Gold Standard for the Global Goals

TEMPLATE

DEVIATION REQUEST FORM

PUBLICATION DATE **11.04.2021**
Version **5.0**

A. To be completed by Gold Standard

1| Decision

1.1 | Date – 15/06/2022

1.2 | Decision

The Deviation request is **not approved**. Though the default values, provided in the methodology are not mandatory to be used, however, in the explanation provided by the PD, only a single report has been referred which provides the efficiency of charcoal stoves globally but not specific to the project location and stove type. Thus, in the opinion of TAC, it is neither a valid claim nor conservative.

Additionally, the thermal efficiency of the traditional charcoal stove in the country and region of project implementation such as Jiko metal, Circular cooking stove and Square cooking stove would be 24.3%; 23.99% and 23.03%, respectively. Besides, another study Quantifying the Potential Impact of Improved Stoves in Nyeri County, Kenya also mentioned that the average efficiency of traditional Jiko is from 20%-25%. In the same report, the efficiency of LPG stoves in Kenya is 50%-60%.

Additionally, since the Project Developer fails to justify the appropriateness of proposed values, the project developer shall apply conservative value determined considering the stove type/design similar to baseline stoves or standard Water Boiling

Tests may be undertaken to determine stove efficiency using representative sampling methods, following the most recent WBT protocol and methodology requirements.

The validating VVB shall, through appropriate means at its disposal, evaluate the Project's compliance with the above decision and provide its opinion in the Validation Report.

SustainCert shall review both the PD's response and the VVB's assessment/opinion of the same and take appropriate steps.

1.3 | Is this decision applicable to other project activities under similar circumstances?

No

B. To be completed by the Project Developer/Coordinating and Managing Entity and/or VVB requesting deviation (Submit deviation request form in Microsoft Word format)

2| Background information

Deviation Reference Number	DEV_260	
Date of decision	15/06/2022	
Precedent (YES/NO)	No	
Precedent details	N/A	
Date of submission	24/05/2022	
Project/PoA/VPA	Project	ID – GSXXXX
	☒ PoA	ID – GS11189
	☒ VPA	ID – **Nigeria WPS VPAs:** GS11259 to GS11288 **Kenya WPS VPAs:** GS11289 to GS11305 And any VPAs that are included in future under the Methodology for emission reductions from safe drinking water supply v1.0
Project/PoA/VPA title	**PoA title:** Improved Cookstove and Safe Water Programme **VPA title:** Improved Cookstove and Safe Water Programme – Nigeria – VPA 01 To Improved Cookstove and Safe Water Programme – Kenya – VPA 47	
Date of listing	11/10/2021	
GS Standard version applicable	GS4GG	
Date of transition to GS4GG (if applicable)	Not Applicable	
Date of transition to Gold Standard from another standard (e.g. CDM) (if applicable)	Not Applicable	
Date of design certification/inclusion (if applicable)	--	
Location of project/PoA/VPA	Host country(ies): Nigeria and Kenya	
Scale of the project/PoA/VPA	☐ Microscale ☒ Small scale ☐ Large scale	
Gold Standard Impact Registry link of the project/PoA/VPA	https://registry.goldstandard.org/projects/details/3177	

Status of the project/PoA/VPA	☐ New ☒ Listed ☐ Certified design ☐ Certified project
Title/subject of deviation	Deviation from Monitoring methodology - Methodology for emission reductions from safe drinking water supply v1.0 dated 03/05/2021
Specify applicable rule/requirements/methodology, with exact paragraph reference and version number	Methodology for emission reductions from safe drinking water supply v1.0 dated 03/05/2021 Parameters: ID SDWS 11
Specify the monitoring period for which the request is valid (if applicable)	Start date 01/01/2021 End date 31/12/25 Not Applicable
Submitted by	Contact person name: Rohit Lohia Email ID: rohit.lohia@climate-secure.com Organisation: Climate Secure India Private Limited Project participant: Yes ☐ No ☒
Validation and Verification body (VVB opinion shall be included, where required by the applicable rules/requirements or request is submitted by the VVB).	Yes ☐ No ☒ If yes; VVB name: VVB Staff name(s):
Any previous deviations approved for the same project activity/PoA/VPA(s)?	Yes ☒ No ☐ Dev_184, Date of approval: 07/12/2021 Dev_263, Date of approval: 31/05/2022

3| Deviation detail

3.1 | Description of the deviation:

3.1.1 | Deviation detail (to be completed by Project developer):

Requirement:

Methodology for emission reductions from safe drinking water supply v1.0 dated 03/05/202, parameter SDWS 11 states the following:

Parameter ID	SDWS 11
Data/Parameter:	η_{wb}
Data unit:	Percentage
Description:	Weighted average efficiency of the baseline water boiling devices. Calculate the weighted average of the water boiling efficiency in the project boundary using the proportion of different stove types used and the stove efficiencies.
Source of data:	The following default values may be applied to calculate the weighted average of the water boiling efficiency in the project

	boundary: - **Three-stone fire or a conventional system** for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system, that is without either a grate or a chimney: default efficiency 10%. - **Other conventional systems using woody biomass:** default efficiency 20%. - **Improved cookstoves:** manufacturer specification, or if not available, default efficiency 30%. - **Fossil fuel combusting system:** manufacturer specification, or if not available, following the testing procedure described below. In case other types of stoves are found in the project area, or if significant efficiency differences from the default values are expected, standard Water Boiling Tests may be undertaken to determine stove efficiency using representative sampling methods, following the most recent WBT protocol or when a sampling is used, follow the 4.2 | below.
Any comment:	-

SustainCert's review feedback:
The applied methodology neither permits using the literature/research paper to use as the source of data for the efficiency.

CME's Argument:

The applied GS methodology mentions "may" and **not "shall"** for application of the default values (please refer below):

*"The following default values **may** be applied to calculate the weighted average of the water boiling efficiency in the project boundary……."*

Thus, use of 20% as charcoal stoves efficiency is not binding on VPAs.

Further, the methodology says:
*"In case other types of stoves are found in the project area, or if significant efficiency differences from the default values are expected, standard Water Boiling Tests **may** be undertaken to determine stove efficiency using representative sampling methods…."*

Thus, the use of WBTs for determining the thermal efficiency of baseline stoves is also not mandatory.

Hence, the applied methodology does not mandate the use of default values or standard Water Boiling Tests through Sampling as the only sources of data for determining the efficiency of baseline stove and use of published literature to establish η_{wb} is deemed within the limits of the methodology.

Lastly, an assessment of other parameters defined in the methodology yields the following

Parameter reference	Conditional Options for source of data
SDWS 5	shall
SDWS 6	shall
SDWS 8	shall
SDWS 11	may
SDWS 12	shall
SDWS 13	shall
SDWS 14	May
SDWS 15	May
SDWS 16	May

Thus, the methodology aims to provide an increase degree of flexibility for certain parameter by applying "May" vs restricts other parameter by applying "shall" as the applicable condition.

In light of the aforesaid, the parameter SDWS 11, should not be limited to using the options given on page 25, given it is **not "shall"** but a "may" condition.

The CME has used a credible published literature (issued by UES EPA) dated August 2017. Table 2.7 of this report presents the following:

Table 2-7. Stove Type and Efficiency by Nation

Fuel	Stove Type	Country	Current Efficiency	Efficiency Range	Sample Size (n=)	Source(s)
		China	16%	13-24%	4	8
		Global	19%	11-50%	69	2,5,10,13, 14,15,18, 19,20
Charcoal	Traditional	Global	14%	12-22%	4	2,6,7
	Angethi	India	18%	18%	1	1
	Improved	Kenya	25%	23-27%	4	5
		Ghana	23%	23%	2	5
Kerosene	Improved, Pressure	India	47%	47%	2	1,4
	Improved, Wick	India	50%	50%	1	4
	Improved	China	45%	42-49%	2	8
		Global[25]	46%	37-52%	8	1,4,8,10,20,21
LPG	Modern	India	55%	54-57%	2	1,4
		China	47%	42-54%	3	8
		Global[24]	49%	42-75%	11	10,20,21
Natural Gas	Modern	China	57%	54-61%	2	8
Coal Gas	Modern	China	46%	46%	1	8
Electricity	Modern	Global	59%	57-80%	4	11,12
Ethanol	Modern	India	53%	53%	1	21
		Kenya	46%	40-52%	2	10
		Global	49%	43-66%	4	10
Biogas	Modern	India	56%	55-57%	2	1,4
	Modern	China	56%	55-57%	2	1,4
	Modern	Global	55%	32-57%	5	1,21
Pellet, Wood	Modern	Global	35%	35-53%	6	5,23

Sources and Notes: [1] Singh et al. 2014a/b, [2] Bhattacharya et al. 2002b, [3] Bhattacharya et al. 2002a, [4] Smith et al. 2000, [5] Jetter et al. 2012, [6] Sweeney 2015, [7] Booker 2012, [8] Zhang et al. 2000, [9] Afrane and Ntiamoah 2012, [10] GACC 2016, [11] Schaetzke 1995, [12] EC 2011 [13] Jetter and Kariher 2009, [14] Winrock 2009, [15] AED 2008, [16] AED 2007, [17] Bailis et al. 2007, [18] Collivignarelli et al. 2010, [19] Robinson 2013, [20] MacCarty et al. 2010, [21] CES 2001, [22] Berick 2006, [23] Carter et al. 2014

[24] Current average thermal efficiency set as the average of India/China (IN/CN) due to the wide range of reported values, which skew towards high thermal efficiency.

[25] Average of reported thermal efficiencies used to derive current thermal efficiency, as opposed to 20th percentile, due to the presence of low values and a better match with the IN/CN average.

The above table provides thermal efficiency values established for traditional charcoal and Improved kerosene stove as 14% and 46% respectively. This study being a third party study, referring multiple credible sources /references as shown above remains the most comprehensive study available as at date with respect to providing thermal efficiency values for various stove types.

The source used above for efficiency values refers multiple difference sources vintaged 2002, 2015 and 2012 respectively for traditional charcoal. Thus, the value is deemed

derived from long term assessment of prevailing information to establish an acceptable value for traditional charcoal stove. Although these

Similarly, for Kerosene, the data source vintages range from 2001 – 2016 and is deemed equally credible. Besides, these literatures sources referred also include WBTs based reports, hence they are principally in line with the methodology.

As a conservative measure, for ER calculation the CME has used a value of 50% for kerosene stoves, which is higher than the established global average of 46%. It is also to be noted that the 50% efficiency value used lies at the higher end of global efficiency range (37-52%) mentioned in the above table.

Also, as a conservative measure, for ER calculation the CME has used a value of 15% for charcoal stoves, which is higher than the established global average of 14%.

During the baseline surveys conducted for Nigeria and Kenya, the $x_{charcoal}$ was found to be 40.74% and 1.16% respectively.

Sample Photos of type of traditional charcoal pot found to be in use in the baseline surveys schools in Nigeria:

<table>
<tr>
<td> 
Baseline Survey sample:
Gold Seal Academy</td>
<td> 
Baseline Survey Sample:
Mukhtar Group of Schools</td>
</tr>
<tr>
<td> 
Baseline Survey sample:
Oluwatoyin Secondary School</td>
<td> 
Baseline Survey sample:
PathFinder's Model School</td>
</tr>
</table>

The photos above, show that the baseline charcoal pots used are very basic, with no ceramic thermal insulation, and application of 15% thermal efficiency as η_{wb} is appropriate. Any baseline charcoal stoves globally with thermal efficiency higher than 15% would have a thermal insulative liner, ceramic or otherwise, to achieve greater heat transfer and combustion efficiencies.

Also, the GS Certified project GS 7312 in Nigeria, uses ex-ante value of conservative 15% for the efficiency of traditional charcoal stove. Review of section B.6.2 of GS7312 reveals that the photos of traditional charcoal stoves shown therein is similar to that found in use during the baseline surveys. This further corroborates the value of 15% as traditional charcoal pot efficiency.

Lastly, the following reference studies are also found in Nigeria, citing values of thermal efficiency of traditional charcoal stoves

Published literature	thermal efficiency
EXPERIMENTAL PERFOMANCE EVALUATION OF CHARCOAL-STOVE by USMAN, OJONIMI YUSUF, UNIVERSITY OF NIGERIA, Section 4.9, page no. 133[1]	15.0%
Thermal Performance of Improved Charcoal Stove as A Clean Development Mechanism Project – A Case Study of Bauchi, April 2017[2]	11.46%

The aforesaid confirms that application of 15% thermal efficiency as default baseline efficiency of charcoal stoves in Nigeria is conservative.

For Kenya, no recent information other than the EPA report cited above is available, hence the use of 15% against global average of 14% is deemed appropriate.

3.1.2 | VVB opinion (to be completed by VVB, if applicable):

The PP has used the datasource (Life Cycle Assessment of Cooking Fuel Systems in India, China, Kenya, and Ghana by USEPA, dated August 2017, Table 2-7 for kerosene) for the consideration of thermal efficiency which was found credible on the following grounds:

- The research is based on a published report in 2016. The aim of the research is to evaluate based on sensitivity analyses the effect of stove thermal efficiency, stove technology use, electrical grid mix, forest renewability factor, and allocation approach on environmental impacts of cookstove use.
- The credibility of the used source has been discussed above by the CME and is deemed appropriate by the VVB.
- The type of source for determining η_{wb} is not deemed limited by the applied methodology as the use of default factors is one of the options but not the only option. The other option for performing WBTs is also not a mandatory option.

[1] https://www.unn.edu.ng/publications/files/images/USMAN,%20OJONIMI%20YUSUF.pdf
[2] https://www.researchgate.net/profile/Kafayat-Adeyemi-2/publication/316523894_Thermal_Performance_of_Improved_Charcoal_Stove_as_A_Clean_Development_Mechanism_Project_-_A_Case_Study_of_Bauchi/links/59020a0f4585156502a2eaf0/Thermal-Performance-of-Improved-Charcoal-Stove-as-A-Clean-Development-Mechanism-Project-A-Case-Study-of-Bauchi.pdf?origin=publication_detail

- Moreover, it is to be noted that the research based on published report and conducted by US EPA would intend to present data without biases of impacting the final ERs, given it was not prepared for the purpose of determining emission reductions and hence there are no perverse incentive risks.

Since the methodology is not limiting in the choice of source, the use of research paper/ report for establishing η_{wb} is not seen as a deviation from the methodology.

3.2 | Assessment of the deviation:

3.2.1 | Deviation assessment (to be completed by Project developer):
Apart from deviation from the stated rule, the project complies with all other requirements of the monitoring methodology the principles of accuracy, completeness, and conservativeness.

3.2.2 | VVB opinion (to be completed by VVB, if applicable):

Not Applicable

3.3 | Impact of the deviation:

3.3.1 | Impact assessment (to be completed by Project developer):

No Impact envisaged

3.3.2 | VVB opinion (to be completed by VVB, if applicable)

No Impact envisaged

3.4 | Documents:

**Guidance* List of documents provided (note that once a decision has been made by Gold Standard, this deviation form along with supporting documents will be made public on the Gold Standard website. If any of the supporting documents are confidential, please indicate here to ensure they are omitted.)*

Version number	Release date	Description
5	11.04.2022	Additional information added: - date of listing, design certification, transition - standard version - specific reference to a requirement deviated from - any previous deviations/design changes approved Guidance on VVB opinion
4	14.01.2021	
3	16.07.2020	
2	03.05.2018	
1	01.07.2017	Initial adoption