February 2018

Myanmar Stoves Campaign

GOLD STANDARD MONITORING REPORT

GS Reference Number: GS 1729 (PoA) & GS2394 (VPA 002)
Monitoring Periods: 01/10/2015 - 28/02/2016 & 01/03/2016 – 28/02/2017
1st Verification - 1st Periodic Verification of the 1st Crediting Period – Including Two Retroactive Crediting Periods (2015-16) & (2016-17)
Net Emission Reductions: For (2015-16) = 3283 tCO_2, For (2016-17) = 7834 tCO_2,
Total ERs for Both Vintage Years = 11117 tCO_2

From	To	VERs
01st October 2015	31st December 2015	1970
01st Jan 2016	31st December 2016	7841
01st Jan 2017	28th February 2017	1306
Total		11117

Version: 3.0 Submitted on: 04th June 2018
By: Mr. Arnfinn Oines, Soneva Foundation

Contents

Section A: General Description of Myanmar Stoves Campaign

A.1] Project Introduction, Participants and Technology Used

Myanmar Stoves Campaign aims to ensure the use of carbon finance to support the distribution and maintenance of domestic and non-domestic Fuel-Efficient Stoves (FES) through local implementation partner(s) (IP) in the Republic of the Union of Myanmar.

The Myanmar Stoves Campaign is a programme of the Soneva Foundation and the first Gold Standard certified carbon project in Myanmar. This project activity is implemented by three actors, which are the Soneva Foundation, Mercy Corps and Local Vendors (Sales Agents) in each of the targeted project villages under this VPA.

Myanmar Stoves Campaign was started in September 2013 and currently, and since then, as of August 2017, the project has covered more than 400 villages in Pyawbwe Township in Mandalay Region in central part of Myanmar. The co-ordinated action by the three actors in this project has been successful in distributing over 17,000 fuel efficient stoves which have improved the lives of more than 70,000 people.

The stoves distributed are the Envirofit SuperSaver GL (Earlier known as M-5000). Each household received at least one stove. There are two methods of payments which are lump sum (15000 MMK for lump sum payment) and instalment (17000 MMK for five (5) months instalment) payments. Instalment is an excellent method for some families who have financial hardship and couldn't afford lump sum payment.

Selected FES model for this VPA:

- Envirofit SuperSaver GL (Earlier known as M-5000), launched in 2011, is the successor model of the G-3300 and is produced in China, India and Kenya

- Product weight 4.2kg
- Size (in cm): 28x26.5x26.5
- CO2 emission reduction compared to three stone fire of 66%
- Wood use reduction compared to three stone fire of 66%
- Thermal efficiency of 29.7%
- Manufacturer guarantee of 2 years on outside and 5 years on the inside parts
- Estimated product life of 5 years

Source: M5000 (SuperSaver GL) Performance Sheet (Link) and manufacturer website (Link)

Envirofit SuperSaver GL had been selected as suitable product for local users based on the inputs from local communities and various stakeholders after they were consulted through demonstration and filed tests. This followed with the stoves being distributed to the households in targeted villages.

This intervention has helped the local households to smoothly transition to a new FES stove from being dependent on the old three stone fires. The user experience and benefits has been very positive and encouraging towards this modern technology. In addition to this, this project has successfully demonstrated the contribution in catalysing the socio-economic development of these communities by having a positive impact on a range of indicators. There is an increasing awareness among the users in targeted villages and the nearby ones on the immediate and long term environmental and economic benefits coming from this project, which is helping in higher rates of adoption, all of which is helping the Myanmar Stoves Campaign to positively impact the lives of the rural under-served in a sustainable and environmentally friendly way.

A.2] Relevant Dates for the Project Activity

Date of first stove sale & start date of the project activity = 01st March 2015

Start date of crediting period = 01st October 2015

First project monitoring exercise performed on: 23rd December 2017 to 27th December 2017, results to be applied to the crediting periods from:

01/10/2015 - 28/02/2016 – Retroactive Crediting Year 1

01/03/2016 – 28/02/2017 – Retroactive Crediting Year 2

A.3] Methodology Applied

GS1729 "Myanmar Stoves Campaign" Gold Standard micro-scale PoA applies the The Gold Standard Simplified Methodology for Efficient Cookstoves, Version 01, February 2013.

The relevant equations are as follows:

$$ER_y = \sum_{0to1}^{XtoY} N_{p,y} * P_y * U_{p,y} * \mathrm{f}_{\mathrm{NRB,\,y}} * (\mathrm{EF}_{\mathrm{b,fuel,CO2}} + \mathrm{EF}_{\mathrm{b,fuel,\,non\_CO2}}) * (1 - \mathrm{DF}_{\mathrm{b,Stove,y}})$$

$$P_y = B_{b,y} * (1 - \frac{\eta_b}{\eta_{p,y}})$$

$$\eta_{p,y} = \eta_p * (DF_\eta)^{y-1} * 0.94$$

Where:

$N_{P,y}$	Number of project cookstoves of each age group operational in the year y
P_y	Quantity of firewood that is saved in the year y (tonnes per household in year y)
$U_{P,y}$	Usage rate for project cookstoves in year y, based on adoption rate and drop off rate revealed by usage surveys (fraction)
$f_{NRB,b,y}$	Fraction of biomass, used in year y for baseline scenario, which can be established as non-renewable. The project proponents shall estimate project specific national/ regional value[4] or apply the default f_{NRB} value provided by the CDM Executive Board and endorsed by the host country DNA[5].
$EF_{b,fuel,CO2}$	CO_2 emission factor of firewood that is substituted or reduced. (Default value for wood fuel 1.747 tCO_2/ton of wood)
$EF_{b,fuel,non\_CO2}$	Non-CO_2 emission factor of firewood that is substituted or reduced. (Default value for wood fuel 0.455 tCO_2/ton of wood)
$DF_{b,Stove,y}$	Usage of baseline cookstove during the year y (fraction) in project scenario
x	y – 1
y	Year of the crediting period

Determination of quantity of biomass saved:

Quantity of firewood that is saved ($P_{,y}$) is estimated as follows:

$$P_y = B_{b,y} * (1-\eta_b/\eta_{p,y}) \quad \ldots\ldots(2)$$

Where:

$B_{b,y}$	Quantity of firewood consumed in baseline scenario during year y (tonnes per household per year)
$\eta_{p,y}$	Efficiency of project cookstove in year y (fraction)
η_b	Efficiency of the baseline cookstove being replaced (fraction). A default value of 10% shall be used if the replaced cookstove is a three stone fire, or a conventional device without a grate or a chimney i.e. with no improved combustion air supply or flue gas ventilation

Determination of firewood consumed in baseline ($B_{b,y}$)

The firewood consumed in baseline ($B_{b,y}$) for this VPA is calculated through the baseline survey conducted as per the guidelines in The Gold Standard Simplified Methodology for Efficient Cookstoves, Version 01, February 2013 by Gold Standard Foundation. The survey shows an Annual Baseline Wood Consumption/Household to be 3.94 Metric Tons.

Section B: Description of Monitoring System & Exercise for VPA 002

B.1] Monitoring System

The monitoring plan is in accordance with " The Gold Standard Simplified Methodology for Efficient Cookstoves, Version 01, February 2013."

The monitoring methodology is supported by:

- Sales receipts
- Total Sales Record (Project Tracking File)
- Customer Database
- Project Database, which is maintained continuously

Maintenance of a Total Sales Record

The Project Proponent collates and maintains the total sales data in electronic and paper format. The Total Sales Record will comprise the following data:

- Date of Sale[1]
- Model/type of project technology sold:
- Serial/ID number of the device
- Name and telephone number (if available) of end-users
- Application of device (type of end use: Commercial/Domestic)
- Address/ Location of end-users[2]

The **Sales Record** information is collected using the following methods:

For the portable fuel-efficient stoves, the local vendors (sales agents) sell stoves directly to end-users and record sales and user training continuously. This data is then collated into a detailed Total Sales Record that tracks the chain of transactions between the user and the distributors.

[1] Date of Sale will be associated with conservative assessment as to date of installation and commencement of use of technology
[2] In circumstances where a user's formal address cannot be provided due to insufficient information on street names/house numbers, suitable landmarks/ with location on a town/city plan will be provided.

The data received by the project implementation partners in paper format will be converted and saved electronically for monitoring and analysis purposes. A mechanism, designed jointly between the CME and the implementing partner, is agreed and put in place to accurately track sales, inventories, supply and purchases for every stove distributed. For assuring accuracy and consistency, the Total Sales Record will be cross checked with import data, usage and other relevant data.

The names and telephone numbers or name and addresses collected must be commensurate with representative sampling, i.e. the names and addresses or phone numbers (where possible) within sales record shall be large enough so that surveys can be based on representative, randomly selected samples.

Project Database

The project database is derived from the Total Sales Record with project cookstoves differentiated by different project scenarios. The differentiation of the project database into sections is based on the results of the applicable monitoring studies for each project scenario, in order that emission reduction calculations can be conducted appropriately section by section.

Other periodic monitoring tasks

Monitoring shall consist of checking of a representative sample, once every year (annually) to ensure that project cookstoves are still operating by carrying out the usage survey as per the guidelines set out in the methodology.

Annual surveys for monitoring:

- **Usage Survey** to establish the drop-off rates in technology usage from year-1 sales and other vintages. For example, if only cookstoves in the first year of use (age0-1) are being credited, a usage parameter must be established for age-group 0-1, through a usage survey for cookstove age0-1. If cookstoves of age 0-1 and age 1-2 are being credited (as part of first request for issuance), usage parameters must be established for age-group 0-1 and 1-2, respectively through a usage survey. If cookstoves of age-group 0-1 and 1-2 are being credited (as part of second request for issuance), usage parameters must be established for age-group 1-2 only through a usage survey as the usage rate for cookstoves of age group 0-1 can be applied from the previous issuance.

- **Monitoring Survey** to reassess household kitchen regimes. CME and/or Implementation Partner will randomly sample households from the sales agreements received. Sampling will be representative of geographic regions and technology used.

Where replacements are made, monitoring shall also ensure that the efficiency of the new cookstove is similar to the appliances being replaced.

The project must also monitor the use of baseline stoves in the project activity and any seasonal variation.

Finally, the project must also monitor the physical conditions of the cookstoves.

B.2] Monitoring Exercise for VPA 002

The project monitoring survey for this VPA, was conducted from 23rd December 2017 to 27th December 2017.

During this period, 100 household face to face surveys were conducted in a total of 10 villages under this VPA. These villages are Mae Kone, Thein Kone, Hta Naung Pin Wine, Nyaung Pin Hla, Kyauk Phyar, Pay Pin Lay, Phaung Taw, Thae Poke, Myaunt Min Kone, and, Tha Phan Chaung.

The survey was designed to collect key information on the monitoring parameters for carbon emission reduction calculations and sustainability development indicators. The list of people interviewed is provided at the end of this document in Annex 2.

The team involved in the project monitoring exercise is as follows:

Name	Designation & Role	Qualification
Bhushan Trivedi	Consultant to the Soneva Foundation on Myanmar Stoves Campaign. Bhushan led the designing of the project monitoring survey exercise + QA/QC of data.	Bhushan Trivedi is a consultant in the field of social development and social entrepreneurship. He has an extensive experience of working in the development sector in India and Myanmar, specifically on energy access initiatives. Apart from being a consultant to the Soneva Foundation on Myanmar Stoves Campaign for four years, he also led a solar PV micro-grid project in rural Myanmar. Bhushan has earned his bachelor's degree in Mechanical Engineering from Pune University, India. A Masters in Environmental Assessment & Management from Salford Univerity, Manchester, UK, and a Diploma in Social Entrepreneurship from NMIMS, Mumbai.
Phyo Phyo Wai	Senior Program Manager, Energy Venture Program for Mercy Corps (Myanmar) Phyo Phyo planned the data collection, training of enumerators, supervision and QA/QC of data.	Phyo is Senior Program Manager managing Energy Social Venture Program for Mercy Corps (Myanmar). She has extensive experiences in Development sectors, especially in Resilience sector; Disaster Risk Reduction, Climate Change and Civil Society Strengthening Sector. Phyo received a Bachelor Degree, majoring in Chemistry from University of Distance Education, Yangon, Myanmar. She also received Master in Development Studies (M.Dev.S) from the Institute of Economics, Yangon and Master in Development Management (MDM) from the Asian Institute of Management (AIM), Philippine. She has also obtained the Post-Graduate Diploma in Social Work from Yangon Art & Science University, Myanmar and Diploma in Teaching English for Speaker of Other Language from London Teacher Training College, UK.
U Hla Khaing	Enumerator	U Hla Khaing is a Myanmar national having significant experience in data collection process with Mercy Corps an

	Data Collection	other organizations. Moreover, he performed as one of the members of Village Development Committee in LIFT Project implemented by Mercy Corps since in 2010.
U Nyeing Maung	Enumerator Data Collection	U Nyeing Maung is a Myanmar national and also one of the members of Village Development Committee in LIFT Project implemented by Mercy Corps in 2010, having relevant experience in data collection relating to community development projects. He is currently living in Tel Lay Pin village, Tel Lay Pin Village Tract, Pyawbwe Township, Mandalay Division.

Age Groups

The project activity initially installed stoves into 1868 households.

This VPA claims ERs for the age_{0-1} and age_{1-2} and has collected information to estimate the drop rates/usage rates of the cookstoves in these project regions. For the calculations of ER, and applying the principle of conservativeness, the age group selected for calculation of both the retroactive years (0-1) and (1-2) is age_{1-2}.

From the age_{1-2} results, the usage rate found out was 84% which means there are currently 1569 stoves currently in use.

Monitoring Procedure Followed

Soneva Foundation led the design of the monitoring exercise while ensuring the quality assurance/check mechanisms with the same. The monitoring plan was then shared and discussed with the project implementation partners, Mercy Corps, who interviewed, selected and trained a team of enumerators for data collection. The data collection was via a survey designed in line with the Project Survey format, Annex A in the Simplified Methodology for Efficient Cookstoves. These 100 surveys were conducted at each of the randomly selected households from the age_{1-2} group.

The data collected converted into the electronic format and shared with the Soneva Foundation, the CME of this project.

QA/QC Measures

Soneva Foundation is responsible for ensuring data quality. The data used in this report is sourced from the project monitoring survey (December 2017), and the user database + project tracking file which are updated regularly. Cross checking of the stove user name and respective serial numbers were done in two stages, first by the team at Mercy Corps and followed by Soneva Foundation.

B.3] Parameters monitored according to the monitoring plan

Parameters and data fixed ex-ante

The following data and parameters are fixed ex-ante and do not need to be monitored over the crediting period:

Data / Parameter:	**$EF_{b, fuel, CO2}$**
Data unit:	tCO2/t firewood
Description:	CO2 emission factor arising from the use of firewood in baseline scenario
Source of data used:	IPCC default values, table 1.4 of chapter 1 of Vol. 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	1.747
Justification of the choice of data or description of measurement methods and procedures actually applied:	Deemed valid by GS VER Methodology
Any comment:	Measuring emission factors from stove technologies is costly and difficult to do accurately. The CME applies default IPCC emission values.

Data / Parameter:	**$EF_{b, fuel, non\_CO2}$**
Data unit:	tCO2/t firewood
Description:	Non-CO2 emission factor for use of firewood in baseline scenario
Source of data used:	IPCC default value, table 2.9 of chapter 2 of Vol. 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	0.455
Justification of the choice of data or description of measurement methods and procedures actually applied:	Deemed valid by GS VER Methodology
Any comment:	Measuring emission factors from stove technologies is costly and difficult to do accurately. The CME applies default IPCC emission values.

Data / Parameter:	η_b
Data unit:	Fraction
Description:	Efficiency of the baseline system being replaced
Source of data used:	Methodology
Value applied:	10%
Justification of the choice of data or description of measurement methods and procedures actually applied:	Default value as per the GS methodology.
Any comment:	Measuring emission factors from stove technologies is costly and difficult to do accurately. The CME applies default IPCC emission values.

Data / Parameter:	η_p
Data unit:	Percent
Description:	Efficiency of the cookstove i being used in the project scenario
Source of data used:	Emissions and Performance Report (Colorado State University)
Value applied:	29.7%
Justification of the choice of data or description of measurement methods and procedures actually applied:	The efficiency of the project cookstove needs to be determined by an independent expert or entity, in the field or laboratory, following the Water Boling Test protocol (available at http://www.pciaonline.org/node/1048). The CME may assess the project cookstove efficiency at the time of installation and use the default factor (eq.3) to derive efficiency in the year y. OR, the project cookstove efficiency ($\eta_{p,y}$) may be determined annually following the WBT protocol. In such a case the project cookstove efficiency shall not be adjusted by the default factor for efficiency loss during the year of operation. The term "DF_η" shall be omitted and "η_p" shall be replaced. The average project cookstove efficiency will be determined using WBT in year y to calculate the $\eta_{p,y}$, efficiency of project cookstove in year y.
Any comment:	No extra Water Boiling Test in Myanmar is required as long as the project stove has been independently tested and is widely used in different countries. Source: Envirofit Data (http://envirofit.org/product/cookstoves/supersaver-gl-wood/)

Data / Parameter:	$f_{NRB, y}$
Data unit:	Fraction
Description:	Default values of fraction of non-renewable biomass for least developed countries and small island developing states
Source of data used:	CDM EB67 Report Annex 22 (Weblink) Endorsed by Myanmar DNA
Value applied:	0.95
Justification of the choice of data or description of measurement methods and procedures actually applied:	The default NRB approved by CDM EB will be applied to all VPAs. If this value is updated by the EB or rejected by the Myanmar DNA, then each VPA using this value will be updated either at VPA inclusion or verification. A VPA-specific NRB assessment may be provided as an alternative within a VPA-DD.
Any comment:	Endorsement letter provided during PoA/VPA 001 validation phase

Data / Parameter:	$B_{b,y}$
Data unit:	t/hh/a (tons firewood per household per annum)
Description:	Quantity of firewood consumed for cooking in baseline scenario during year y
Source of data used:	Baseline survey report
Value applied:	3.94
Justification of the choice of data or description of measurement methods and procedures actually applied:	Value derived from ex-ante baseline surveys. As per the methodology, the baseline may be reassessed post-registration, in time for verification if survey reveals significant changes over time. Estimates for average annual fuel use will be derived from the project survey. Alternatively, the default value suggested by the GS methodology (0.5 tons/capita/year) may be used instead.
Any comment:	All data sources are transparent and verifiable. Refer to baseline survey report for details, submitted separately in supporting documents with this report

Data / Parameter:	$LE_{p,i,y}$
Data unit:	fraction
Description:	Leakage in project scenario p, for technology i, during year y
Source of data to be used:	Default value

Value applied:	0.95
Justification:	Deemed valid per the GS methodology.
Any comment:	Aggregate leakage can be assessed for multiple project scenarios, if appropriate.

Parameters and data fixed ex-ante – with latest values from 2017 Survey

The following data and parameters are established as part of the project survey and are monitored over the crediting period. the tables show the latest values derived from project monitoring survey conducted in December 2017.

Data / Parameter:	**$U_{p,y}$**
Data unit:	Percentage
Description:	Usage rate for project cookstove in year y, based on adoption rate and drop off rate as per usage surveys
Source of data:	Project monitoring survey conducted during December 2017
Value applied:	84% value applied for both the years (2015-16) and (2016-17)
Monitoring frequency:	Annually as established in the VPA-DD
QA/QC procedures to be applied:	A representative sample of project cookstove end-users was selected for follow-up by the monitoring and evaluation team. End user surveys were done house to house and status/information on all monitoring parameters was gathered.
Any comment:	A usage parameter is derived for each age group of project cookstove being credited. However, in case of this submission, usage survey results from 2017 are applied to both the retroactive years of period (2015-16) and (2016-17)

Data / Parameter:	**$N_{p,y}$**
Data unit:	Number of project cookstoves credited (units)
Description:	Cookstove in the project database for project scenario p through year y
Source of data:	Total Sales Record (VPA 002 User Database)
Value applied:	1868
Monitoring frequency:	Continuous
QA/QC procedures to be applied:	Transparent data analysis and reporting
Any comment:	

Data / Parameter:	**DF_n**
Data unit:	Fraction
Description:	Discount factor to account for efficiency loss n of project cookstoves
Source of data:	Fixed default value from the methodology.
Value applied:	0.99 i.e., 1% efficiency loss per year. For period 2015-16 = 0.94 For period 2016-17 = 0.93
Monitoring frequency:	Annual
QA/QC procedures to be applied:	Transparent data analysis and reporting
Any comment:	This default will be used if stoves are found in good condition during annual surveys. For each year, the stoves of the age group x-y should be physically verified. In the case of progressive installations, stove of age group 0-1 shall also be physically verified each year through a random sampling approach. Minimum number of sample size shall be selected following the guidelines provided in section 4.2, option (b) of the methodology.

Data / Parameter:	**$DF_{p, Stove, y}$**
Data unit:	Fraction
Description:	Discount factor to account for usage of baseline cookstove during the year y in project scenario p
Source of data:	Project monitoring survey conducted during December 2017
Value applied:	4.73%
Monitoring frequency:	Annual
QA/QC procedures to be applied:	Transparent data analysis and reporting
Any comment:	The discount factor for baseline-stove use may be determined based on number of meals cooked using the baseline stove. The required information shall be captured through sample surveys carried out following a random sampling approach for each age-group of the project stove. The minimum number of sample sizes shall be selected following the guidelines provided in section 4.2, option (b) of the POA-DD. The impact of seasonal variation on the use of baseline stove should be considered as part of the monitoring survey.

Results on Sustainability Development Indicators - with latest values from 2017 Survey

No		1
Indicator		Air Quality
Mitigation measure		Not Required
Repeat for each parameter		*N/A*
Chosen parameter		Visible improvement in the indoor air quality by reduction of smoke, and sub-sequent indoor air pollution, irritation to eyes, soot emitting out and depositing on the walls of houses.
Current situation of parameter		**100 %** Unanimous agreement from the current stove users that the project stove has significantly improved the indoor air quality as compared to the earlier baseline stove. Source: VPA 002 Project Monitoring Survey in December 2017
Estimation of baseline situation of parameter		Elevated levels of smoke coming out from stove usage, irritation to eyes, respiratory difficulties and higher deposition of soot on the walls of the kitchen area/house.
Future target for parameter		Maintain and improve the indoor air quality.
Way of monitoring	How	Household Surveys, Focus Group Discussions & Interviews
	When	Annually – after stoves are distributed
	By who	Self-Assessment by CME or Independent Auditor

No	2
Indicator	Livelihoods of the Poor
Mitigation measure	Not Required
Repeat for each parameter	*N/A*
Chosen parameter	Money and time spent in purchasing/collecting firewood
Current situation of parameter	**Time Savings for Households = 54% (96 mins/month)** According to the project monitoring survey results, around 88% of

		the stove users have a practice of collecting firewood and have reported to save an average of 54% time (avg. of 96 mins/month) in the activity. Only 12% of the stove users currently purchase wood, majority of whom were collecting wood during the baseline surveys. Even for the current users who have started purchasing wood recently, the project stove saves significant amount of money as compared to the baseline three-stone stove. Source: VPA 002 Project Monitoring Survey in December 2017
Estimation of baseline situation of parameter		Households earlier spent almost 2 times on time to collect firewood before using the new stoves.
Future target for parameter		Increase the time and money savings for users
Way of monitoring	How	Household Surveys, Focus Group Discussions & Interviews
	When	Annually – after stoves are distributed
	By who	Self-Assessment by CME or Independent Auditor

No	3
Indicator	Access to Affordable and Clean Energy
Mitigation measure	Not Required
Repeat for each parameter	*N/A*
Chosen parameter	Access and satisfaction with project stove
Current situation of parameter	The project initially installed stoves into 1868 households. Applying the latest usage rate of 84% this results in 1560 stoves currently in use. From the baseline survey, we know that households have on average 5.61 members. Thus, the project currently provides clean and efficient cooking stoves for 8752 people. There has been high levels of user satisfactions with the project stove, savings in fuel are evident. Stove users are satisfied with the small portable design of stove which can be easily carried around anywhere.
Estimation of baseline situation of parameter	Three stove fires were easily accessible but are stationary, emit more heat on the user, consume more wood and does not provide with a healthy and comfortable environment for the user. None of the users had any form of better and efficient cooking technology.

Future target for parameter		Increase the outreach and number of stoves distributed. Maintain and increase the level of user satisfactions.
Way of monitoring	How	Household Surveys, Focus Group Discussions & Interviews
	When	Annually – after stoves are distributed
	By who	Self-Assessment by CME or Independent Auditor

No		4
Indicator		Human & Institutional Capacity
Mitigation measure		Not Required
Repeat for each parameter		*N/A*
Chosen parameter		Number of households participated in environmental awareness raising campaigns and sessions.
Current situation of parameter		From the start of this VPA In March 2015 to End of July 2015, the results of Human & Institutional Capacity are as follows: Total Awareness Raising Events = 83 Total Participants = 3223 Total Male Participation = 1885 out of 3223(59%) Total Female Participation = 1338 out of 3223 (41%) Source: Myanmar Stoves Campaign - Project Tracking File - VPA 002, submitted as a supporting document
Estimation of baseline situation of parameter		None of such campaigns and/or sessions were organized.
Future target for parameter		Increase the number of household and women participation
Way of monitoring	How	Household Surveys, Focus Group Discussions & Interviews
	When	Annually – after stoves are distributed
	By who	Self-Assessment by CME or Independent Auditor

No		5
Indicator		Quantitative Employment & Income Generation
Mitigation measure		Not Required
Repeat for each parameter		*N/A*
Chosen parameter		Number of local Sales Agents jobs created and increase in income & social recognition.
Current situation of parameter		From the start of this VPA In March 2015 to End of July 2015, the results on Quantitative Employment & Income Generation are as follows: Total Number of Sales Agents (Vendors) Trained = 81 Total Male Sales Agents (Vendors) Trained = 74 Total Male Sales Agents (Vendors) Trained = 7 These local sales agents in this VPA from all the villages, and significant increase in their social recognition and some assistance through financial incentives. The average earnings made by the sale agents is 90,925 MMK. Source: Myanmar Stoves Campaign - Project Tracking File - VPA 002, submitted as a supporting document
Estimation of baseline situation of parameter		These jobs did not exist prior to this project
Future target for parameter		Increase more local vendors with more focus on women
Way of monitoring	How	Household Surveys, Focus Group Discussions & Interviews
	When	Annually – after stoves are distributed
	By who	Self-Assessment by CME or Independent Auditor

Section C: Emission Reduction Calculations

Actual Emission Reduction Values Post Conducting the Monitoring Study

The table below summarizes the values for key emission reduction calculation parameters, measured in project monitoring survey, default values from methodology, and from other sources used for calculations for both the crediting periods. Ie., 2015-16 & 206-17. Please refer the "VPA 002 - Ex-Post Emission Reductions Sheet" for 2015-16 & 2016-17, as a supporting document for detailed calculations.

Parameter	Description	Value		Unit	Source
		Crediting Period 2015-16	Crediting Period 2016-17		
$N_{p,y}$	Number of project cookstoves of each age group operation in year y	1868	1868		Total Sales Record (VPA 002 User Database)
$U_{p,y}$	Usage rate for project cookstove in year y, based on adoption rate and drop off rate	84	84	%	Project monitoring survey conducted during December 2017
$B_{b,y}$	Quantity of firewood consumed in baseline scenario during year y	3.94	3.94	Tons/ household/ year	Baseline Survey Report
η_b	Efficiency of the baseline system being replaced	10	10	%	Default Value from Methodology
$\eta_{p,y}$	Efficiency of the system being deployed as part of the project activity	27.92	27.64	%	After applying discount factor to original efficiency (29.7%) to account for efficiency loss of project cookstove per year of operation
P_y	Quantity of firewood that is saved in the year y	2.53	2.51	Tons/ household/ year	Calculated as per Methodology
DFη	Discount factor to account for efficiency loss of project cookstove per year of	0.94	0.93	Factor	Calculated as per Methodology
$f_{NRB,\ y}$	Fraction of woody biomass	0.95	0.95	Fraction	CDM EB67

	saved by the project activity in period y that can be established as non-renewable biomass				Report Annex 22 (Weblink) + Endorsement Letter Provided during PoA registration
$EF_{b, fuel, CO2}$	CO_2 emission factor of firewood that is substituted or reduced	1.747	1.747	tCO_2/ tWood	Default Value from Methodology
$EF_{b, fuel, non CO2}$	Non-CO2 emission factor of firewood that is substituted or reduced	0.455	0.455	tCO_2/ tWood	Default Value from Methodology
$DF_{b, Stove, y}$	Usage of baseline cookstove during the year y in project scenario	4.73	4.73	%	Project monitoring survey conducted during December 2017
	Emission reductions of the project activity in period y (pre-leakage)	**8293**	**8246**	**tCO_2**	Calculated as per Methodology
	Leakage Discount Factor	**0.95**	**0.95**		
ER_y	**Emission reductions of the project activity in period y**	**7878***	**7834**		Calculated as per Methodology
Total ER for both the crediting years			**15,712***	**tCO_2**	

***For 2015-16, the crediting period begins on 01st October 2015. Hence, the ER claims are only from 01st October 2015 to 28th Feb 2016 for Year 1, this brings down the ER value 7878 to 3283 (please refer ER Sheet) and the total ER for both the crediting years to be = 11117 tCO_2**

Year Wise ER breakup

From	To	VERs
01st October 2015	31st December 2015	1970
01st Jan 2016	31st December 2016	7841
01st Jan 2017	28th February 2017	1306
Total		11117

Estimated ER Values Before Conducting the Monitoring Study

Year	Estimation of project activity emission (tCO_2)	Estimation of baseline emissions (tCO_2)	Estimation of leakage (Discount Factor)	Estimation of overall emission reductions (tCO_2)
01/03/2015 to 29/02/2016	0	10394	0.95	9875
01/03/2016 to 28/02/2017	0	10335	0.95	9819
01/03/2017 to 28/02/2018	0	10276	0.95	9763
01/03/2018 to 28/02/2019	0	10216	0.95	9706
01/03/2019 to 29/02/2020	0	10156	0.95	9649
01/03/2020 to 28/02/2021	0	10095	0.95	9591
01/03/2021 to 28/02/2022	0	10033	0.95	9532
Total (tCO_2)	0	71505	0.95	67,935

The difference between the estimated value for emission reductions Vs the actual values are summarized in the table below:

	Estimated VER	Actual VER
2015-16 (age_{0-1})	9875	3283
2016-17 (age_{1-2})	9819	7834

The difference between the estimated VER and actual VER values is majorly because of low usage rate (84% Vs 100% in estimated) and high use of baseline stove usage (4.7% Vs 0.2% in estimated), as derived from the latest monitoring results. It is particularly low in 2015-16 group due to late registration of the VPA, beyond 2 years of stove distribution.

Annex 1 - List & Name of Supporting Documents

1) Baseline Survey Report

2) Myanmar Stoves Campaign - Project Tracking File - VPA 002

3) VPA 002 - User Database

4) VPA 002 – Project Monitoring Survey Results

5) VPA 002 - Ex-Post Emission Reductions Sheet

6) VPA 002 - Monitoring Survey Scan Samples

Annex 2 - List of Households Surveyed

Survey No	Stove Serial Number	Household Owner Name	Village Name	Date of FES Purchase	Date of Survey
1	EMIG-059158	Ko Maung Yin Htwe	Mae Kone	08-06-2015	23-12-2017
2	EMIG-054854	U Ko Kyi	Mae Kone	10-06-2015	23-12-2017
3	EMIG-059357	U Win	Mae Kone	08-06-2015	23-12-2017

4	EMIG-053961	Daw Nyunt Yi	Mae Kone	08-06-2015	23-12-2017
5	EMIG-053148	U Khin Saung	Mae Kone	08-06-2015	23-12-2017
6	EMIG-053216	Daw Nyunt Kyi	Mae Kone	08-06-2015	23-12-2017
7	EMIG-053408	U Wah Linn	Mae Kone	08-06-2015	23-12-2017
8	EMIG-053610	Daw Myint San	Mae Kone	08-06-2015	23-12-2017
9	EMIG-053496	Daw Hwe Tin	Thein Kone	03-06-2015	23-12-2017
10	EMIG-055151	U Chin	Thein Kone	03-06-2015	23-12-2017
11	EMIG-055432	U Than Mg	Thein Kone	03-06-2015	23-12-2017
12	EMIG-055099	U Mg Ko	Thein Kone	03-06-2015	23-12-2017
13	EMIG-055452	Daw Hwe	Thein Kone	03-06-2015	23-12-2017
14	EMIG-055837	U Shwe Thaung	Thein Kone	03-06-2015	23-12-2017
15	EMIG-053525	U Tun Wai	Thein Kone	03-06-2015	23-12-2017
16	EMIG-053496	Daw Hwe Tin	Thein Kone	03-06-2015	23-12-2017

17	EMIG- 053638	Daw Tin Wai	Thein Kone	03-06-2015	23-12-2017
18	EMIG-055888	U Khaing Soe	Hta Naung Pin Wine	19-06-2015	24-12-2017
19	EMIG-055354	U Than kyaw	Hta Naung Pin Wine	19-06-2015	24-12-2017
20	EMIG-054765	U Tun Myint	Hta Naung Pin Wine	18-06-2015	24-12-2017
21	EMIG-055750	U Than Pu	Hta Naung Pin Wie	17-06-2015	24-12-2017
22	EMIG-052943	U Thein Tan/Daw Di Ma	Hta Naung Pin Wine	17-06-2015	24-12-2017
23	EMIG-053887	Daw Than Nyunt	Hta Naung Pin Wine	17-06-2015	24-12-2017
24	EMIG-054678	U Aung Dwe	Hta Naung Pin Wine	17-06-2015	24-12-2017
25	EMIG-053243	U San Pwint	Hta Naung Pin Wine	17-06-2015	24-12-2017
26	EMIG-053222	U Kyaw Dun	Hta Naung Pin Wine	17-06-2015	24-12-2017
27	EM1G-054274	U Thein	Nyaung Pin Hla	09-06-2015	24-12-2017
28	EM1G-054731	U Myo	Nyaung Pin Hla	09-06-2015	24-12-2017
29	EM1G-053103	U Kyaw Hla	Nyaung Pin Hla	09-06-2015	24-12-2017
30	EM1G-055422	U Aung Tun	Nyaung Pin Hla	09-06-2015	24-12-2017
31	EM1G-053623	U Zaw	Nyaung Pin Hla	25-06-2015	24-12-2017

32	EM1G-055552	U Aung Maung	Nyaung Pin Hla	09-06-2015	24-12-2017
33	EM1G-055182	U Hmat Tin	Nyaung Pin Hla	09-06-2015	24-12-2017
34	EM1G-053332	Daw Khin Ohn Myint	Nyaung Pin Hla	09-06-2015	24-12-2017
35	EM1G-053234	U Htay	Nyaung Pin Hla	30-05-2015	24-12-2017
36	EM1G-053923	U Myint Win	Nyaung Pin Hla	09-06-2015	24-12-2017
37	EM1G-054153	U Kyaw Yin	Kyauk Phyar	10-06-2015	27-12-2017
38	EM1G-053458	U Han Tin	Kyauk Phyar	10-06-2015	27-12-2017
39	EMIG-054216	U Htay Aung	Kyauk Phyar	10-06-2015	27-12-2017
40	EM1G-054172	U Tin Zaw	Kyauk Phyar	10-06-2015	27-12-2017
41	EM1G-055600	U Kyi Aung	Kyauk Phyar	10-06-2015	27-12-2017
42	EM1G-055450	U Thein Kyaw	Kyauk Phyar	10-06-2015	27-12-2017
43	EM1G-053669	U Tin Nyunt	Kyauk Phyar	10-06-2015	27-12-2017
44	EM1G-055261	U Win Aung	Kyauk Phyar	10-06-2015	27-12-2017
45	EM1G-054620	U Aung Than Zaw	Kyauk Phyar	10-06-2015	27-12-2017
46	EM1G-054888	U Kyi Maung	Kyauk Phyar	10-06-2015	27-12-2017
47	EM1G-053601	U Kyaw Thein	Kyauk Phyar	10-06-2015	27-12-2017
48	EMIG-053288	U Phoe Aye	Pay Pin Lay	13-06-2015	27-12-2017
49	EMIG-054732	U Than Lwin	Pay Pin Lay	13-06-2015	27-12-2017

50	EMIG-053933	Daw Pu Sein	Pay Pin Lay	13-06-2015	27-12-2017
51	EMIG-055027	Daw Tin Htay	Pay Pin Lay	13-06-2015	27-12-2017
52	EMIG-054409	U Naing Soe	Pay Pin Lay	13-06-2015	27-12-2017
53	EMIG-054264	U Man Tin	Pay Pin Lay	13-06-2015	27-12-2017
54	EMIG-055341	Ma Myo Myo	Pay Pin Lay	13-06-2015	27-12-2017
55	EMIG-053511	U Maung Win	Pay Pin Lay	13-06-2015	27-12-2017
56	EMIG-055705	Daw Sanda Win	Pay Pin Lay	13-06-2015	27-12-2017
57	EMIG-053400	U Kyaw Myint (Gyi)	Pay Pin Lay	13-06-2015	27-12-2017
58	EMIG-053573	U Kyaw Hlaing	Pay Pin Lay	13-06-2015	27-12-2017
59	EM1G-055768	U Aung Moe	Phaung Taw	20-05-2015	27-12-2017
60	EM1G-054564	U Thein Myint	Phaung Taw	20-05-2015	27-12-2017
61	EM1G-054811	U Min Min	Phaung Taw	20-05-2015	27-12-2017
62	EM1G-053207	U Win Saung	Phaung Taw	20-05-2015	27-12-2017

63	EM1G-053094	U Hla Wai	Phaung Taw	20-05-2015	27-12-2017
64	EM1G-055545	U Soe Mg	Phaung Taw	20-05-2015	27-12-2017
65	EM1G-055529	U Tin Hlaing	Phaung Taw	20-05-2015	27-12-2017
66	EM1G-055648	U Soe Myint	Phaung Taw	20-05-2015	27-12-2017
67	EM1G-055070	U Tin Aung	Phaung Taw	20-05-2015	27-12-2017
68	EM1G-054919	Daw Aye Myint	Phaung Taw	20-05-2015	27-12-2017
69	EM1G-054735	U Nyunt	Phaung Taw	21-05-2015	27-12-2017
70	EMIG-053383	Ma Kyi Than	Thae Poke	26-05-2015	25-12-2017
71	EMIG-053885	Daw Kyin Sein	Thae Poke	26-05-2015	25-12-2017
72	EMIG-054344	U Than Lwin	Thae Poke	26-05-2015	25-12-2017
73	EMIG-055743	U Tin Myint	Thae Poke	26-05-2015	25-12-2017
74	EMIG-054403	Daw Hnin Shwe	Thae Poke	26-05-2015	25-12-2017
75	EMIG-052960	Daw Myint Kyi	Thae Poke	27-05-2015	25-12-2017

76	EMIG-053124	Daw Mya Htay	Thae Poke	26-05-2015	25-12-2017
77	EMIG-055762	Daw Nwet Yee	Thae Poke	26-05-2015	25-12-2017
78	EMIG-054724	Daw Htwe Kyi	Thae Poke	26-05-2015	25-12-2017
79	EMIG-055081	U Myint Shwe Aye	Thae Poke	26-05-2015	25-12-2017
80	EM1G-055152	U Nay Win	Myaunt Min Kone	15-06-2015	26-12-2017
81	EM1G-055183	U Bwar	Myaunt Min Kone	15-06-2015	26-12-2017
82	EM1G-054901	Daw Hla Hmee	Myaunt Min Kone	15-06-2015	26-12-2017
83	EM1G-055908	U Moe Win Zaw	Myaunt Min Kone	15-06-2015	26-12-2017
84	EM1G-053134	Ko Soe Moe	Myaunt Min Kone	15-06-2015	26-12-2017
85	EM1G-053073	U San Htwe	Myaunt Min Kone	15-06-2015	26-12-2017
86	EM1G-053646	U Nyan Tin	Myaunt Min Kone	15-06-2015	26-12-2017
87	EM1G-052998	U Thaung Sein	Myaunt Min Kone	15-06-2015	26-12-2017

88	EM1G-054724	U Hmwe	Myaunt Min Kone	15-06-2015	26-12-2017
89	EM1G-055220	U Win Hlaing	Myaunt Min Kone	15-06-2015	26-12-2017
90	EM1G-053358	Ma Htay Nyunt	Myaunt Min Kone	15-06-2015	26-12-2017
91	EM1G-053435	U San Lwin	Tha Phan Chaung	13-06-2015	26-12-2017
92	EM1G-053505	U Soe Lwin	Tha Phan Chaung	13-06-2015	26-12-2017
93	EM1G-053724	U Tauk Htein	Tha Phan Chaung	11-06-2015	26-12-2017
94	EM1G-054517	U Than Win	Tha Phan Chaung	11-06-2015	26-12-2017
95	EM1G-053821	U Aung Yin	Tha Phan Chaung	11-06-2015	26-12-2017
96	EM1G-053854	Daw Ngwe Yin	Tha Phan Chaung	11-06-2015	26-12-2017
97	EM1G-055756	U Kyi Soe	Tha Phan Chaung	11-06-2015	26-12-2017
98	EM1G-054006	Daw Thaung	Tha Phan Chaung	11-06-2015	26-12-2017
99	EM1G-055086	U Nyunt Win	Tha Phan Chaung	11-06-2015	26-12-2017
100	EM1G-053579	U Chit San	Tha Phan Chaung	13-06-2015	26-12-2017