can be considered Case 1.
- DNV reviewed the raw data and can confirm that the results met 90/10 confidence/precision. As the LSHTM team is well respected in the field of waterborne disease and impact assessment, and the study design meets CDM requirements for the determination of unbiased values, DNV accepts the study results. Therefore, all CPAs located entirely within the Western Province or Rwanda (the region of the baseline study) can be assumed to have similar proportions of households using water that does not meet the Rwandan government standard, and can be considered Case 1.
Case 1/Case 2, or the determination of whether the CPA is located in a region where the proportion of the population using improved drinking water source is equal to or less than 60%, will be specified at the CPA level based on the value of IMP_{frac} parameter. If IMP_{frac} is not less than 40%, the CPA is Case 1; otherwise it is Case 2. As discussed above, IMP_{frac} for the first CPA is 81.1%, and therefore it is Case 1. As mentioned above, these results are representative of the Western Province, and therefore all CPAs located entirely within this area can be considered Case 1.

According to paragraph 18 of AMS-III.AV, an ex-ante survey is required to establish the Population serviced by the project equipment, the average volume of drinking water per person per day, and the proportions of NRB and fossil fuel. The PoA requires these parameters to be determined ex-ante, and also monitored after CPA inclusion (see QPWy, HHsize and BS, respectively). These parameters are described in section D.7.1 of the PoA-DD, and in section 4.15.1 of this report.

DNV verified the source of the ex-ante values above, and can confirm that the values applied above are accurate and reasonable.

AMS-II.G

The following parameters that are relevant for AMS-II.G are determined ex-ante.



- 1 NCV_{biomass} is the net calorific value of the non-renewable woody biomass that is substituted, set at .015 TJ/tonne biomass. This is a default value specified in AMS-II.G /19/.
- 2 CE, or an indication of whether cross-effects must be accounted for, will be determined at the CPA level prior to inclusion. If cook stoves and water filters are distributed under a CPA, then CE=1 and cross-effects must be accounted for. If only one technology is distributed under a CPA, then CE = 0 and cross-effects do not have to be accounted for.
- 3 B_{old,pp}, or the per capita quantity of woody biomass used in the absence of the project activity (kg), will be established at the CPA level based on reference to 3rd party literature or a survey conducted according to the sampling plan discussed below. For CPAs in Rwanda, the value is fixed at 377.6 kg per person, based on official data presented by the Energy Water and Sanitation Authority (EWSA) /31/. DNV reviewed the data presented in this report, which state that the average household has 5 people and uses 1888 kg of wood for cooking, or 377.6 kg per person.

4.15 Monitoring plan

The programme applies the monitoring methodology established in AMS-III.AV, Low greenhouse gas emitting water purification systems (version 04), and AMS-II.G (version 05).

Distribution under each CPA will target select regions within the host country and will be done in collaboration with local partners. For instance, the first CPA in Rwanda has partnered with the Ministry of Health (MoH), and will utilize MoH Community Health Workers (CHWs) for distribution and monitoring /2/. The CME shall train local partners on the proper use and maintenance of the project technologies, and also on delivery of the baseline and monitoring surveys. The initial distribution of technologies will occur either at a centralized location, where HH end-users will be trained en masse on proper use and maintenance, or at retail outlets, where end-users will be trained by retailers who have received the CME training. HH end-users will then provide the necessary contact details, including name, address and phone number, before receiving the project technologies, so that the CME partners can follow-up with an in-home demonstration on use and maintenance, so that the entire HH receives the training. This initial follow-up will occur within a day of the initial distribution. Follow-up visits will then be conducted /9/, to ensure that the units are being used, are working properly, and to address maintenance concerns.

As on-going monitoring will be conducted based on surveys administered to a sample of HHs, the CME has developed a sampling plan in accordance with the EB Sampling Standard /17/. The general design of the survey that is used for all parameters is reviewed below. Where necessary, the details relevant for individual parameters are discussed in Section 4.15.1.

DNV Assessment of Proposed Sampling Plan

1. Does the sampling plan present a reasonable approach for obtaining unbiased, reliable estimates of the variables?
 - The objectives and reliability requirements are complete and in line with the CDM sampling guidance /17/. If a single sampling plan covers a group of CPAs, the sample size shall be sufficient to achieve 95/10 confidence/precision. Alternatively, if a single sampling plan is elaborated for each CPA, 90/10 confidence/precision can be used, unless otherwise allowed by the methodology (as specified for the individual parameter below). Assuming the required reliability



is reached, the sample mean or proportion will be applied as the parameter value. If the desired reliability is not reached, the sample size will be increased, unless otherwise specified by the methodology.

- Samples will be selected randomly from the sampling frame /1/ and will ensure that the results from the activity will not be biased.
2. Is the population clearly defined, and how well does the proposed approach to developing the sampling frame represent that population?
- The target population is the portion of end-users that share the following characteristics:
 - o Region (country)
 - o Combination of project technology. Possible combinations include:
 - Stove only
 - Filter only
 - Stove and filter
 - o Model of project technology
 - o Installation year (by technology model)
 - o Target group
 - o Socioeconomic level (if target group is HH), or type of establishment, such as restaurant, school, etc (if target group is SME)

DNV confirms that this combination of variables is sufficient to ensure similar usage patterns among the target population, so that sampling results can be appropriately generalized to the population. The sampling frame shall be the portion of users in the PoA database that share the characteristics above /1/. This will ensure that the sample frame accurately represents the target population.

3. Is the proposed sampling approach clear?
- The sampling approach will be simple random sampling from within each sampling frame.
4. Is the proposed sample size adequate to achieve the minimum confidence/prevision requirements? Is the ex-ante estimate of the population variance needed for the calculation so sample size adequately justified?
- Sample sizes will be calculated using the appropriate calculations described in the “Best practice examples focusing on sample size and reliability calculations”, and to meet the required reliability. The PP has provided ex-ante calculations for each parameter, using an estimated variance for each parameter that is based on the variance found in the PP’s baseline survey /8/. As described above, DNV can confirm the acceptability of the baseline survey sampling plan, and thus considers the estimates of variance to be acceptable. DNV was able to replicate the results of the PPs sample size calculations by following the simple random sampling guidelines in the CDM guidance /17//25/, and can thus confirm their accuracy.
 - If a single sampling plan covers a group of CPAs, the sample size shall be sufficient to achieve 95/10 confidence/precision. Alternatively, if a single sampling plan is elaborated for each CPA, 90/10 confidence/precision can be used,



unless otherwise allowed by the methodology (as specified for the individual parameter below). Assuming the required reliability is reached, the sample mean or proportion will be applied as the parameter value. If the desired reliability is not reached, the sample size will be increased.

5. Is the sample representative?
 - The sample will be selected randomly, using a random number generator /1/. The sampling frame will be kept in hard-copy form for at least 2 years after the lifetime of the PoA.
 - DNV can confirm that the sample is representative.
6. Is the data collection/measurement method likely to provide reliable data given the nature of the parameters of interest and project, or is it subject to measurement errors?
 - Data collection will be conducted via self-reported surveys /1/, as is permitted in the applied methodologies /18//19/.
7. Are the procedures for data measurement well defined and do they adequately provide for minimizing non-sampling errors?
 - The CME has implemented acceptable QA/QC procedures /1/. Surveys will be administered by trained surveyors overseen by trained supervisors. Supervisors will spot-check approximately 10% of the surveys conducted /1/.
 - All survey responses will be assessed for outliers. Outliers will be defined as data points that are more than 1.5 times the inner quartile range /1/. Outliers will be removed from the dataset, unless a root cause analysis is conducted and the data point is found to be accurate /1/. This is a technique that is standard practice in data analysis, and therefore DNV finds it acceptable.
 - DNV can confirm that the data measurement procedures are well defined.
8. Does the frame contain the information necessary to implement the sampling approach?
 - All surveys will be administered by staff trained on the appropriate use and maintenance of the project technologies, and on the proper administration of the surveys so that data is consistently recorded across enumerators' /1/. Records of trainings will be maintained by the CME, and the person conducting each survey will be maintained, so that it will be possible to verify that all surveyors received adequate training /1/.
 - DNV reviewed the training manuals developed by the CME /9/, and observed the training of 132 CHWs in Kigali for the first CPA between 24 September 2012 and 26 September 2012 /58/, and can confirm that the CHWs receive sufficient training to conduct the surveys. DNV further reviewed the QA/QC procedures /1/, and found them to be appropriate.

Based on a review of the monitoring plan, DNV can confirm that it is in compliance with the monitoring methodology AMS-III.AV, Low greenhouse gas emitting water purification



systems (version 04) /18/, and AMS-II.G, (version 5) /19/, as well as the Sampling Standard /17/.

DNV further reviewed the ability of the CME to implement the monitoring plan. The CME has previously implemented a similar monitoring plan for a voluntary Gold Standard project in Kenya /48/ and has already received issuance of credits /48/. DNV considers the ability of the project participant to implement the monitoring plan and QA/QC procedures to be adequate. It is DNV's opinion, that the project participants are able to implement the monitoring plan.

4.15.1 Parameters monitored ex-post by each generic CPA

All monitored parameters will be measured via surveys that comply with the sampling plan reviewed above and are administered by staff that have received the appropriate training (see Section 4.15 above).

The PP has conducted a baseline survey covering the districts of the Western Province of Rwanda /1//7//8/. DNV reviewed the sampling plan /7/ and can confirm that it was conducted in accordance with the CDM Sampling standard /17/, and the sampling plan described below. HHs were randomly selected and trained enumerators delivered surveys that were spot checked by supervisors, in order to generate unbiased, representative results. As described in section 3.2, DNV validated the baseline survey results during the site visit, and cross-checked them through HH visits. DNV further reviewed the raw data and calculations /8/ and can confirm that the results meet the required 90/10 confidence/precision. Several parameters are estimated ex-ante based on the results of the baseline survey, and DNV thus confirms this to be acceptable.

The following parameters will be monitored by each generic CPA:

Parameters measured for both AMS-II.G and AMS-III.AV

- $N_{y,i}$, or the number of individual technologies of type I distributed under a CPA, will be continuously monitored based on data uploaded to the project database.
- Operating fraction (OF), or the fraction of the monitoring period that a technology was deployed, shall be recorded directly from the project database, based on the date of sale.
- Operational check ($OC_{y,i}$), or the fraction of units per technology type i that are operational in year y, will be measured at least biennially via surveys /1/. The sample proportion shall be used as the parameter value. Ex-ante emission reductions are estimated using a value of .85 for this value /3//4/.
- HH_{size} , or the number of persons that utilize each functional project appliance, shall be determined ex-ante (prior to CPA inclusion) and annually via surveys that meet the sampling plan described above. The sample mean shall be used as the parameter value. Ex-ante emission reductions are estimated using a value of 5.41 /3//4/, as determined by the PPs baseline survey /1//8/.
- Baseline system (BS), or the fraction of the population for which the baseline fuel being replaced is biomass, will be estimated ex-ante via surveys that meet the sampling plan described above. In addition, BS shall be recorded once during initial distribution. No surveys will be required, and the sample proportion shall be used as the parameter value. Ex-ante emission reductions are estimated using a value of 100% /3//4/, as confirmed during the PPs baseline survey /1//8/.



Parameters measured for AMS-III.AV

- QPW_y , or the liters of drinking water consumed per day per person, shall be determined ex-ante (prior to CPA inclusion) and annually via surveys conducted according to the sampling plan described above, and the sample mean shall be used for the parameter value. Ex-ante emission reductions are estimated using a value of 2863 litres/year; this is based on 1.45 litres/person/day and an average of 5.41 persons/household, as determined during the PPs baseline survey.
- The fraction of water filter units that deliver water that is in compliance with the appropriate standards (Water Quality Monitoring) will be monitored annually, based on quality assurance certificates issued by the manufacturer for every batch of filters produced. As designed and produced, the filters, such as the LifeStraw Family units use size exclusion to ensure that microbiological contamination is not present in treated water. As the filter clogs, the flow rate is reduced. Therefore, a filter at its end-of-life cannot pass water that is untreated. This was confirmed by both independent studies of the LifeStraw® Family filter describe above, which found that $\log_{10}$ reductions did not diminish as the quantity of water treated increased (one study /35/, tested compliance up to 900 liters of treated water, while the other study /41/ tested compliance through 20,000 liters of treated water). Therefore, LifeStraw® water filters will deliver drinking water that exceeds the protective target if they were assembled properly by the manufacturer, for as long as they remain operational (i.e., do not become clogged during operation). The CME is already monitoring the fraction of Lifestraw Family units that remain operational (see Operational Check in section 4.15.1.1), and therefore water quality is monitored through quality assurance certificates that provide evidence the filters were properly assembled. DNV reviewed the quality assurance certificate and can confirm that it states the filters will meet requirements equal to the WHO protective target /36/. Other water filters that are distributed in a CPA besides the Lifestraw Family will need to operate in the same manner.
- A check for a public distribution system providing safe drinking water (SDWfrac) shall be determined annually via surveys that meet the sampling plan described above. The sample proportion shall be used as the parameter value. Ex-ante emission reductions are estimated using a value of 0%, as determined during the PPs baseline survey /1/8/.
 - This parameter is also required to be determined prior to inclusion of a CPA, as required by eligibility criterion #14. Any HHs found to have access to a public distribution network prior to CPA inclusion will be excluded from the CPA boundary.

Parameters measured for AMS-II.G

- $\eta_{new,y}$, or the efficiency of the system being deployed as part of the project activity in year y, will be monitored annually using the Water Boiling Test (WBT) protocol, and the sampling plan described above. The sample mean shall be used as the parameter value. If more than one type of system is introduced, a weighted average can be used, as is permissible by AMS-II.G /19/. Ex-ante emission reductions are estimated using a value of .381% /42/.



- Usage (U), or the fraction of total cooking that continues to be done on the baseline stove in the project scenario, shall be determined biennially via surveys conducted according to the sampling plan described above. The sample proportion shall be used as the parameter value. Ex-ante emission reductions are estimated using a value of 0%.

4.15.2 Management system and quality assurance

Responsibilities and authorities for project management, monitoring and reporting activities, measurement, training and reporting techniques and QA/QC procedures are defined in PoA-DD /1/. Further, the frequency, responsibility and authority for registration, monitoring, measurement and reporting activities is clearly described in the PoA-DD.

The CME has provided the CV for the person responsible for the PoA /47/ and DNV has reviewed the previous implementation experience of the CME /48/. DNV considers the ability of the project participant to implement the monitoring plan and QA/QC procedures to be adequate.

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APPENDIX A

POA AND GENERIC CPA VALIDATION PROTOCOL

Table 1 Mandatory requirements for CDM programme of activities (PoA)

Requirement	Reference	Conclusion
About Parties		
1. The programme shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	N/A
2. The programme shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	N/A
3. The programme shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK
4. The programme shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK
5. In case public funding from Parties included in Annex I is used for the programme, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	No public funding
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	N/A
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	N/A
About Design of Programme		
10. The CDM-POA-DD sets a framework for the implementation of the PoA and defines unambiguously a CPA under the PoA.	PoA Procedures § 6	OK
11. The coordinating/managing entity shall be identified.	PoA Procedures § 6 (a)	OK
12. The boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all CPAs included in the PoA will be implemented is defined.	PoA Procedures § 6 (b)	OK
13. Eligibility criteria are defined for inclusion of a project activity as a CPA under the PoA, which	PoA Procedures § 6 (g)	OK

Requirement	Reference	Conclusion
shall include criteria for demonstration of additionality, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility.		
14. The length of the PoA is not exceeding 28 years.	PoA Procedures § 6 (h)	OK
15. The operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA is described, including a description of a record keeping system for each CPA under the PoA, a system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as CDM project activity or as a CPA of another PoA, the provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA.	PoA Procedures § 6 (i)	OK
16. The proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of emission reductions achieved by CPAs under the PoA is described. In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA there is a transparent system defined and described that ensures that no double accounting occurs and that the status of verification can be determined anytime for each CPA.	PoA Procedures § 6 (k)	OK
About small-scale project activities (if applicable)		
17. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK
18. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
19. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK
About additionality		
20. Additionality of the programme as a whole is demonstrated because in the absence of the CDM (i) the proposed voluntary measure would not be implemented, or (ii) the mandatory policy/regulation would be systematically not enforced and that non-compliance with those requirements is widespread in the country/region, or (iii) that the PoA will lead to a greater level of enforcement of the existing mandatory policy /regulation.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43 PoA Procedures § 6 (e)	OK
21. It is demonstrated for the PoA and generic CPA that in the absence of CDM, none of the implemented CPAs would occur	PoA Standard § 7	OK

Requirement	Reference	Conclusion
22. Additionality of a typical CPA is demonstrated through eligibility criteria for inclusion in the PoA.	PoA Procedures § 7 (g)	OK
About application of baseline and monitoring methodology		
23. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
24. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
25. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
26. The monitoring plan for a typical CPA is developed in accordance with the approved monitoring methodology, and identification of the monitoring provisions and data parameters a CPA has to apply/monitor	PoA Procedures § 6 (j)	OK
27. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK
About forecast emission reductions		
28. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
About environmental impacts		
29. Documentation on the analysis of the environmental impacts of the programme activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the programme participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	☐ Analysis at PoA level ☒ Analysis at CPA level
About stakeholder comments		
30. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	☐ Analysis at PoA level ☒ Analysis at CPA level

Requirement	Reference	Conclusion
31. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
32. The project design document shall be in conformance with the CDM-PoA-DD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK

Table 2 Requirements checklist

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
PART I. Programme of activities (PoA)					
A General description of project activity					
A.1 Title of the PoA (PS § 31, VVS § 62-63)					
A.1.1 Does section A.1 of the PoA-DD include a clearly identifiable project title, version number of the PoA-DD and date of the PoA-DD?	/1/	DR	☒ Clearly identifiable title of the project activity ☒ Version number of the PoA-DD is included ☒ Date of the PoA-DD is included.		OK
A.1.2 Is the PoA-DD is in accordance with the applicable requirements for completing PoA-DD?	/1/	DR	☒ Yes If no, list where the PoA-DD is not in accordance:		OK
A.2 Description of the PoA (VVS § 64-69, (PS § 138, VVS § 189 and VVS § 150-157 for small-scale project activities, as applicable)					
A.2.1 How was the design of the PoA assessed?	/1/	DR	What type is the project? ☐ Project in existing facility or utilizing existing equipment(s) ☒ Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. ☐ Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO ₂ e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. ☐ The project is an individual small scale		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

PoA and generic CPA validation protocol (Part I PoA) – Report No. 2012-9603, rev. 02

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				project activity with emission reductions not exceeding 15 000 tCO₂e per year. In this case, DOE may not conduct a physical site visit as appropriate. ☐ Greenfield project How was the design of the project assessed? ☒ Physical site inspection ☒ Reviewing available designs and feasibility studies If a physical site inspection is not undertaken, justify why no site visit was undertaken:		
A.2.2	If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/	DR	At the time of validation, the PP had conducted a pre-pilot consisting of water filter and cook stove distribution in 1 district in Rwanda. A larger pilot is planned for October 2012.		OK
A.2.3	If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO ₂ e per year), justify the sampling through a statistical analysis:	/1/	DR	NA- this is not a bundled small scale project		OK
A.2.4	Does the PoA-DD and generic CPA-DD describe the framework for the implementation of the proposed CDM PoA and inclusion of CPAs under the PoA?	/1/	DR	The framework for implementation of the PoA and inclusion of CPAs is fully described, including -responsibilities for review of CPA inclusions -responsibilities for monitoring & training		OK
A.2.5	Does the PoA involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PoA-DD?	/1/	DR	The PoA does not involve the alteration of existing installations		OK
A.2.6	Does the PoA design engineering reflect current good practices?	/1/	DR	NA		OK
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/	DR	The project will distribute two types of technologies: - Water filters, according to AMS-III.AV – These filters achieve compliance with the most		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				stringent of international standards - Cook stoves, according to AMS-II.G, that will achieve at least 20% efficiency. These technologies far exceed the performance of commonly used technologies in the host countries		
A.2.8	Does the PoA qualify as a small scale CDM project activity as defined in paragraph 6(c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/	DR	As a small-scale PoA, each CPA must respect the small-scale thresholds defined in 6 (c) of decision 17/CP.7. High-efficiency cook stoves qualify as type (ii): energy efficiency project activities with maximum annual thermal energy savings of 180 GWh, while water filters qualify as type (iii): other project types with maximum annual emission reductions of 60,000 tonnes. As stated above, the PoA creates a framework for the technologies distributed within each CPA, but does not specify the exact make/model to be distributed. The inclusion criteria require that the technologies distributed under each CPA meet their respective small-scale size limit. The first CPA has decided to distribute Lifestraw Family water filters and EcoZoom Zoom Dura stoves. Each water filter is expected to reduce 0.66 tonnes per year Therefore, DNV confirms that, from an ex-ante perspective, the first CPA meets the small-scale requirements.		OK
A.2.9	Is the small scale project activity a debundled component of a larger project activity in accordance with the rules defined in appendix C of the simplified modalities and procedures for small-scale CDM project activities?	/1/	DR	According to paragraph 7 of the Guidelines on the Assessment of Debundling for SSC Project Activities (Version 03) in Annex 13 of EB 54 /20/, an SSC project activity is exempt from performing a debundling check “if each of the independent subsystems/measures...included in one or more		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

PoA and generic CPA validation protocol (Part I PoA) – Report No. 2012-9603, rev. 02

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			CDM project activities is no greater than 1% of the small scale thresholds defined by the applied methodology and the subsystems/measures are indicated in the PDDs to be each implemented at or in multiple locations (e.g. installed at or in multiple homes) then these CDM project activities are exempted from a debundling check and is not considered a component of a large scale activity.” As described above, the PoA creates a framework for the technologies distributed within each CPA, but does not specify the exact make/model to be distributed. The inclusion criteria require that the technologies distributed under each CPA are no greater than 1% of the appropriate small-scale threshold.		
A.3 Programme Boundaries (VVS § 191-192) <i>Programme Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.3.1 Are the programme’s spatial boundaries (geographical) clearly defined?	/1/	DR	The programme’s spatial boundary is clearly identified as the country of Rwanda. The PoA may expand to include surrounding countries at a later date.		OK
A.3.2 Are the programme’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The project boundary includes the physical, geographical sites of the low greenhouse gas emitting technologies for water purification installed by the project activity.		OK
A.3.3 Do the programme boundaries take into consideration all applicable national and/or sectoral policies and regulations within the chosen boundary?	/1/	DR	DNV met with the Rwanda DNA to understand national and sectorial policies, and can confirm that all relevant policies are taken into account		OK
A.3.4 Can each CPA under the PoA be clearly identified individually including spatial boundaries (geographical) clearly defined?	/1/	DR	Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages) within Rwanda (or another country that is added to the PoA at a later date). The total project area under the CPA will be HHs within		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			this boundary that do not have access to a public distribution network of safe drinking water.		
A.4 Participation and authorization (VVS § 38-52) <i>Referring to Part A.3 and A.4, Appendix 1 and 2 of the PoA-DD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.4.1 Do all participating Parties fulfill the participation requirements as follows:	/1/	DR			OK
	Rwanda (host)				
a) Party has ratified the Kyoto Protocol	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
b) Party has designated a Designated National Authority	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
c) The assigned amount has been determined	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
A.4.2 Do the letters of approval meet the following requirements?	/1/ /12/	DR			OK
	Rwanda (host)				
a) LoA confirms that Party has ratified the Kyoto Protocol	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
b) LoA confirms that participation is voluntary	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
c) The LoA confirms that the project contributes to the sustainable development of the host country?	☒ Yes ☐ No NA NA				
d) The LoA refers to the precise project activity title	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
e) The LoA is unconditional with respect to (a) to (d) above	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
f) The LoA is issued by the respective Party's DNA	☒ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No				
g) The LoA was received directly by the DNA or the PP	☐ DNA ☒ PP ☐ DNA ☐ PP ☐ DNA ☐ PP				
h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic	During a site visit interview, REMA, the Rwandan DNA, confirmed that the LoA was authentic.				
A.4.3 Have all private/public project participants been authorized by an involved Party?	/1/	DR	The PP has not received the LoA	~~CAR-1~~	OK

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A.4.4	Has the coordinating/managing entity of the programme been identified?	/1/	DR	The CME of the programme is DelAgua Health Rwanda Limited		OK
A.4.5	Has the coordinating/managing entity provided letters of authorization of its coordination of the PoA from each host Party?	/1/	DR	The CME has not received the letter of authorization	~~CAR-1~~	OK
A.5 Modalities of communications (VVS § 53-61)						
A.5.1	How has the corporate identity of all project participants and focal points included in the MoC, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories, been validated?	/1/	DR	☐ Directly checking evidence for corporate, personal identity and other relevant documentation; ☐ Notarized documentation; ☒ Written confirmation from the project participant or the coordinating/managing entity that submits to it the MoC statement that all corporate and personal details, including specimen signatures, are valid and accurate. If this case was selected, DNV has confirmed that: ☒ the MoC statement was received from a project participant with whom DNV has a contractual relationship. ☐ the official who submits the MoC statement to the DOE and the official who signed the written confirmation (if a different person) is/are duly authorized to do so on behalf of the respective project participant	~~CAR-2~~	OK
A.5.2	Has the MoC statement been correctly completed and duly authorized? Check that all three requirements listed in the next column are complied with.	/1/	DR	☒ The latest version of the form F-CDM-MOC has been used; ☒ The information required as per the F-CDM-MOC, including its annex 1, is correctly	~~CAR-2~~	OK

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			completed; ☒ The project participants authorized signatories signing the F-CDM-MOC correspond to the project participants authorized signatories included in F-CDM-MOC, annex 1.		
A.6 Public funding of the project activity (CDM Modalities and Procedures Appendix B § 2)					
A.6.1 In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/1/	DR	No public funding is used for the project. It should be noted that project technologies will be purchased from abroad by the CME, and then donated to the host country government. The host country government will then re-assign the technologies to the CME once in the country. This arrangement will allow the host country government to adjust taxes and duties associated with importation.		OK
A.7 Verification of CPAs (PoA procedure § 6 k)					
A.7.1 If case the coordinating /managing entity does not wish to have all CPAs verified, is there a description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA?	/1/	DR	The PoA-DD does not specify a statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.	CAR-3	OK
B Demonstration of additionality and development of eligibility criteria					
B.1 Additionality of the Programme of Activities (VVS § 195) <i>Assessment of the additionality of the PoA as a whole in accordance with the PoA standard</i>					
B.1.1 Has it been demonstrated that the programme is a voluntary coordinated action that would not be implemented in the	/1/	DR	The programme is a voluntary coordinated action.		OK

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absence of CDM?						
B.1.2	If the programme is implementing a mandatory policy/regulation, has it been demonstrated whether the policy/regulation is being enforced? If it is enforced, has it been demonstrated that the programme will lead to a higher level of enforcement?	/1/	DR	As confirmed by the Rwandan DNA during the site visit, Rwanda does not have any regulations requiring the distribution of water filters or cook stoves.		OK
B.2 Additionality determination of each generic CPA (VVS § 101-129 and VVS § 158-161 for small-scale project activities, as applicable)						

B.2.1	What approach/tool does the PoA use to demonstrate additionality of each generic CPA? Is this in line with the methodology? In case of small-scale CDM project activities, is Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities applied considering also the “Non-binding best practice examples to demonstrate additionality for SSC project activities”.	/1/	DR	Additionality is demonstrated via Attachment A to Appendix B, using a financial analysis UPDATE: Additionality is demonstrated by EB 68, Annex 27, version 09.0, Guidelines on the Demonstration of Additionality of Small Scale Project Activities, per paragraph 2 (c) which states, “documentation of barriers...is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list is comprised of, inter alia, project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises and where the size of each unit is no larger than 5% of the small-scale CDM thresholds		OK
B.2.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/	DR	In accordance with EB68 Annex 27, consideration of regulatory requirements is not necessary to establish additionality.		OK
B.2.3	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	The PP must submit evidence to support the figures used in the investment analysis.	CAR-4	OK
B.2.4	What is the additionality of each generic CPA mainly based on (Investment analysis or barrier analysis)?	/1/	DR	Additionality is based on an investment analysis. UPDATE: The additionality of each generic CPA is based on inclusion in the positive list identified in EB 68, Annex 27. Each generic CPA meets this requirement if it complies with the following 3		OK

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			criteria: 10. Isolated units are distributed 11. Users of the technology are households or communities or SMEs 12. The size of each unit is no larger than 5% of the small-scale CDM threshold		
Investment analysis (VVS § 117-123) <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation. <u>All</u> input parameters need to be assessed.</i>					
B.2.5	Does each generic CPA or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PoA-DD?	/1/	DR	Revenues are not generated apart from CDM..	OK
B.2.6	Do any of the alternatives to each generic CPA involve investment? Is this reflected in the PoA-DD?	/1/	DR	No, the alternatives do not involve investment UPDATE: An investment analysis is no longer conducted to support additionality.	OK
B.2.7	Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/	DR	A simple cost analysis is acceptable as there is no revenue generation. UPDATE: An investment analysis is no longer conducted to support additionality.	OK
B.2.8	Is the benchmark/discount rate the latest available at the time of decision?	/1/	DR	N/A – a simple cost analysis was conducted. UPDATE: An investment analysis is no longer conducted to support additionality.	OK
B.2.9	What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/	DR	N/A – a simple cost analysis was conducted. UPDATE: An investment analysis is no longer conducted to support additionality.	OK

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B.2.10	Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/	DR	The PP has not provided evidence to support the figures used in the simple cost analysis. UPDATE: An investment analysis is no longer conducted to support additionality.	~~CAR-4~~	OK
B.2.11	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/	DR	N/A – a simple cost analysis was conducted. UPDATE: An investment analysis is no longer conducted to support additionality.		OK
B.2.12	Is the time period of the investment analysis and operating time of each generic CPA realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/	DR	N/A – a simple cost analysis was conducted. UPDATE: An investment analysis is no longer conducted to support additionality.		OK
B.2.13	When a feasibility study report or similar approved by the government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PoA-DD are fully consistent with the FSR and is the period of time between finalization of the FSR and the investment decision adequate?	/1/	DR	A feasibility study was not used as the basis for the analysis. UPDATE: An investment analysis is no longer conducted to support additionality.		OK
B.2.14	How was the amount of output (e.g. sales of electricity) assessed?	/1/	DR	☐ The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval ☐ The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company) ☐ Other approach. Provide details on how the load factor was validated:: This is not necessary for the project type		OK

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B.2.15	How was the output price (e.g. electricity price) assessed?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants Provide details on how the output price was validated: This is not necessary for the project type		OK
B.2.16	How were the investment costs assessed? Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants Provide details on how the investment costs were validated: The PP has not provided evidence to support the investment costs. UPDATE: The PP is no longer demonstrating additionality via investment analysis	CAR-4	OK
B.2.17	How were the O&M costs assessed? Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants Provide details on how the O&M costs were validated: There are no O&M costs involved in the project		OK

B.2.18	Describe the assessment of the other input parameters. Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants Provide details on how other input parameters were validated: There are no other input parameters to assess		OK
B.2.19	Was the financial calculation spreadsheet verified and found to be correct?	/1/	DR	The PP uses a simple cost analysis that does not require a calculation spread sheet UPDATE: An investment analysis is no longer conducted to support additionality.		OK
B.2.20	Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/1/	DR	The PP has not conducted a sensitivity analysis. UPDATE: An investment analysis is no longer conducted to support additionality.	~~CAR-4~~	OK
B.2.21	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/	DR	The PP has not conducted a sensitivity analysis. UPDATE: An investment analysis is no longer conducted to support additionality.	~~CAR-4~~	OK
B.2.22	Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/	DR	The PP has not conducted a sensitivity analysis. UPDATE: An investment analysis is no longer conducted to support additionality.	~~CAR-4~~	OK
Barrier analysis (VVS § 124-127)						
B.2.23	Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/	DR	A barrier analysis is not used to support additionality UPDATE: Additionality is demonstrated by EB 68, Annex 27, version 09.0, Guidelines on the		OK

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			Demonstration of Additionality of Small Scale Project Activities, per paragraph 2 (c) which states, “documentation of barriers...is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list is comprised of, inter alia, project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises and where the size of each unit is no larger than 5% of the small-scale CDM thresholds		
B.2.24	How were the <u>investment barriers</u> assessed to be real? Are the investment barriers substantiated by a source independent of the project participants?	/1/	DR	See above	OK
B.2.25	How does CDM alleviate the investment barriers?	/1/	DR	See above	OK
B.2.26	Is each generic CPA prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See above	OK
B.2.27	How were the <u>technological barriers</u> assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR	See above	OK
B.2.28	How does CDM alleviate the technological barriers?	/1/	DR	See above	OK
B.2.29	Is each generic CPA prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See above	OK
B.2.30	How were the <u>barriers due to prevailing practice</u> assessed to be real? Are the barriers due to prevailing practice substantiated by a source independent of the project participants?	/1/	DR	See above	OK
B.2.31	How does CDM alleviate the barriers due to prevailing practice?	/1/	DR	See above	OK

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B.2.32	Is each generic CPA prevented by the barriers due to prevailing practice and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See above		OK
B.2.33	How were the other barriers assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR	See above		OK
B.2.34	How does CDM alleviate the other barriers?	/1/	DR	See above		OK
B.2.35	Is each generic CPA prevented by the other barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See above		OK
Common practice analysis (VVS § 128-130)						
B.2.36	What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR	See above		OK
B.2.37	What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR	See above		OK
B.2.38	What is the data source(s) used for the common practice analysis?	/1/	DR	See above		OK
B.2.39	How many similar non-CDM-projects exist in the region within the scope?	/1/	DR	See above		OK
B.2.40	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	See above		OK
B.2.41	What is the conclusion of the common practice analysis?	/1/	DR	See above		OK
Conclusion						
B.2.42	What is the conclusion with regard to the additionality of the project activity?	/1/	DR	The PoA is a voluntary, coordinated action, and has sufficiently demonstrated the framework for CPAs to demonstrate additionality (via meeting the positive list requirements). Therefore, the PoA is confirmed to meet the requirements for additionality		OK

B.3 Eligibility Criteria (VVS § 196) <i>Eligibility criteria to assess eligibility of CPAs to be included to PoA.</i>						
B.3.1	Are the geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA?	/1/	DR	Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages) within a specific country included in this POA.		OK
B.3.2	Are there conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo)?	/1/	DR	Each filter distributed will contain a unique identification number that is traceable to a specific CPA.		OK
B.3.3	Are there specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications?	/1/	DR	The eligibility criteria do not specify the minimum efficiency level for cook stoves included in the PoA, as required by the methodology	~~CAR-5~~	OK
B.3.4	Are there conditions to check the start date of the CPA through documentary evidence?	/1/	DR	Each CPA must confirm that its start date is not prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The date of webhosting of the CDM-PoA-DD is August 2, 2012.		OK
B.3.5	Are there conditions that ensure compliance with applicability and other requirements of single or multiple methodology/ies applied by CPAs?	/1/	DR	The eligibility criteria do not include applicability criteria for AMS-II.G	~~CAR-6~~	OK
B.3.6	Are there conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality, and are these in accordance with the requirements of the PoA Standard?	/1/	DR	The eligibility criteria require technologies to be distributed for free. As a simple cost assessment was conducted to justify additionality, this will ensure that the project is more costly than the baseline. UPDATE: Additionality is now demonstrated by EB 68, Annex 27, version 09.0, Guidelines on the Demonstration of Additionality of Small Scale Project Activities, per paragraph 2 (c) which		OK

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			states, “documentation of barriers...is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list is comprised of, inter alia, project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises and where the size of each unit is no larger than 5% of the small-scale CDM thresholds. A simple cost assessment is no longer necessary.		
B.3.7	Are there PoA-specific requirements stipulated by the CMEs including any conditions related to undertaking local stakeholder consultations and environmental impact analysis?	/1/	DR	The LSC and EIA are conducted at the PoA level, so this is not required. UPDATE: LSC and EIA requirements are included in the eligibility criteria	OK
B.3.8	Where applicable, are the target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation) specified?	/1/	DR	As required by the PoA Standard, the eligibility criteria must describe the target group and distribution mechanism	~~CAR 7~~ OK
B.3.9	Where applicable, are there conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys?	/1/	DR	As required by the PoA Standard, the eligibility criteria must include conditions related to sampling requirements	~~CAR 8~~ OK
B.3.10	Where applicable, are there conditions that ensure that CPA in aggregate meets the small-scale or micro-scale threshold criteria and remain within those thresholds throughout the crediting period of the CPA?	/1/	DR	The eligibility criteria specify that each Type III SSC CPA shall stay below 60,000 tCO ₂ e/year. However, the SSC limit for Type II CPAs shall be specified	~~CAR 9~~ OK
B.3.11	Where applicable, are there requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories?	/1/	DR	The eligibility criteria do not require a debundling check	~~CAR 10~~ OK

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B.3.12	Are there conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance?	/1/	DR	Yes, the eligibility criteria required CPAs to confirm that no public funding is used for the project		OK
B.3.13	Are all eligibility criteria verifiable, and sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA?	/1/	DR	The PP has provided verifiable evidence for the existing eligibility criteria. However, evidence must be submitted for the additional criteria identified above.	~~CAR 4~~ ~~10~~	OK
B.4 Application of methodologies by the PoA (VVS §190)						
B.4.1	Does the PoA apply approved methodologies and the correct and valid version thereof? If during the course of validation the originally applied version of the methodology expires, a CAR shall be raised in Table 3 of the validation protocol. Any new requirements of the revised version of the methodology not yet validated in Table 2 of the validation protocol shall be validated in Table 3 as part of the assessment of the CAR raised.	/1/	DR	The following applies the following methodologies: - AMS-II.G, version 5 - AMS-III.AV, version 4 The methodologies are approved, and apply the latest, valid version.		OK
B.4.2	If the programme applies multiple methodologies, is their application in accordance with the PoA Standard?	/1/	DR	The application of multiple methodologies in the PoA meets the following requirements specified in the PoA Standard: - Para 26: the PoA-DD and CPA-DD lists the various combinations of methodologies that will be implemented in CPA. - Para 27: The PoA-DD specifies inclusion criteria for each methodology separately. Monitored parameters for each methodology will follow a single sampling plan. - Para 29: The programme seeks to reduce household energy consumption and improve household health through the distribution of water filters and high-efficiency cook stoves. This requires the use of two different methodologies, and therefore the combination of methodologies is permissible according to the PoA Standard, para 29 (d).	~~CAR~~ ~~11~~	OK

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			However, the project has not proposed a method for eliminating cross-effects in the calculation of emission reductions.		
B.4.3	If the PoA applies small-scale methodologies, does the PoA also comply with the general guidelines to SSC CDM methodologies, which provides guidelines on equipment capacity, equipment performance/lifetime, baseline identification for type-II/III Greenfield project activities, sampling and other monitoring-related issues?		The PoA does not describe cook stove equipment performance.	CAR-5	OK
B.5 Management system of the PoA (VVS § 186) <i>Assessment of the PoA management systems in accordance with the PoA standard</i>					
B.5.1	Is there a clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies?	/1/	DR	The PoA-DD specifies that the Program Director of DelAgua shall be responsible for the review/approval of new CPA inclusions. DNV has reviewed the CV of the current program director, and can confirm that he possess the capabilities necessary for the role.	OK
B.5.2	Are there records of arrangements for training and capacity development for personnel?	/1/	DR	The PP has elaborated sufficient arrangements for training and capacity development, and has records documenting the plans for the first round of trainings.	OK
B.5.3	Are there procedures for technical review of inclusion of CPAs?	/1/	DR	The Del Agua program director is responsible for reviewing all CPAs inclusions prior to submittal to a DOE.	OK

B.5.4	Is there a procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA)?	/1/	DR	The CME shall be the CPA Implementer for all CPAs, ensuring that CPAs are only counted in this PoA.		OK
B.5.5	Is there a records and documentation control process for each CPA under the PoA?	/1/	DR	The PoA-DD requires that all trainings & QA/QC actions are documented. However, it does not specify the length of time that documents must be retained.	~~CAR~~ 12	OK
B.5.6	Are there measures for continuous improvements of the PoA management system?	/1/	DR	The management system requires the DelAgua program director to ensure that all improvement opportunities resulting from audits are effectively implemented.		OK
B.5.7	Do the operational and management arrangements established by the coordinating entity include provisions to ensure that CPA implementers are aware and have agreed that their activity is being subscribed to the PoA?	/1/	DR	All CPAs shall be implemented by the CME, thus guaranteeing that: 1 – the CPA operator is aware of and agrees that the CPA is part of the PoA 2 – The operator is aware that the emission reduction benefits shall not be claimed as a standalone project or as a CPA in another PoA.		OK
C Duration of the PoA, Crediting Period (VVS § 197)						
C.1.1	Is the PoA starting date and length of the PoA clearly defined and evidenced?	/1/	DR	According to the project standard, the start date of a PoA shall be the date of publication of the PoA-DD for the global stakeholder consultation. The PoA-DD states that the start date is 1 October 2012, however the global stakeholder consultation started on is 2 August 2012.	~~CAR~~ 13	OK
C.1.2	D.2. Does the PoA design documentation confirm that the length of the PoA does not exceed 28 years (60 years for A/R)?	/1/	DR	The PoA-DD states that the length of the PoA shall be 28 years		OK

D Environmental Impacts (VVS § 134-137, VVS § 199-200)			☐ Analysis at PoA level ☒ Analysis at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
D.1.1	Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring? For small-scale project activities, is an assessment of the environmental impacts of the proposed CDM project activity is required by the host Party?	/1/	DR	The PoA-DD states that the PoA will be implemented in several countries, but the EIA and LSC are conducted at the PoA level b/c there is a similar situation across these countries. Evidence must be provided to support this claim UPDATE: Analysis at the CPA level	CAR 14 OK
D.1.2	Does the PoA comply with environmental legislation in the host country?	/1/	DR	See above	CAR 14 OK
D.1.3	Will the PoA create any adverse environmental effects?	/1/	DR	See above	CAR 14 OK
D.1.4	Have identified environmental impacts been addressed in the PoA design?	/1/	DR	See above	CAR 14 OK
D.1.5	Are transboundary environmental impacts considered in the analysis?			See above	CAR 14 OK
E Local stakeholder consultation (VVS § 138-140, VVS § 201-202)			☐ Consultation at PoA level ☒ Consultation at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
E.1.1	Have relevant stakeholders been consulted?	/1/	DR	The PoA-DD states that the PoA will be implemented in several countries, but the EIA and LSC are conducted at the PoA level b/c there is a similar situation across these countries. Evidence must be provided to support this claim UPDATE: Analysis at the CPA level	CAR 14 OK
E.1.2	Have appropriate media been used to invite comments by	/1/	DR	See above	CAR OK

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	local stakeholders?				14	
E.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	See above	~~CAR~~ 14	OK
E.1.4	Is a summary of the stakeholder comments received provided?	/1/	DR	See above	~~CAR~~ 14	OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/	DR	See above	~~CAR~~ 14	OK

PART II. Generic component project activity (CPA)					
A Description of each generic CPA (VVS § 189)					
A.1.1	Does the description of each generic CPA sufficiently cover all relevant elements, is accurate and does it provides the reader with a clear understanding of the nature of the proposed CPAs?	/1/	DR	The description of a generic CPA does not cover all relevant elements, including target groups, distribution method, and collaboration with local partners.	~~CL~~ OK
A.1.2	If applicable, are all different types of generic CPAs clearly described?	/1/	DR	The PoA encompasses the distribution of water filters and cook stoves. While most CPAs are expected to distribute both, some may focus on only one technology. DNV can confirm that the distribution and monitoring plans are identical in either situation. The only difference is whether cross-effects must be accounted for. See CAR 11	OK
B Application of a baseline and monitoring methodology(ies)					
B.1 Title and reference of the approved baseline and monitoring methodology(ies) selected					
B.1.1	Are the exact reference and title of approved methodology(ies) and tools listed?	/1/	DR	The following methodologies and tools are correctly referenced: - AMS-II.G, version 05 - AMS-III.AV, version 04 - Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities”, version 02.1 - “Guidelines on the demonstration of additionality of small-scale project activities” in EB68, Annex 27,	OK

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			- Sampling and surveys for CDM project activities and programme of activities”, version 03.0 - AMS-I.E, version 05		
B.1.2	Are valid version of approved methodology(ies) and tools applied?	/1/	DR	The PoA-DD applies valid versions of both methodologies and all tools referenced.	OK
B.2 Applicability of methodology (and tools) (VVS § 73-77) <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>					
B.2.1	How was it validated that each specific CPA complies with the following applicability criteria: Water purification technologies involve point-of-use or point-of-entry treatment systems?	/1/	DR	Inclusion criterion #13 requires each CPA to provide manufacturers specifications or product information sheets will be provided by each CPA to demonstrate compliance with the criterion	OK
B.2.2	How was it validated that each specific CPA complies with the following applicability criteria: Water treatment systems are distributed for residential or institutional applications?	/1/	DR	Inclusion criterion #6 requires each CPA to provide manufacturers specifications or product information sheets shall be provided by each CPA to demonstrate the target group for the technology.	OK
B.2.3	How was it validated that each specific CPA complies with the following applicability criteria: Prior to the implementation of the project activity, a public distribution network of safe drinking water (SDW) does not exist within the total project area. ?	/1/	DR	Inclusion criterion #14 requires each CPA to provide Government reports and/or surveys will be provided, demonstrating that a public distribution network of safe drinking water does not exist in the CPA region.	OK
B.2.4	How was it validated that each specific CPA complies with the following applicability criteria: The project technology shall achieve compliance with “protective” performance target as per WHO (2011) or a comparable national standard or guideline?	/1/	DR	Inclusion criterion #12 requires each CPA to provide third party evaluation of filter technology and/or manufacturer attestation and/or certification by host government authority shall be provided by each CPA.	OK
B.2.5	How was it validated that each specific CPA complies with the following applicability criteria: In cases where the lifespan of the technology is shorter than the crediting period of the project activity, there must be documented measures in	/1/	DR	According to inclusion criterion #15, the following steps shall be followed by each CPA. 1. Each water filter that is distributed is logged in an electronic database that	OK

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place to ensure end-users have access to replacement purification systems of comparable quality			records the time and date of distribution, the name of the recipient, the number of people in their family, the location of the house by village, district and/or GPS coordinates, and a picture of each recipient. - Each distribution of the water filter will be accompanied by an education campaign, describing how the unit is used, maintained, and how to identify if a repair or replacement is needed, and how to obtain such repair/replacement. - When a repair or replacement is needed, the water filter recipient will bring their old filter to a local repair/replacement facility managed by DelAgua. In order to receive a new or repaired filter, the recipient must provide their old unit. - A new or repaired filter is issued to the recipient, and their contact information and date of re-issuance is recorded in the same electronic database. The old filter is repaired, recycled, or disposed of safely, such that it will not be burned or pollute locally.		
B.2.6 How was it validated that each specific CPA complies with the following applicability criteria: The project activity will determine the proportion of the population using an improved drinking water source	/1/	DR	Inclusion Criterion #16 – Each CPA shall provide the following: - The definition of an improved drinking water source shall be defined based on relevant government standards, or the JMP definition - Each CPA shall reference official data such as publicly available statistical data from a government agency, or an		OK

				independently commissioned study by an international organization or university, or a survey commissioned by the CME that meets 90/10 confidence/precision.		
B.2.7	How was it validated that each specific CPA complies with the following applicability criteria: Appliances displace use of non-renewable biomass	/1/	DR	Inclusion criterion #20 requires CPAs to provide the following evidence; 1. Reference to surveys or government statistics showing that biomass is consumed in the baseline. 2. $f_{NRB,y}$ value shows that biomass consumption is considered non-renewable.		OK
B.2.8	How was it validated that each specific CPA complies with the following applicability criteria: Project technologies include single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.	/1/	DR	Inclusion criterion #21 requires CPAs to provide third party reports or manufacturer specifications to demonstrate compliance with the applicability criterion		OK
B.2.9	How was it validated that each specific CPA complies with the following applicability criteria: NRB has been used since 31 December 1989.			Inclusion criterion #22 requires CPAs to provide reference to 3 rd party literature demonstrating that NRB has been used since 31 December 1989.		OK
B.2.10	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/	DR	The small-scale methodologies utilized in this PoA specify the baseline scenario, and these scenarios are correctly identified in the PoA-DD. Thus, DNV confirms the applicability of AMS-III.AV and AMS-II.G to the PoA.		OK
B.3 Project boundary of each generic CPA (VVS § 82-87)						
B.3.1	What are each generic CPA's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/	DR	The project boundary includes the physical, geographical sites of the low greenhouse gas emitting technologies for installed by the project activity.		OK
B.3.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to	/1/	DR	Baseline GHG sources include fuel consumption for cooking and water treatment. Project GHG sources include fuel consumption for cooking (there are no GHG sources associated with water		OK

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	arrive at this conclusion.			treatment in the project scenario). Leakage includes the use/diversion of NRB saved under the project activity by non-project households/users that previously used renewable energy sources.		
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR	The desk review and site visit did not identify any emission sources not foreseen by the methodology.		OK
B.4 Baseline scenario determination and description (VVS § 88-95 / Identification of alternatives to the project activity (VVS § 113-116) <i>Ensure that the evaluation of all alternatives provided and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this.</i>						
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete? Does the list include as one of the options that the project activity is undertaken without being registered as a proposed project activity? Does the list contain all plausible alternatives which are viable means of supplying the comparable outputs or services that are to be supplied by the proposed project activity?	/1/	DR	Each small-scale methodology applied in this PoA specifies an assumed baseline. Therefore, it is not necessary to specify multiple scenarios. Under AMS-II.G, the cooking baseline scenario is assumed to be the use of fossil fuels for meeting similar thermal energy needs. Under AMS-III.AV, the water treatment baseline scenario is assumed to be the use of fossil fuel or NRB to boil water. Each baseline scenario is correctly identified in the PoA-DD and CPA-DD		OK
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	Each small-scale methodology applied in this PoA specifies an assumed baseline. Therefore, this step is unnecessary		OK
B.4.3	What is the baseline scenario?	/1/	DR	Under AMS-II.G, the cooking baseline scenario		OK

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			is assumed to be the use of fossil fuels for meeting similar thermal energy needs. Under AMS-III.AV, the water treatment baseline scenario is assumed to be the use of fossil fuel or NRB to boil water. Each baseline scenario is correctly identified in the PoA-DD and CPA-DD		
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	Each small-scale methodology applied in this PoA specifies an assumed baseline.. Under AMS-II.G, the cooking baseline scenario is assumed to be the use of fossil fuels for meeting similar thermal energy needs. Under AMS-III.AV, the water treatment baseline scenario is assumed to be the use of fossil fuel or NRB to boil water. Each baseline scenario is correctly identified in the PoA-DD and CPA-DD	OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	The baseline scenario is specified in the small-scale methodologies. Therefore, no assumptions are necessary.	OK
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? Does the baseline scenario comply with all applicable and enforced legislation?	/1/	DR	The baseline scenario is specified in the small-scale methodologies	OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	The baseline scenario is specified in the small-scale methodologies.	OK
B.4.8	Is the baseline determination adequately documented in the PoA-DD?	/1/	DR	The baseline scenario is specified in the small-scale methodologies applied in the PoA-DD, and	OK

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• All assumptions and data used by the project participants are listed in the PoA-DD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity			is adequately documented		
B.5 Demonstration of eligibility for each generic CPA					
B.5.1 Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages) within Rwanda.	/1/	DR	Required Documentation: The boundary will be stated in the CPA DD and checked by the DOE. Documentation for first CPA: The boundary of the first CPA is the Rubavu District in the Western Province of the Republic of Rwanda. During the site visit, DNV confirmed that this district is located in Rwanda, and therefore confirms that the first CPA meets the criterion.		OK
B.5.2 Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: All CPAs will be owned / operated / managed by the CME, ensuring that the operator is aware of and agrees that the CPA is included in the PoA and that all emission reduction benefits are exclusively assigned to this PoA.	/1/	DR	Required Documentation: Statement by CPA Implementer in each CPA-DD. Documentation for first CPA: As stated in the first CPA-DD, the CPA Implementer is the CME. DNV thus confirms that the first CPA meets the eligibility criterion.		OK
B.5.3 Has it been sufficiently justified that each generic CPA	/1/	DR	Required Documentation:		OK

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	complies with the following eligibility criteria: Each technology distributed by a CPA will contain a unique identification number			Unique barcodes attached to each technology will be traceable through the CME database and will identify which measure, CPA, and POA it is attached to, and the date of installation. Documentation for first CPA: DNV observed the distribution of project technologies for the first CPA, and spot-checked a sample of the technologies distributed, and can confirm that they contained a unique barcode. DNV thus confirms that the first CPA meets the eligibility criterion		
B.5.4	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: All technologies distributed shall receive approval from the host country government, if required, and will comply with criterion #12 (for water filters) and/or criterion #21 (for cook stoves).	/1/	DR	Required Documentation: Approval letter from appropriate government agency Documentation for first CPA: The first CPA has provided letters of approval from the Rwandan Bureau of Standard for the LifeStraw /44/ and Ecozoom /43/ products that will be distributed. DNV thus confirms that the first CPA meets the eligibility criterion.		OK
B.5.5	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA must confirm that its start date is not prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The date of webhosting of the CDM-PoA-DD is no later than August 2, 2012.	/1/	DR	Required Documentation: The CME database will be reviewed to ensure that no products for a CPA were distributed prior to 2 August 2012. Documentation for first CPA: DNV reviewed the CME database during the site visit /54/ and can confirm that no products that are linked to the first CPA were distributed prior to 2 August 2012. DNV thus confirms that the first CPA meets the eligibility criterion.		OK
B.5.6	Has it been sufficiently justified that each generic CPA	/1/	DR	Required Documentation:		OK

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	complies with the following eligibility criteria: End-users receiving project technologies are households or communities or Small and Medium Enterprises (SMEs)			Manufacturers specifications or literature demonstrating the target group for the technology Documentation for first CPA: DNV reviewed the product specifications for the Ecozoom /42/ and Lifestraw /37/, and can confirm that they are intended for household use. Further, the CPA-DD for the first CPA states that the intended target group is households. Thus, DNV confirms that the first CPA meets the eligibility criterion		
B.5.7	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: An LSC must be conducted that is appropriate for the region and target group of the CPA, and that meets host country and CDM requirements.	/1/	DR	Required Documentation: LSC report - Unless otherwise required by the host country, a CPA may reference an LSC from a previous CPA, if the LSC is from the same region and includes the target group. Documentation for first CPA: DNV reviewed the LSC report /5/ for the first CPA, and can confirm that it meets host country /45/ and CDM requirements (this is described in detail in the first CPA-DD validation report). Thus DNV confirms that the first CPA meets the eligibility criterion.		OK
B.5.8	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA must reference an Environmental Impact Assessment approval that is appropriate for the region and technology, or cite relevant regulations that exempts the project proponent from conducting an EIA.	/1/	DR	Required Documentation: EIA approval or waiver, or relevant national regulation demonstrating that an EIA is not required. Unless otherwise required by the host country, a CPA may reference an EIA received from a previous CPA, if the EIA is in the same region and utilizes the same technology. Documentation for first CPA:		OK

			Ministerial order N0042008 /6/ establishes the list of project types that are required to conduct an EIA /45/. Water filters and cook stove projects are not included on this list and therefore an EIA is not required. However, as part of the LoA process, the DNA requires the project to be submitted to RDB for review and confirmation that the project will not have a negative environmental impact. The project received an EIA clearance letter on 5 September 2012/52/. DNV thus confirms that the first CPA meets the eligibility criterion.		
B.5.9	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: The CME shall confirm that there is no public funding from an Annex I party. If funding is received from an Annex I party, the donor shall provide confirmation that this funding is not a diversion of official development assistance (ODA).	/1/	DR	Required Documentation: Statement by CME in CPA-DD that there is no public funding, or attestation from Annex I party that funding is not a diversion of ODA. Documentation for first CPA: DNV reviewed the CPA-DD /2/ and can confirm that the CME attests that there is no public funding used for the CPA. DNV thus confirms that the first CPA meets the eligibility criterion.	OK
B.5.10	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies are directly distributed to end-users	/1/	DR	Required Documentation: The CPA-DD specifies the distribution method in section A.3. Documentation for first CPA: According to Section A.3 of the CPA-DD /2/, project technologies will be distributed at a centralized distribution point. DNV thus confirms that the first CPA meets the eligibility criterion.	OK
B.5.11	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA	/1/	DR	Required Documentation: The monitoring plan in the CPA-DD follows the	OK

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must follow the sampling guidelines as described in section B.7.2 (of the PoA-DD).			approved monitoring plan in the PoA-DD Documentation for first CPA: DNV reviewed the monitoring plan in the CPA-DD /2/ and can confirm that it follows the monitoring plan in the PoA-DD /1/, and that the monitoring plan in the PoA-DD meets all CDM requirements /17/. DNV thus confirms that the first CPA meets the eligibility criterion.	
B.5.12 Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Zero energy water purifiers are distributed that achieve water quality that meets the “protective” performance target specified by WHO (2011).	/1/	DR	Required Documentation: Third party evaluation of filter technology and/or manufacturer attestation and/or certification by host government authority. Documentation for first CPA: DNV reviewed the product specifications /37/ and can confirm that the water purifiers distributed under the first CPA are gravity fed and do not require energy. Third-party studies shall be referenced to demonstrate compliance with the protective performance target. The protective performance target is defined by a 2 log ₁₀ reduction of bacteria, a 3 log ₁₀ reduction of viruses and a 2 log ₁₀ reduction of protozoa /34/. Several independent studies have been conducted on the LifeStraw Family water filter that is distributed under this project activity, and all have found that the performance exceeds the WHO’s protective target. Specifically, a study conducted by the University of Arizona Department of Soil, Water and Environmental Science /35/ found log ₁₀ reductions exceeded 6 logs E. coli, exceeded 5 logs for MS-2 virus, exceeded 5 logs for Rotavirus SA-11 and exceeded 4 logs for Cryptosporidium. This	OK

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			exceeds the WHO protective criteria. Furthermore, a separate study of the efficacy of the LifeStraw Family water filter conducted by independent experts, and published in a peer-reviewed journal /41/, found average log₁₀ reductions exceeded 6 logs (99.9999%) of the test organism for bacteria, 4 logs (99.99%) of the test organism for virus, and 3 logs (99.9%) of the test organism for protozoan cysts. These results also exceed the WHO protective target. Therefore, DNV can confirm that CPAs distributing Lifestraw Family water filters exceed the protective performance target specified by the methodology. The first CPA provides reference to the Arizona Department of Soil, Water and Environmental /35/ to demonstrate compliance with this requirement.		
B.5.13	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies are point-of-use or point-of-entry treatment systems	/1/	DR	Required Documentation: Manufacturer specifications or product information sheets. Documentation for first CPA: DNV reviewed the product specifications for the Lifestraw water filter /37/ and can confirm that it is a point of use treatment system. DNV thus confirms that the first CPA meets the eligibility criterion.	OK
B.5.14	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Prior to implementation of the project activity, a public distribution network of safe drinking water does not exist within the CPA total project area, and any SDW is produced by consumers	/1/	DR	Required Documentation: Government reports and/or surveys will be provided, demonstrating that a public distribution network of safe drinking water does not exist in the CPA region.	OK

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using POU or POE water purifiers. The CPA total project area is defined by the project proponent to be households within a delineated geographical boundary within a country, minus those households that have running water within their households. Surveys will establish the proportion of households that have running water, and are therefore excluded from the total CPA project area.			Documentation for first CPA: Official government data from the DHS 2010 show that 4.5% of household have access to a public distribution system /32/. DNV cross-checked this information during the site visit, and can confirm that no HHs in the validation sample had access to a public distribution system. To ensure that emission reductions are conservatively stated, the CPA will monitor the fraction of project HHs that have access to the public distribution network, and will discount emission reductions by this percentage /1/. DNV thus confirms that the CPA meets the inclusion criterion.		
B.5.15 Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.	/1/	DR	Required Documentation: Each CPA shall specify the following: 1. Each water filter that is distributed is logged in an electronic database that records the time and date of distribution, the name of the recipient, the number of people in their family, the location of the house by village, district and/or GPS coordinates, and a picture of each recipient. 2. Each distribution of the water filter will be accompanied by an education campaign, describing how the unit is used, maintained, and how to identify if a repair or replacement is needed, and how to obtain such repair/replacement. 3. When a repair or replacement is needed, the water filter recipient will bring their old filter to a local repair/replacement facility managed by DelAgua. In order to receive a new or repaired filter, the recipient must		OK

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		provide their old unit. 4. A new or repaired filter is issued to the recipient, and their contact information and date of re-issuance is recorded in the same electronic database. 5. The old filter is either repaired, recycled, or disposed of safely, such that it will not be burned or pollute locally. Documentation for first CPA: DNV can confirm that these measures are sufficient to demonstrate compliance with the requirement. The filters become clogged from use as they reach the end of their useful lifetime, making it impossible for water to pass through. The reduced flow-rate provides a signal to the end-users that the filter must be replaced. The distribution of the LifeStraw Family water filter will be associated with information on how to obtain a replacement filter from a local repair/replacement facility. These facilities will be managed by VFG S.A., ensuring that replacement filters are of comparable quality. Filters that are in need of replacement will be identified based on calculation of the expected useful lifetime of each filter. Ongoing monitoring will ensure that emission reductions are not claimed for filters that are in operation longer than their useful lifetime. For instance, if 10 percent of units surveyed during ongoing monitoring are found to be past their useful lifetime, then 10% of all emission reductions will be discounted. DNV can further confirm that the first CPA is designed to implement the 5 measures identified	
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B.5.16 Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Prior to the start of the crediting period, it will be assessed whether the CPA will be: (Case 1) implemented in rural areas of countries with proportion of rural population using an improved drinking-water source equal to or less than 60% confirmed by option a) ii: Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; or (Case 2) implemented in areas not included in Case 1.	/1/	DR	above /2/. Required Documentation: Each CPA shall select one of the following options: (i) Proportion of populations using an improved drinking-water source for the most recent year for which data is available from WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation shall be used (<http://www.wssinfo.org/data-estimates/table/>) for this purpose. Definition of improved and unimproved drinking water source shall be as per the information provided by JMP; OR (ii) Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; (iii) Using survey methods (use 90/10 confidence/precision for sampling) Documentation for first CPA: The first CPA has selected option 2, as described in the CPA-DD/1/. The PP commissioned a study by the London School of Hygiene and Tropical Medicine, led by Dr. Thomas Clasen. The study focused on three villages in the region of the PPs baseline study that were selected to be representative of the entire CPA region, and collected water samples from each HH in the villages. A total of 562 samples were collected. During the site visit, DNV confirmed with local experts that the villages in the LSHTM study are representative of the baseline survey region /55/. The 562 samples were assayed for thermotolerant coliforms (TTC), a WHO-approved indicator of		OK
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			fecal contamination /34/ using the membrane filtration method in accordance with the Standard Methods /33/. The results were compared to the Rwanda Standard for Potable Water /49/, and it was found that 81.1% of households did not meet the Rwandan government standard, and therefore the region can be considered Case 1. DNV reviewed the raw data and can confirm that the results met 90/10 confidence/precision. As the LSHTM team is well respected in the field of waterborne disease and impact assessment, and the study design meets CDM requirements for the determination of unbiased values, DNV accepts the study results and confirms that the first CPA is Case 1. Thus DNV confirms that the first CPA meets the eligibility criterion.		
B.5.17	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: If water filters are distributed, the CPA shall demonstrate that it meets Type III SSC threshold of 60,000 tCO ₂ e per year	/1/	DR Required Documentation: Emission reduction estimates following the calculations described in section B.6.3 of the PoA-DD. Documentation for first CPA: The first CPA is estimated to generate 23,133 tCO₂e per year from water filters /2//4/ DNV can confirm that these reductions are accurately and conservatively calculated in accordance with the PoA and AMS-III.AV (version 2) requirements.		OK
B.5.18	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	/1/	DR Required Documentation: Calculation using debundling equations provided in PoA-DD. Documentation for first CPA: DNV has reviewed the calculations for the first		OK

			CPA /2//4/ and can confirm that each water filters is less than 600 tonnes of emission reductions (or 1% of the small-scale threshold).		
B.5.19	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds.	/1/	DR	Required Documentation: Ex-ante estimates shall be provided following the procedure outline in section B.1 of the PoA-DD, with parameter values that are appropriate for the CPA region. Documentation for first CPA: DNV has reviewed the calculations for the first CPA /2//4/ and confirmed that each water filter is expected to generate 0.66 tonnes of emission reductions annually; this is less than 3000 tonnes of emission reductions (or 5% of the small-scale threshold).	OK
B.5.20	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Appliances displace use of non-renewable biomass	/1/	DR	Required Documentation: 3. Reference to surveys or government statistics showing that biomass is consumed in the baseline. 4. $f_{NRB,y}$ value shows that biomass consumption is considered non-renewable. Documentation for first CPA: The first CPA is located in Rwanda, where the Demographic and Health Survey 2010 /32/ shows that 98% of households use biomass for cooking. Furthermore, the default NRB value /24/ of 98% demonstrates that this biomass consumption is considered non-renewable. DNV thus confirms that the first CPA meets the eligibility criterion.	OK

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B.5.21	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies include single pot or multi pot portable or in-situ cook stoves with specified thermal efficiency of at least 20%.	/1/	DR	Required Documentation: Third party reports or manufacturer specifications. Documentation for first CPA: DNV reviewed the manufacturer's specifications for the first CPA /42/, which show that the EcoZoom stove is a single pot cook stove with an expected efficiency of 38.1%. DNV thus confirms that the CPA meets the eligibility criterion.	OK
B.5.22	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: NRB has been used since 31 December 1989.	/1/	DR	Required Documentation: Reference to 3rd party literature demonstrating that NRB has been used since 31 December 1989. Documentation for first CPA: According to 3rd party, peer reviewed, published literature /46/, wood consumption has exceeded sustained wood removals since at least 1960. DNV thus confirms that the first CPA meets the eligibility criterion.	OK
B.5.23	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: If efficient cook stoves are distributed, the CPA shall demonstrate that it will remain under the Type II SSC energy savings threshold of 180 GWh per year.	/1/	DR	Required Documentation: Manufacturing specifications, demonstrating product efficiency improvement, and ex-ante emissions reduction calculations according to the calculations described in section B.6.3 of the PoA-DD. Documentation for first CPA: DNV has reviewed the calculations for the first /2//4/ which demonstrate that the energy savings expected from cook stoves is 0.004331, which is less than the Type II SSC energy savings threshold. The CPA can therefore distribute up to 41,564 stoves without exceeding the Type II	OK

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			energy savings threshold (though this value will fluctuate based on monitored parameters). DNV thus confirms that the CPA meets the eligibility criterion.		
B.5.24	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.	/1/	DR	Required Documentation: Manufacturers specifications or product sheets, demonstrating product efficiency improvement, and ex-ante debundling calculations following the procedure described in Section B.7.3 of the PoA-DD Documentation for first CPA: DNV reviewed the manufacturer's specifications for the Ecozoom stove distributed under the first CPA /42/ and can confirm that the efficiency is 0.381. Based on this value, the expected energy savings per stove is 0.004331 GWh annually, which is less than 1.8 GWh savings /2//4/ (or 1% of the small-scale threshold).	OK
B.5.25	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds)	/1/	DR	Required Documentation: Ex-ante estimates shall be provided following the procedure outline in section B.1 of the PoA-DD, with parameter values that are appropriate for the CPA region. Documentation for first CPA: DNV reviewed the manufacturer's specifications for the Ecozoom stove distributed under the first CPA /42/ and can confirm that the efficiency is 0.381. Based on this value, the expected energy savings per stove is 0.004331 GWh annually, which is less than 9 GWh savings (or 5% of the small-scale threshold).	OK

B.6 Algorithms and/or formulae used to determine emission reductions of each CPA (VVS § 96-100)					
Data and parameters that are available at validation and that are not monitored					
B.6.1	How was the $EF_{\text{projected_fossilfuel}}$ parameter available at validation verified?	/1/	DR	$EF_{\text{projected_fossilfuel}}$ is the emission factor for the projected fossil fuel consumption in the baseline when NRB is displaced, and is fixed at 81.6 tCO ₂ /TJ. This is the default value provided in AMS-II.G and AMS-III.AV	OK
B.6.2	How was the LF parameter available at validation verified?	/1/	DR	LF, or a discount factor applied to account for potential leakage, is fixed at 0.95. This is a default value allowed by AMS-III.AV and AMS-II.G.	OK
B.6.3	How was the $f_{\text{NRB},y}$ parameter available at validation verified?	/1/	DR	$f_{\text{NRB},y}$ is the fraction of biomass used in the absence of the project activity in year y that can be established as non-renewable biomass, and has been fixed at .98. This is a default value published in the CDM SSC WG 35 information note, "Default value of $f_{\text{NRB},y}$ for LDCs and SIDs".	OK
B.6.4	How was the $\eta_{\text{wb}} / \eta_{\text{old}}$ parameter available at validation verified?	/1/	DR	$\eta_{\text{wb}} / \eta_{\text{old}}$ are the efficiency of the baseline water boiling / cook stove system being replaced. These values will be fixed at the CPA level prior to inclusion, based on one of the following methods: 1. measured using representative sampling methods, or 2. based on referenced literature values use weighted average values if more than one type of device is being replaced, or 3. a default value of 0.10 may be optionally used if the replaced device is a three stone fire, or a conventional device with	OK

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			no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used. a. If option 3 is selected, the PP may conduct an ex-ante survey according to the sampling plan elaborated in the PoA-DD to justify the value. Alternatively, the PP may choose to fix the value ex-ante, and then monitor the baseline system during product distribution. In this case, an ex-ante survey is not required, but emission reductions will only be claimed for the portion of the project population that conforms to the baseline efficiency. DNV confirms that these methods are acceptable under the applied methodologies.		
B.6.5	How was the $EF_{\text{projected_kerosene}}$ parameter available at validation verified?	/1/	DR	$EF_{\text{projected_kerosene}}$ is the emission factor for kerosene, fixed at 71.9 tCO ₂ /TJ. This is the default value provide in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories	OK
B.6.6	How was the WH parameter available at validation verified?	/1/	DR	WH is the specific heat of water, set at 4.186 kJ/L °C. This value is a default value specified by AMS-III.AV	OK
B.6.7	How was the T_i parameter available at validation verified?	/1/	DR	T_i is the initial temperature of water, set at 20 °C. This value is a default value specified by AMS-III.AV	OK
B.6.8	How was the T_f parameter available at validation verified?	/1/	DR	T_f is the final temperature of water, set at 100 °C. This value is a default value specified by AMS-III.AV	OK

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B.6.9	How was the WHE parameter available at validation verified?	/1/	DR	WHE is the latent heat of water evaporation, set at 2260 kJ/L. This value is a default value specified by AMS-III.AV		OK
B.6.10	How was the X_{boil} parameter available at validation verified?	/1/	DR	Xboil is the proportion of the total population for which the common practice of water treatment is or would have been water boiling, and will be fixed at the CPA level prior to inclusion based on 3 rd party literature or a survey conducted according to the sampling plan elaborated in the PoA-DD. For CPAs located in Rwanda, the value is set at 74.34%. To determine this value, the PP administered a HH survey consisting of two questions. Respondents were asked if they treated drinking water, and if so, how. 57.25% of the population was found to treat water, and 42.56% of those who treated water did so by boiling. To account for suppressed demand, the PP has applied the ratio of water boilers to water treaters ($42.56/57.25 = 74.34$) to the entire population. The assumption is that HHs that do not currently treat water face a barrier that, if removed, would result in water treatment habits that are similar to the current population of water treaters. The results of the survey meet the required 90/10 confidence/precision requirements.		OK
B.6.11	How was the IMP_{frac} parameter available at validation verified?	/1/	DR	IMP_{frac} or the proportion of the population not using an improved drinking-water source, is established at the CPA level prior to inclusion via surveys that comply with the sampling plan discussed above. Based on the results, the CPA will be labeled as Case 1 (if IMP_{frac} is not less than 40%) or Case 2 (if IMP_{frac} is less than 40%). For CPAs located in Rwanda, an improved drinking-water source is defined as a water	~~CL2~~	OK

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			supply that meets/exceeds the Rwanda Standard for Potable Water /49/. For CPAs located in other countries, improved water supply will be defined by a relevant national standard or the JMP definition of improved if a national standard does not exist. The PP commissioned a study by the London School of Hygiene and Tropical Medicine, led by Dr. Thomas Clasen. The results of this study must be submitted to DNV for review			
B.6.12	How was the Case1/Case2 parameter available at validation verified?	/1/	DR	Case 1/Case 2, or the determination of whether the CPA is located in a region where the proportion of the population using improved drinking water source is equal to or less than 60%, will be specified at the CPA level based on the value of IMP_{frac} parameter. If IMP_{frac} is not less than 40%, the CPA is Case 1; otherwise it is Case 2. The PP commissioned a study by the London School of Hygiene and Tropical Medicine, led by Dr. Thomas Clasen to fix the value of IMP_{frac}. The results of this study must be submitted to DNV for review.	CL2	OK
B.6.13	How was the $NCV_{biomass}$ parameter available at validation verified?	/1/	DR	$NCV_{biomass}$ is the net calorific value of the non-renewable woody biomass that is substituted, set at .015 TJ/tonne. This is a default value specified in AMS-II.G		OK
B.6.14	How was QPW_y verified?	/1/	DR	QPW_y is the quantity of purified water delivered from a water filter in year y. According to paragraph 18 of AMS-III.AV, this parameter must be measured via ex-ante survey; this survey will be conducted according to the sampling plan		OK

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			elaborated in the PoA-DD. DNV confirms that this method is acceptable.		
B.6.15 How was HHsize verified?	/1/	DR	HH _{size} is the number of persons that utilize each of the functional project appliances. According to paragraph 18 of AMS-III.AV, this parameter must be measured via ex-ante survey; this survey will be conducted according to the sampling plan elaborated in the PoA-DD. DNV confirms that this method is acceptable.		OK
B.6.16 How was BS verified?	/1/	DR	BS is the fraction of population for which the baseline fuel being replaced is biomass. According to paragraph 18 of AMS-III.AV, this parameter must be measured via ex-ante survey; this survey will be conducted according to the sampling plan elaborated in the PoA-DD. According to AMS-III.AV, an ex-ante survey is required to establish the “proportion of NRB and fossil fuel”; the survey for the BS parameter will measure both biomass and fossil fuel consumption, though biomass use is the proportion of interest. Biomass use can converted to NRB (as required by AMS-III.AV) using the fNRB value. DNV confirms that this method is acceptable.		OK
B.6.17 In case any of the parameters above were determined based on sampling, was the sample adequate and did it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, did it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?	/1/	DR	The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size	~~CAR~~ 45 ~~CAR~~ 47	OK

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			calculation. According to the CDM Sampling Standard, if the desired reliability is not reached, the sample size must be increased, unless otherwise specified in the methodology. The sampling plan in the PoA-DD states that the lower bound of the 90% confidence interval may be used if the required reliability is not reached. This is permissible under AMS-II.G, but is not mentioned in AMS-III.AV		
Baseline emissions					
B.6.18	Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?	/1/	DR	The calculations used in the PoA-DD follow the calculations from the approved methodologies, though several parameters have been added to make clear how monitored parameters will affect the emission reduction calculations.	OK
B.6.19	Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Baseline emissions are not adjusted for cross-effects. A comment during the LSC, confirmed during the site visit, indicated that HHs cook on more than one stove. This should be reflected in the calculation of baseline emissions.	CAR 44 GL3 OK
B.6.20	Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Uncertainty exists in the parameter values. The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size	CAR 45 OK

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B.6.21	If the calculations of baseline emissions are based on sampling, does this comply with the Standard for sampling and surveys?	/1/	DR	calculation. Several parameters are established based on sampling. The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size calculation.	~~CAR~~ 45	OK
Project emissions						
B.6.22	Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?	/1/	DR	The calculations used in the PoA-DD follow the calculations from the approved methodologies, though several parameters have been added to make clear how monitored parameters will affect the emission reduction calculations.		OK
B.6.23	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	The PP has added several parameters to the standard calculation from the methodologies to make the results more conservative. However, cross-effects are not accounted for.	~~CAR~~ 44	OK
B.6.24	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Uncertainty exists in the parameter values. The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering	~~CAR~~ 45	OK

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			a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size calculation.		
B.6.25	If the calculations of project emissions are based on sampling, does this comply with the Standard for sampling and surveys?	/1/	DR	Several parameters are established based on sampling. The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size calculation.	CAR 45 OK
Leakage					
B.6.26	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	According to each methodology, leakage related to the use/diversion of NRB saved under the project activity by non-project households/users that previously used renewable energy sources must be assessed. In lieu of a survey assessment, the PP has chosen to apply a .95 discount factor to the calculation of emission reductions.	OK
B.6.27	Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	The PoA-DD has applied a default leakage discount value, as is permissible in each methodology	OK
B.6.28	Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	The PoA-DD has applied a default leakage discount value. Therefore, no uncertainty assessment is required.	OK
B.6.29	If the calculations of leakage emissions are based on sampling, does this comply with the Standard for sampling and surveys			Leakage emissions are based on the default leakage rate specified in the methodology. No sampling is required.	OK

Emission Reductions						
B.6.30	Algorithms and/or formulae used to determine emission reductions: - All assumptions and data used by the project participants are listed in the PoA-DD and related document submitted for registration. The data are properly referenced - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity - The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PoA-DD and supporting files to be submitted for registration.	/1/	DR	All assumptions and data sources are transparent and reasonable.		OK
B.7 Monitoring plan (VVS § 131-133)						
Data and parameters monitored						
B.7.1	Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/	DR	The monitoring plan does not include the parameter Bold, which is required by AMS-II.G	~~CAR~~ 16	OK
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/	DR	The monitoring plan does not include the parameter Bold, which is required by AMS-II.G	~~CAR~~ 16	OK
B.7.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR	Parameters are determined via self-reported survey and literature reviews. Measurement equipment is not required		OK
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR	Surveys conducted to determine parameter values will be conducted in accordance with sampling plan described in the PoA-DD, which meets the CDM sampling standard guidance for accuracy.		OK
B.7.5	In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.	/1/	DR	Parameters are determined via self-reported survey and literature reviews. Measurement equipment is not required		OK
B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	Operating Fraction (OF), or the fraction of the monitoring period that a technology has		OK

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			been deployed, shall be measured annually based on data in the project database. • $N_{y,i}$, or the number of technologies distributed under a CPA, shall be measured annually based on data in the project database. • Operational check ($OC_{y,i}$), or the fraction of units per technology type i that are operational in year y, will be measured at least biennially. • HH_{size}, or the number of persons that utilize each functional project appliance, shall be determined annually. (Note this parameter is also estimated ex-ante, per AMS-III.AV) • Baseline system (BS), or the fraction of the population for which the baseline fuel being replaced is biomass, will be recorded once, during initial distribution. (Note this parameter is also estimated ex-ante, per AMS-III.AV) • QPW_y, or the liters of drinking water consumed per day per person, shall be determined annually. (Note this parameter is also estimated ex-ante, per AMS-III.AV) • Water Quality Monitoring, or the fraction of water treatment units that are in compliance with the water quality requirements of the methodology, will be determined annually. • The proportion of the CPA population that is served by a public distribution system providing safe drinking water (SDW_{frac}) shall be determined annually • Usage (U), or the fraction of total cooking		
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			that continues to be done on the baseline stove in the project scenario, shall be determined biennially.		
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	The recording frequency is the same as the monitoring frequency, with the exception of $N_{y,i}$ and OF, which are recorded continuously.	OK
B.7.8	In case any of the parameters will be determined based on sampling, is the sample plan adequate and does it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, does it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?	/1/	DR	The sampling plan complies with the Standard or sampling and surveys for CDM project activities and programme of activities. The sampling method shall be selected from the acceptable methods described in the CDM sampling guidance . In the event that a sampling plan is elaborated for each CPA, the results will achieve 90/10 confidence/precision. If a sampling plan is applied to multiple CPAs, then 95/10 confidence/precision shall be used	OK
Ability of project participants to implement monitoring plan					
B.7.9	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR	All monitoring shall be conducted via self-reported surveys. All monitoring staff shall receive adequate training prior to conducting surveys, ensuring that data is accurately and consistently recorded.	OK
B.7.10	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/	DR	The monitoring plan requires retention of all necessary records in electronic and/or hard-copy format. However, the plan does not specify the length of time that documents shall be retained.	~~CAR~~ 42 OK
B.7.11	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/	DR	All parameters required for the calculation of emission reductions are included in the monitoring plan. The plan describes feasible methods for collecting all required information,	OK
B.7.12	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever	/1/	DR	The monitoring plan does not specify the length of time that documents shall be retained	~~CAR~~ 42 OK

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occurs later?					
Monitoring of sustainable development indicators/ environmental impacts					
B.7.13	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	The host country does not require monitoring of any SD indicators or environmental impacts.	OK
B.7.14	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	N/A	OK
B.7.15	Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	N/A	OK

Table 3 Resolution of corrective action requests and clarification requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CAR 1 The PoA-DD states that Rwanda, Burundi, Tanzania and Uganda will be host Parties. As required by the CDM Project Standard, the PP must obtain a letter of approval from the DNA of each Party involved.	A.4.2 A.4.3 A.4.5	The CME has obtained the LoA from Rwanda. Other host countries will be removed for now, and added after registration	DNV has reviewed the LoA from Rwanda which confirms all required points. All other host countries have been removed from the PoA-DD. This CAR is closed
CAR 2 As required by the CDM Project Standard, project participants shall define for the proposed CDM project activity or PoA their modalities of communication with the Board and present them in a Modalities of communication statement (MoC statement). PP shall submit the MoC statement for review	A.5	The MoC has been submitted	DNV has reviewed the MoC and can confirm that it contains all necessary information and uses the latest form. This CAR is closed
CAR 3 In case the coordinating /managing entity does not wish to have all CPAs verified, there shall be a description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.	A.7.1	Section B.7.2 has been updated to reflect the requirement	DNV reviewed the monitoring plan in section B.7.2, which now specifies a statistically sound procedure to be used by DOEs during verification. This CAR is closed.
CAR 4 The PoA-DD demonstrates additionality using a simple cost analysis. Verifiable evidence must be provided to support the assessment.	B.2.3 B.2.10 B.2.16	The additionality demonstration has been revised to follow the Guidelines on the demonstration of additionality of small-scale project activities.	DNV has reviewed the revised additionality demonstration. Additionality is demonstrated by EB 68, Annex 27, version 09.0, Guidelines on the Demonstration of Additionality of Small Scale Project Activities, per paragraph 2 (c) which states, “documentation of barriers...is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds. The positive list is comprised of, inter alia,

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			project activities solely composed of isolated units where the users of the technology/measure are households or communities or Small and Medium Enterprises and where the size of each unit is no larger than 5% of the small-scale CDM thresholds DNV has reviewed the water filter calculations for the first CPA /2//4/ and confirmed that each water filter is expected to generate .66 tonnes of emission reductions annually; this is less than 3000 tonnes of emission reductions (or 5% of the small-scale threshold). DNV reviewed the manufacturer's specifications for the Ecozoom stove distributed under the first CPA /42/ and can confirm that the efficiency is 0.381. Based on this value, the expected energy savings per stove is .004331 GWh annually, which is less than 9 GWh savings (or 5% of the small-scale threshold). This CAR is closed
CAR 5 The PoA-DD specifies the performance requirements for water filters, but does not specify the performance requirements for cook stoves.	B.3.3 B.4.3	The eligibility criteria have been revised to require at least 20% efficiency for all cook stoves.	The PoA-DD has been revised to require that the minimum efficiency of cook stoves included a CPA of the PoA is 20%, as required by AMS-II.G. This CAR is Closed.
CAR 6 According to the CDM Project Standard, the PoA-DD must demonstrate that all applicability conditions of the applied methodologies are met. However, , the PoA-DD does not include applicability criteria for AMS-II.G	B.3.5	The applicability criteria for AMS-II.G have been added to the PoA-DD	DNV reviewed the PoA-DD and the first CPA-DD, and can confirm that all applicability criteria are discussed in the eligibility criteria and also in section B.2. The PP has further provided verifiable evidence to support compliance with these conditions for the first CPA.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			This CAR is closed
CAR 7 According to the PoA Standard, the eligibility criteria must include a description of target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);	B.3.8	The eligibility criteria have been revised	DNV reviewed the revised eligibility criteria in the PoA-DD. These criteria now require CPAs to state the target group and distribution method. This CAR is closed
CAR 8 According to the PoA Standard, the eligibility criteria must contain conditions related to sampling requirements for the PoA in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities.” However, this is not included in the eligibility criteria.	B.3.9	Sampling requirements have been added to the eligibility criteria	DNV reviewed the updated PoA-DD, and can confirm that the eligibility criteria require CPAs to follow the monitoring plan specified in the PoA-DD. This CAR is closed.
CAR 9 According to the CDM Project Standard, if a small-scale project activity includes more than one type of SSC activity, the SSC size thresholds are mutually exclusive. The PoA-DD includes the size threshold for Type III activities under AMS-III.AV, but does not mention the Type II threshold for AMS-II.G related activities. Further, according to the PoA Standard, the eligibility criteria must include provisions to ensure CPAs abide by the required size threshold.	B.3.10	The SSC threshold has been revised to separately address Type II and Type III thresholds. This has been reflected in the eligibility criteria	DNV reviewed the revised PoA-DD, and can confirm that cook stoves implemented under AMS-II.G are subjected to the appropriate SSC threshold (180 GWh energy savings annually). In addition, the SSC limits have been added to the eligibility criteria. This CAR is closed.
CAR 10 According to the PoA Standard, the eligibility criteria must include requirements for the debundling check.	B.3.11	The debundling check has been added to the eligibility criteria.	DNV reviewed the revised PoA-DD and can confirm that the eligibility criteria now contain a debundling check requirement. This CAR is closed.
CAR 11 According to the PoA standard, combinations of methodologies for a PoA are eligible where it can be demonstrated that there are no cross-effects between the measures applied. CPAs implemented under the PoA may distribute both cook stoves and water filters,	B.4.2	The PP has submitted a proposed method for addressing cross-effects, and has updated the parameter values accordingly.	DNV reviewed the proposed method for accounting for cross-effects. The approach is in DNV’s opinion adequate as it subtracts the estimated amount of biomass that is used for boiling water (determined from the results of survey on actual water use and actual share of

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
and therefore cross-effects may exist. The PP must propose a method for accounting for cross-effects			water being boiled prior to be used) from the total amount of biomass used by a household (as determined from a literature review). In accordance with the PoA Standard, a methodology deviation request form was submitted to the EB. DNV received approval on 10 April 2013 This CAR is closed.
CAR 12 The monitoring plan must specify the duration of document retention.	B.5.5 B.7.10	All documents will be retained for 2 years past the end of the PoA.	DNV reviewed the revised monitoring plan in the PoA-DD and can confirm that it requires all CPAs to retain all documents for at least 2 years past the end of the PoA. This CAR is closed.
CAR 13 As stated in the CDM Project Standard, the start date of the PoA is either the date of notification of the intention to seek CDM status, or the date of publication of the PoA-DD for the global stakeholder consultation. The start date stated in the PoA-DD does not correspond to either of these dates.	C.1.1	The start date of the PoA-DD has been revised to 2 August 2012, which is the date of publication	The revised start date is the date of publication of the PoA-DD for the global stakeholder consultation. This CAR is closed.
CAR 14 The PoA-DD states that the PoA will be implemented in several countries. The PoA-DD states that the EIA and LSC are conducted at the PoA level b/c there is a similar situation across these countries. Evidence must be provided to support this claim	D E	The PoA-DD has been revised to require each CPA to conduct or reference an EIA & LSC.	DNV has reviewed the revised PoA-DD and CPA-DD, and can confirm that the EIA & LSC are conducted at the CPA level. This is appropriate as the PoA plans to expand beyond a single country. This CAR is closed.
CAR 15 The sampling plan states that a single sampling plan shall be used and that 90/10 confidence/precision shall be reached. However, according to the CDM Sampling Standard, parameter values shall be estimated by sampling in accordance with the requirements in the	B.6.16	The reliability requirements of the sampling plan have been revised.	DNV reviewed the revised sampling plan and can confirm that if a single sampling plan is applied to more than one CPA, the results must meet 95/10 confidence/precision. This CAR is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs ¹⁸ is undertaken applying 95/10 confidence/precision ¹⁹ for the sample size calculation.			
CAR 16 According to AMS-II.G, the parameter B_{old} must be specified in the PoA_DD. However, this parameter is missing from the list of fixed and monitored parameters.	B.7.1	B_{old} has been added to the list of fixed parameters	DNV reviewed the revised PoA-DD and can confirm that B_{old} is required to be specified ex-ante by each CPA. This CAR is closed.
CAR 17 According to the Sampling Standard, if the desired reliability is not reached, the sample size must be increased, unless otherwise specified in the methodology. The sampling plan in the PoA-DD states that the lower bound of the 90% confidence interval may be used if the required reliability is not reached. This is permissible under AMS-II.G, but is not mentioned in AMS-III.AV.	B.6.14	The sampling plan has been revised to specify that the lower bound can only be used for AMS-II.G parameters.	DNV reviewed the revised sampling plan and can confirm that the lower bound of the confidence interval may be used for AMS-II.G parameters.(if the results do not meet the required reliability. The sample size will be increased if the results for AMS-III.AV related parameters do not meet the required sampling plan. This CAR is closed.
CL1 The description of a generic CPA does not cover all relevant elements, including target groups, distribution method, and collaboration with local partners.	A.1.1	The description of the activity in the PoA-DD and CPA-DD have been revised to discuss the target group, distribution method and involvement of local partners.	DNV has reviewed the revised PoA-DD and can confirm that the description of the generic CPA is sufficient to provide the reader with a clear understanding of each CPA. This CL is closed.
CL2 The PP commissioned a study by the London School of Hygiene and Tropical Medicine, led by Dr. Thomas Clasen to support the value of IMPfrac. The results of this study must be submitted to DNV for review	B.6.13	The study results have been provided to DNV	DNV has reviewed the study results and can confirm that the results are accurately stated by the PP and that the results achieve the required reliability. This CL is closed.
CL 3	B.6.16	Each CPA will monitor the fraction of cooking	DNV has reviewed the revised monitoring plan

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
One of the comments during the LSC was that HHs cook on more than one stove. But the biomass consumption is not adjusted for this.		that is done with baseline stoves and B_{old} will be discounted by this fraction. The parameter U has been added to the monitoring plan.	and can confirm that it now includes monitoring of the fraction of cooking that is done with baseline stoves in project households. As Bold will be discounted by this fraction, DNV confirms that this is an acceptable method to address the comment. This CL is closed.

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
There are no FAR's identified during the validation	N/A	N/A

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APPENDIX B

PROTOCOL FOR ASSESSING COMPLIANCE OF SPECIFIC CPA WITH POA REQUIREMENTS

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A Description of CPA (PS § 31, VVS § 62-63, § 189)					
A.1. Title, Technical description of CPA and Parties involved					
A.1.1 Does section A.1 of the CPA-DD include a clearly identifiable project title, version number of the CPA-DD and date of the CPA-DD?			☐ Clearly identifiable title of the project activity ☐ Version number of the PoA-DD is included ☐ Date of the PoA-DD is included.		
A.1.2 Is the CPA-DD is in accordance with the applicable requirements for completing CPA-DDs?					
A.1.3 Does the description of the CPA sufficiently cover all relevant elements, is accurate and does it provides the reader with a clear understanding of the nature of the proposed CPA?					
A.1.4 Does the CPA-DD provide information on the CPA implementer(s)? CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided the name is included in the registered PoA.					
A.1.5 Does the CPA-DD describe all the technologies and/or measures to be employed and/or implemented by the CPA including a list of the facilities, systems and equipment that will be installed and/or modified by the CPA					
A.1.6 Does the CPA-DD adequately list all Party(ies) and CPA implementer(s) involved in the CPA and provide contact information in Appendix 1? Are all listed Party(ies) and CPA implementer(s) included in the PoA?					
A.1.7 Does the CPA-DD provide geographic reference or other means of identification that allows for the unique identification of the CPA?					
A.2. Duration of the CPA and crediting period					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.2.1	Is the CPA starting date and operational lifetime clearly defined and evidenced?					
A.2.2	Has the crediting period been clearly defined and is the start of the crediting period deemed to be reasonable?					
A.2.3	Has it been confirmed that the length of the CPA crediting period does not exceed the end of PoA?					
A.3.	Estimated amount of emission reductions from the CPA					
A.3.1	Has the emission reduction forecast been checked and is it deemed likely that the stated amount is achieved given that the underlying assumptions do not change?					
A.4.	Public funding					
A.4.1	In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?					
A.5.	Confirmation for CPA					
A.5.1	Has a confirmation been provided that the CPA is neither registered as an individual CDM project activity nor is part of another registered PoA?					
B Environmental impacts (PS § 63-64, VVS § 134-135) <i>It is assessed whether environmental impacts of the CPA have been properly addressed.</i>				☐ Analysis at PoA level ☐ Analysis at CPA level This section must only be completed if the analysis of environmental impacts must be at CPA level.		
D.1.2.	Has an analysis of the environmental impacts of the CPA been sufficiently described?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)?					
D.1.4. Will the programme create any adverse environmental effects?					
D.1.5. Are transboundary environmental impacts considered in the analysis?					
D.1.6. Have identified environmental impacts been addressed in the programme design?					
D.1.7. Does the programme comply with environmental legislation in the host country?					
C Stakeholders' comments (PS § 65-69, VVS § 138-140) <i>It is assessed whether stakeholders have been properly consulted in the development of the CPA.</i>			☐ Consultation at PoA level ☐ Consultation at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
C.1.1. Have relevant stakeholders been consulted?					
C.1.2. Have appropriate media been used to invite comments by local stakeholders?					
C.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?					
C.1.4. Is a summary of the stakeholder comments received provided?					
C.1.5. Has due account been taken of any stakeholder comments received?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D Application of a baseline and monitoring methodology(ies)					
D.1. Title and reference of the approved baseline and monitoring methodology(ies) selected					
D.2.2. Are the exact reference and title of approved methodology(ies) and tools listed?					
D.2.3. Are valid version of approved methodology(ies) and tools applied?					
D.2. Applicability of methodology (and tools) (VVS § 73-77) <i>The applicability of the methodology is checked through the eligibility criteria specifying the conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs</i>					
D.3.2. Do the eligibility criteria in D.5 below, in particular the eligibility criteria specifying the conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by the CPA, sufficiently demonstrate that the CPA complies with the applicability criteria of the applied methodology (and tools)? If not, provide below and assessment of the CPAs compliance with the applicability criteria.					
D.3. Project boundary of CPA (VVS § 82-87)					
D.3.1. What is the CPA's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?					
D.3.2. Is the CPA located within the geographical boundary of the proposed or registered PoA?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.3.3. Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.					
D.3.4. Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?					
D.4. Baseline scenario determination and description (VVS § 88-95 / Identification of alternatives to the project activity (VVS § 113-116)) <i>Ensure that the evaluation of all alternatives provided and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this</i>					
D.5.2. Which baseline scenarios have been identified? Is the list of baseline scenarios complete? Does the list include as one of the options that the project activity is undertaken without being registered as a proposed project activity? Does the list contain all plausible alternatives which are viable means of supplying the comparable outputs or services that are to be supplied by the proposed project activity?					
D.5.3. How have the other baseline scenarios been eliminated in order to determine the baseline?					
D.5.4. What is the baseline scenario?					
D.5.5. Is the determination of the baseline scenario in accordance with the guidance in the methodology?					
D.5.6. Has the baseline scenario been determined using conservative assumptions where possible?					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.5.7.	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? Does the baseline scenario comply with all applicable and enforced legislation?					
D.5.8.	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?					
D.5.9.	Is the baseline determination adequately documented in the PoA-DD? • All assumptions and data used by the project participants are listed in the PoA-DD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the CPA-DD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity					
D.5. Demonstration of eligibility for the CPA						
D.6.2.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will be referenced by a unique host government recognized boundary (such as districts, sectors, cells, villages) within Rwanda.					
D.6.3.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: All CPAs will be owned/operated/managed by the CME, ensuring that the operator is aware of and agrees that the CPA is included in the PoA and that all emission reduction benefits are					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	exclusively assigned to this PoA.					
D.6.4.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each technology distributed by a CPA will contain a unique identification number					
D.6.5.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: All technologies distributed shall receive approval from the host country government, if required					
D.6.6.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA must confirm that its start date is not prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation. The date of webhosting of the CDM-PoA-DD is no later than August 2, 2012.					
D.6.7.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: End-users receiving project technologies are households or communities or Small and Medium Enterprises (SMEs). CPA shall define the metric for determining the socio-economic status of the end-user, if HH or communities are targeted, or will define the type of SME targeted.					
D.6.8.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: An LSC must be conducted that is appropriate for the region and target group of the CPA, and that meets host country and CDM requirements.					
D.6.9.	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA must reference an Environmental Impact Assessment approval that is appropriate for the region and technology, or					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
cite relevant regulations that exempts the project proponent from conducting an EIA.					
D.6.10. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: The CME shall confirm that there is no public funding utilized in the CPA.					
D.6.11. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies are directly distributed to end-users					
D.6.12. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA must follow the sampling guidelines as described in section B.7.2.					
D.6.13. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Zero energy water purifiers are distributed that achieve water quality that meets the “protective” performance target specified by WHO (2011).					
D.6.14. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies are point-of-use or point-of-entry treatment systems					
D.6.15. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Prior to implementation of the project activity, a public distribution network of safe drinking water does not exist within the CPA region, and any SDW is produced by consumers using POU or POE water purifiers					
D.6.16. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
must be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.					
D.6.17. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Prior to the start of the crediting period, it will be assessed whether the CPA will be: (Case 1) implemented in rural areas of countries with proportion of rural population using an improved drinking-water source equal to or less than 60% confirmed by option a) ii: Using official data such as publicly available statistical data from a government agency or an independently commissioned study by an international organization or an university; or (Case 2) implemented in areas not included in Case 1.					
D.6.18. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: If water filters are distributed, the CPA shall demonstrate that it meets Type III SSC threshold of 60,000 tCO ₂ e per year					
D.6.19. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.					
D.6.20. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds)					
D.6.21. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Appliances displace use of non-renewable biomass					
D.6.22. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
technologies include single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.					
D.6.23. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: NRB has been used since 31 December 1989.					
D.6.24. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: If efficient cook stoves are distributed, the CPA shall demonstrate that it will remain under the Type II SSC energy savings threshold of 180 GWh per year.					
D.6.25. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Each CPA will demonstrate that it is exempt from a de-bundling check as each sub-system is no more than 1 per cent of the CPA threshold.					
D.6.26. Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria: Project technologies consist of isolated units that are no larger than 5 per cent of the small-scale CDM thresholds)					
D.6. Algorithms and/or formulae used to determine emission reductions of the CPA (VVS § 96-100)					
Data and parameters that are available at validation and that are not monitored					
D.7.2. How was the EF _{projected_fossilfuel} parameter available at validation verified?					
D.7.3. How was the LF parameter available at validation verified?					
D.7.4. How was the $f_{NRB,y}$ parameter available at validation verified?					
D.7.5. How was the η_{wb}/η_{old} parameter available at validation verified?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.7.6. How was the EFprojected_kerosene parameter available at validation verified?					
D.7.7. How was the WH parameter available at validation verified?					
D.7.8. How was the Ti parameter available at validation verified?					
D.7.9. How was the Tf parameter available at validation verified?					
D.7.10. How was the WHE parameter available at validation verified?					
D.7.11. How was the Xboil parameter available at validation verified?					
D.7.12. How was the IMPfrac parameter available at validation verified?					
D.7.13. How was the Case1/Case2 parameter available at validation verified?					
D.7.14. How was the NCVbiomass parameter available at validation verified?					
D.7.15. How was QPW _y verified?					
D.7.16. How was HH _{size} verified?					
D.7.17. How was BS verified?					
D.7.18. In case any of the parameters above were determined based on sampling, was the sample adequate and did it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, did it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?					
Baseline emissions					
D.7.19. Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?					
D.7.20. Have conservative assumptions been used when calculating					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
the baseline emissions?					
D.7.21. Are uncertainties in the baseline emission estimates properly addressed?					
D.7.22. If the calculations of baseline emissions are based on sampling, does this comply with the Standard for sampling and surveys?					
Project emissions					
D.7.23. Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?					
D.7.24. Have conservative assumptions been used when calculating the project emissions?					
D.7.25. Are uncertainties in the project emission estimates properly addressed?					
D.7.26. If the calculations of project emissions are based on sampling, does this comply with the Standard for sampling and surveys?					
Leakage					
D.7.27. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?					
D.7.28. Have conservative assumptions been used when calculating the leakage emissions?					
D.7.29. Are uncertainties in the leakage emission estimates properly addressed?					
D.7.30. If the calculations of leakage emissions are based on sampling, does this comply with the Standard for sampling and surveys					
Emission Reductions					
D.7.31. Algorithms and/or formulae used to determine emission					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
reductions: - All assumptions and data used by the project participants are listed in the CPA-DD and related document submitted for registration. The data are properly referenced - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity - The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PoA-DD and supporting files to be submitted for registration.					
D.7. Monitoring plan (VVS § 131-133)					
Data and parameters monitored					
D.7.1. Do the means of monitoring described in the plan comply with the requirements of the methodology?					
D.7.2. Does the monitoring plan contains all necessary parameters, and are they clearly described?					
D.7.3. In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.					
D.7.4. In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.					
D.7.5. In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.					
D.7.6. Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.					
D.7.7. Is the recording frequency adequate for all monitoring parameters? Describe each parameter.					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.7.8. In case any of the parameters will be determined based on sampling, is the sample plan adequate and does it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, does it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?					
Ability of project participants to implement monitoring plan					
D.7.9. How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?					
D.7.10. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?					
D.7.11. Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?					
D.7.12. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?					
Monitoring of sustainable development indicators/ environmental impacts					
D.7.13. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?					
D.7.14. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.7.15. Are the sustainable development indicators in line with stated national priorities in the host country?					

APPENDIX C

CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

Kyle Silon holds a Masters Degree in Energy and Environmental Economics, and has 9 years' experience climate change mitigation strategies and carbon reduction projects. Prior to joining DNV, Kyle worked for 7 years in the climate change industry, devising corporate level marginal abatement cost curves and developing mitigation strategies for the financial, oil & gas, mining, and electric power sectors. His experience has focused particularly on California, where he has worked with several major California utilities to develop GHG strategies surrounding the developing carbon markets under AB32 and the Low Carbon Fuel Standard.

Mr. Silon has 2 years of experience related to the validation and verification of CDM projects/JI and other 3rd party validation/verification services. He has worked on the validation and verification of 8 household energy demand projects, including 5 CDM projects, located throughout the world.

His qualifications, experience and experience in CDM demonstrate his sufficient sectoral competence in household energy demand.

Weidong Yang holds a Master's Degree in Chemical Engineering and has studied MBA in general management, with an overall experience of around 20 years. Prior to joining DNV he had around 4 years' experience in chemical process industry covering technology, production, and quality control. He worked in research institute of pharmaceutical industry for about 8 years. His experience also covers the fields of quality management, environmental management and health & safety management. He has also been an IRCA registered lead auditor of management systems such as ISO 9001, ISO 14001 and OHSAS 18001 standards for various industrial sectors, including chemical process industry for 6 years.

He has experience of around 4 years in validation and verification of numerous GHG emission projects and inventory in DNV, both in China and other countries. The GHG emission projects and inventory include various types, such as, CDM, VCS, CAR and CCAR. His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in chemical process.

Seshan Ranganathan, holds a Bachelor's Degree in Chemical Engineering and has done diploma course in Management and completed the graduate ship course in Industrial Engineering and has an overall working experience of around twenty nine years. Prior to joining DNV, he has around twenty four years' experience in Chemical process industry (fertilizer & petrochemical manufacturing) covering production, technical services including energy audits and efficiency studies, waste heat recovery, efficiency studies of boilers ,power plants , safety audits and pollution control activities including waste water treatment, project management, corporate planning, sales, logistics in fertilizer & petrochemical industry . With respect to the thermal power plant the job assignment included the monitoring of flue gas exit temperatures, excess air used efficiency of fuel additives, condition of boiler refractory, insulation of steam lines etc. The experience also includes 5 years in process design & engineering for chemical process industry.

He is qualified validator and verifier for CDM projects and is carrying out the same for the past five years. He has completed the EMS lead auditor course. His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in areas of

(a) 1.1 Thermal energy generation from fossil fuels and Biomass including thermal electricity from solar (b) 1.2 Energy generation from renewable energy sources (c) 2.2 Heat distribution (d) 5.1/11.1/12.1 Chemical Processes Industries and (e) 13.1 Waste handling and disposal

Grant Little - Holds a Bachelor Degree in Pure and Applied Chemistry; with a Secondary Degree in Forest Products Manufacture and a Masters Degree in Business Administration (MBA). He has over 20 years of industrial experience. Prior to joining DNV, Grant gained 16 years' experience in the forest products industry covering Process Engineering, energy projects, Sustainable Development, Forest eco-labeling and Environmental Management Systems. He also has over 5 years' experience in the business development for carbon project development and carbon markets in Africa and the Middle East where he worked for a carbon aggregator and a government owned carbon management and environmental project development company. He is passionate about Africa and sees his work as a contribution to the development of the continent.

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