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TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v. 1.2**

RELATED SUPPORT

– **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

Key Project Information

Section A – Description of project

Section B - Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions

Section C – Duration and crediting period

Section D – Summary of Safeguarding Principles and Gender Sensitive Assessment

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Appendix 1 – Safeguarding Principles Assessment (mandatory)

Q - Contact information of Project participants (mandatory)

Q - LUF Additional Information (project specific)

Q - Summary of Approved Design Changes (project specific)

KEY PROJECT INFORMATION

GS ID of Project	
Title of Project	Sustainable Market Development of Improved cooking in rural Nepal by Practical Action
Time of First Submission Date	22/06/2020
Date of Design Certification	Not yet registered
Version number of the PDD	1.0
Completion date of version	26/03/2021
Project Developer	Value Network Venture Advisory Services Pte. Ltd.
Project Representative	Value Network Venture Advisory Services Pte. Ltd. Mr. Sandeep Roy Choudhury
Project Participants and any communities involved	Practical Action and Value Network Venture Advisory Services Pte. Ltd.
Host Country (ies)	Nepal
Activity Requirements applied	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Scale of the project activity	<input type="checkbox"/> Micro scale <input checked="" type="checkbox"/> Small Scale <input type="checkbox"/> Large Scale
Other Requirements applied	
Methodology (ies) applied and version number	AMS II G, ver 11.1
Product Requirements applied	<input type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A
Project Cycle:	<input type="checkbox"/> Regular <input checked="" type="checkbox"/> Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in Error! Reference source not found.)	Estimated Annual Average	Units or Products
13 Climate Action	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	35,362	tCO2
7 Affordable and clean energy	7.1.2. Proportion of population with primary reliance on clean fuels and technology	16,400	Nos. of Households (qualitative)
3 Good Health and well Being	3.9.1 Mortality rate attributed to household and ambient air pollution	100	%(qualitative)

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

>> Nepal is a mountainous country challenged by its inherent topography and socio-economic conditions. It ranks 145 on the Human Development Index (HDI) and nearly one-fourth of its population live below poverty line.

Household Air Pollution (HAP) is one of the biggest causes of premature deaths globally killing more people than a combined number of TB, Malaria and Aids. In rural especially remote and poor communities of Nepal, solid biomass fuel burning in the kitchens with inefficient cook stoves has posed threat to not just health but also the atmosphere.

Identified barriers for the sustainable market creation of clean cook stoves in Nepal include: i) lack of awareness; ii) low willingness to pay; iii) limited access to

affordable finance; iv) lack of economies of scale in cook stove production; v) problem on service delivery and supply chain of cook stoves.

In its effort to combat with the climate change, Nepal has set-up a good policy environment to support the climate change mitigation and adaptation. Nepal's Climate Change Policy (2011) aims, among others, to reduce GHG emissions by promoting the use of clean energy such as hydro-electricity, renewable and alternative energies, and by increasing energy efficiency and encouraging the use of green technology. This policy envisions utilizing the financial resources available from national and international sources for climate adaptation, adverse impacts, mitigation and low carbon development. The policy also targets to mobilize at least 80% of the total funds available for climate change related programmes at the community level. Nepal's Nationally Determined Contribution (NDC) recognizes the "Clean Energy Development Pathways" as a crucial measure to realize the mitigation actions, which, among others, targets to equip every household in rural areas with smokeless (improved) cook stoves by 2030.

In this context, the project aims to: i) strengthen private-sector led clean cook stove marketing approach; ii) strengthen market chain of clean cook stoves; and iii) minimise respiratory health problems in rural Nepal caused by open fire cooking. Learning objectives of the project include: i) setting incentives that enable poor users to purchase and benefit push products despite their low financial means; and ii) innovative financing for clean cook-stoves through preferential loans via cooperatives as an alternative to the current approach of providing substantial subsidies for certain types of clean cookstoves.

The underlying theory of change is that once the clean cook stove entrepreneurs are provided with Results-based Financing (RBF) incentives over a period of five years, they will grow in capacity over the period and will be able to continue to meet the on-going demand on their own. Through their initially supported activities, they will gradually be able to achieve greater production, quality assurance, and decrease their costs through economies of scale, so that the price of a portable cook stove will reduce over the 5 years by approximately 10 per cent.

The project is being implemented in various Districts of Nepal. Most of the households from these areas use solid biomass fuel for cooking.

Likewise, the project has partnership with five local NGOs while the project is working closely with District Cooperative Association, local cooperatives, cook stove manufacturers, importers, distributors and other supply chain actors.

In the proposed project activity, three types of ICS are deployed viz. HPNJE-01ND, HPN-01FD and Greenway Jumbo stoves.

The estimated number of ICS to be deployed are

HPN JE-01 ND	12000
HPN-01FD	3900
Greenway Jumbo	500
Total ICS	16400

The non-renewable biomass energy as well as fossil fuel energy displaced by project activity will result in a total emission reduction of 35,362 tonnes of CO₂e/year. The total emission reduction by the project activity is estimated to be 176,810 tonnes of CO₂e for the first crediting period, which is 22/06/2019 to 21/06/2024.

A.1.1. Eligibility of the project under Gold Standard

>> As per clause 3.1.1 of the GS4GG Principles and Requirements document. Sub-clause 3.1.1.1 under the clause 3.1.1 states automatic eligibility for a project “if there are Gold Standard published Activity Requirements and/or Gold Standard Approved Methodologies associated with it or as referenced in Gold Standard Product Requirements.” The GS has published Community Services Activity Requirements; therefore, the proposed project falls under the automatic eligibility list of projects. As per clause 3.1.1 of GG4GG Community Services Activity Requirements, types of project eligible are Renewable energy, End-use energy efficiency, waste management & handling and water, sanitation and hygiene projects.

The ICS component of the project activity falls under End-use energy efficiency as per clause 3.1.1 (b) of GG4GG Community Services Activity Requirements, since the Project activities will reduce energy requirements as compared to baseline scenario without affecting the level and quality of services or products, where the end-user of the products and services are clearly identified i.e. individual household users and the physical intervention is required at the user end.

Thus the project falls under GG4GG Community Services Activity Requirements and meet the eligibility criteria as per the activity requirements.

a) Eligible Project Types & Scope:

The projects lead to climate change mitigation by providing access to resources to households.

b) Types of project: The project falls under- Type II – Energy Efficiency Improved Projects

c) Project Area, Boundary and Scale:

Project Area –All Districts in Nepal

Boundary - Territorial boundary of Nepal

The detailed discussion on project area & boundary is described under section A.4 below.

Scale: The project falls under small scale projects.

Thermal energy output of HPNJE-01ND cookstove = 0.0106 GWh

Thermal energy output of HPN-01FD cookstove = 0.0120 GWh

Thermal energy output of Greenway Jumbo cookstove = 0.0105 GWh

Number of household where cookstoves will be disseminated = 16,400

Breakup of ICS types to be disseminated are

HPN JE-01 ND	12000
HPN-01FD	3900
Greenway Jumbo	500
Total ICS	16400

So total thermal output of ICS = 179 GWh (Below the threshold of 180 GWh)

Hence, the project falls under small scale projects.

d) Host country requirement – The project is in compliance with the host country’s (Nepal’s) legal, environmental, ecological & social regulation. There are no objection for the implementation of these type (ICS) project in the host country i.e. Nepal and same can be checked from the Nepal’s ministry of environment websites.

e) Contact Details – The contact details of project developer & project participant is included under Appendix 1 of this report. Please refer Appendix 1.

f) Legal Ownership - The entitlement of the emission reductions generated by the project shall be transferred to the project developer from the beneficiary households through a signed covenant.

g) Other rights – There are no other rights involve in this project. Implementation of the proposed project doesn't involve any activity that causes alteration of any resource; therefore acquiring any specific legal right to do so is not applicable.

h) ODA declaration – PP has provide a declaration of Non-use of ODA by the project owner.

It is to be noted that the PP has declared that the proposed GS project activity is not registered with any other scheme.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

>> Implementation of the proposed project doesn't involve any activity that causes alteration of any resource; therefore acquiring any specific legal right to do so is not applicable. However, the entitlement of the emission reductions generated by the project shall be transferred to the project developer from the beneficiary households through a signed covenant

A.2. Location of project

>>

A.2.1 Host Country

Nepal

A.2.2. Region/State/Province etc.

>>

All Districts in Nepal

A.2.3. City/Town/Community etc.

>>

All Districts in Nepal

A.2.4. Physical/Geographical location

>> (Include information allowing the unique identification of this project.)

The physical/geographical location of the project activity is the project ICS installation points throughout all districts of Nepal.. All ICS installations will be within the territorial boundaries of Nepal as shown below.

Latitude – 28.3949⁰ North, Longitude – 84.1240⁰ East



A.3. Technologies and/or measures

>> The project will promote improved cook stove (portable cookstoves) which is design developed by Practical Action. This stoves is portable type single pot rocket stoves.

Stove model	HPNJE-01 ND	HPN01FD	Greenway Jumbo
Stove type	Biomass/natural Draft/ Metallic/Single Pot	Biomass/forced Draft/ Metallic/Single Pot	Biomass/natural Draft/ Metallic/Single Pot
Efficiency	30.29%	41.24%	29.79%
CO (g/MJd)	2.94	4.35	8.16
PM (mg/MJd)	300.9	157.35	118.4
Fuel consumption (MJ/min/L)	0.042	0.053	0.043
Application / service level	Domestic cooking	Domestic cooking	Domestic cooking
Fuel type	Biomass.	Biomass.	Biomass.
Operational Lifetime (years)	7	7	7

Photos of ICS types disseminated.

<p>HPNJE-01 ND</p>	
<p>HPN-01 FD</p>	
<p>Greenway Jumbo</p>	

In order to avoid double counting, the PP has placed a procedure in which the details of the end user (HH) along with name, village, district, & along with unique serial number are recoded in their database.

Proposed project will contribute to various dimensions of sustainable development. The project contributes directly in achieving the SDG#3 & 7 in addition to SDG#13 as required by Principle-1 of GS4GG.

- Environmental Benefits: Reduction in firewood consumption and emission of greenhouse gases, forest and biodiversity conservation (SDG#13).
- Health Benefits: Sufficiently enhance indoor air quality thereby improving health of women and children and reducing incidences of smoke and fire related injuries (SDG#3).
- Social Benefits: Ensure access to affordable, reliable, sustainable and modern energy for all (SDG#7)

A.4. Scale of the project

>> The project falls under the non-microscale project category. The total installed capacity of the project at full implementation will generate emissions reductions greater than 10,000 tons of CO2 equivalents.

Thermal energy savings per household are calculated by multiplying the annual biomass savings per household from improved cook stove, with its calorific value:

$$\text{Energy Savings (GWh)} = B_{y,savings} * \text{NCV}_{\text{biomass}}$$

$$= B_{old} * (1 - \eta_{old} / \eta_{new}) * \text{NCV}_{\text{biomass}}$$

For HPNJE-01ND

$$= 4.23 (1 - 10\% / 30.29\%) * 4.16$$

$$= 10.59 \text{ MWh/ICS}$$

$$= 0.0106 \text{ GWh/ICS per annum}$$

For HPN-01FD

$$= 4.23 (1 - 10\% / 41.24\%) * 4.16$$

$$= 11.97 \text{ MWh/ICS}$$

$$= 0.0120 \text{ GWh/ICS per annum}$$

And For Greenway Jumbo

$$= 4.23 (1 - 10\% / 29.79\%) * 4.16$$

$$= 10.50 \text{ MWh/ICS}$$

$$= 0.0105 \text{ GWh/ICS per annum}$$

Where:

B_y = Quantity of biomass used in the absence of the project activity in tonnes = 3.80 t per household (see Section B.4.3).

η_{old} = Efficiency of the system being replaced = 10%.

η_{new} = Efficiency of the system being deployed as part of the project activity = 30.29% for HPNJE-01ND, 41.24% for HPN-01FD, and 29.79% for Greenway Jumbo)

$NCV_{biomass}$ = Net calorific value of the non-renewable biomass that is substituted = IPCC default for wood fuel, 0.0156 TJ/tonne, corresponds to 4.16 kWh/t.

The maximum number of eligible households to be disseminated with the stove in this project activity is therefore limited to = 16400 ICS or households(since 1 ICS per household).

The project activity will remain under the limit of small-scale project activity types (annual energy savings below 180 GWhth) during every year of the crediting period, because the maximum number of households that will be disseminated with the stove under the project will be limited to 16,400

A.5. Funding sources of project

>> This information is confidential.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

>> Type: Type II – Energy Efficiency Improved Projects

Methodology: AMS II.G - Energy efficiency measures in thermal applications of non-renewable biomass

Version: Version 11.1

Reference:

https://cdm.unfccc.int/filestorage/R/1/Y/R1YKFOXZNTJQSG53IVCL8BDP2EU904/Energy%20efficiency%20measures%20in%20thermal%20applications%20of%20non-renewable%20biomass.pdf?t=MEp8cWMwbHJufDAqYc_eBwSVdNVyqURuQlah

B.2. Applicability of methodology (ies)

>>

S. No.	AMS II.G, Version 11.1 Requirements	Project Activity Applicability
1.	This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices (cookstoves or ovens or dryers) to replace the existing devices and/or energy efficiency improvements in existing biomass fired cookstoves or ovens or dryers.	This project includes the dissemination of the high efficiency biomass fired cook stoves having the efficiency $\geq 20\%$ compared to traditional stoves. This project will save nonrenewable biomass which otherwise would have been consumed by less efficient cooking appliances.
2.	In the case of cookstoves, the methodology is applicable to the introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20	The efficiency of the disseminated biomass fired forced draft cook stoves is having the efficiency $> 20\%$ compared to traditional stoves. Also, WBT test has been conducted to determined the

	per cent. Refer to the requirements indicated in "Data / Parameter table 12" which details the options for testing and certification as well as supporting documentation (e.g. certificate issued by third party or test results) that needs to be presented to the validating DOE.	efficiency of the new cookstoves.
3.	The aggregate energy saving of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	The project activity will remain under the limit of small-scale project activity types (annual energy savings below 180 GWhth) during every year of the crediting period, because the maximum number of households that will be disseminated with the stove under the project will be limited to 16,400.
4.	Non-renewable biomass has been in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	The non-renewable biomass has been used in the country since 1989. This is evident from EB 67 annex 22, that has affirmed the fraction of non-renewable biomass for Nepal.
5	For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.	In the proposed project the biomass used are the non renewable biomass, thus this condition is not applicable
6	If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period	The project used non renewable biomass and not any specific fuel (e.g. briquettes, pellets, woodchips), thus this condition is not applicable
7	The CDM-PDD or CDM-PoA-DD/CPA-DD shall explain the proposed	Each ICS will bear a single unique serial numbers. Also PP will maintain a database

	<p>method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).</p>	<p>of records of ICS dissemination with the end user’s details viz. name, address, mobile no etc.</p>
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B.3. Project boundary

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Source		GHGs	Included ?	Justification/Explanation
Baseline scenario	Source 1	CO ₂	Yes	Major source of emissions
		CH ₄	No	Not required by methodology, only CO2 emission factor for fossil fuels is considered. Conservative Assumption.
		N ₂ O	No	Not required by methodology, only CO2 emission factor for fossil fuels is considered. . Conservative Assumption.
Project scenario	Source 1	CO ₂	No	Major source of emissions
		CH ₄	No	Not required by methodology, only CO2 emission factor for fossil fuels is considered
		N ₂ O	No	Not required by methodology, only CO2 emission factor for fossil fuels is considered

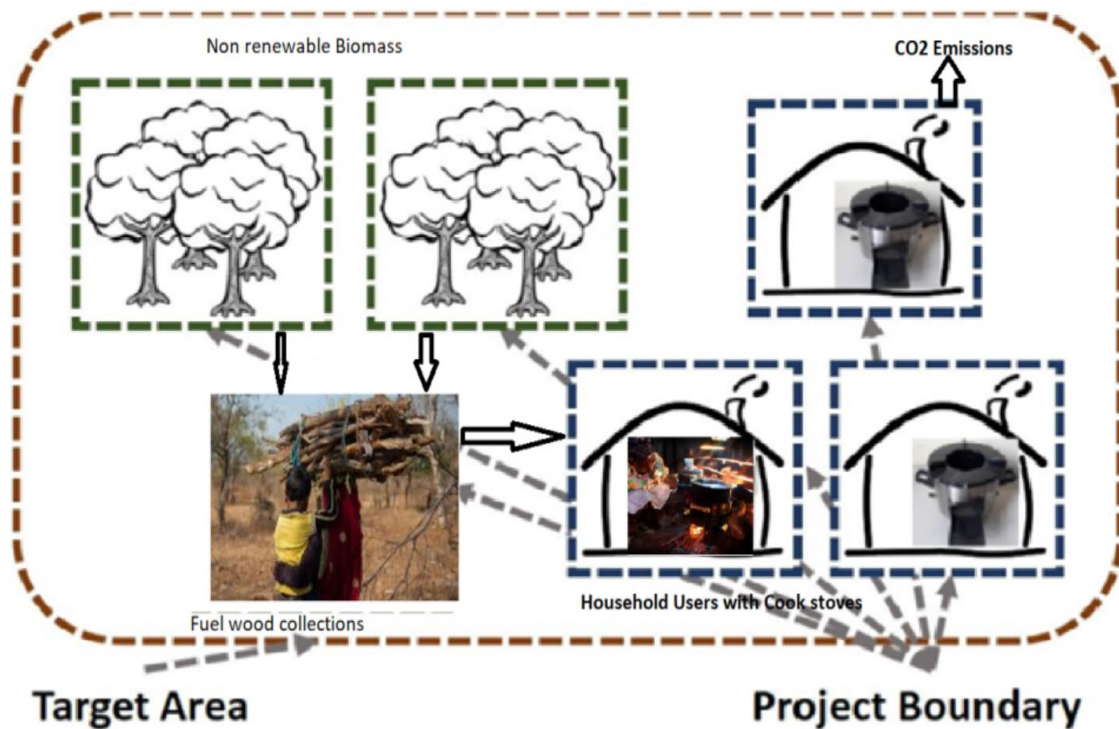


Fig 2. Project devices and project boundary diagram

B.4. Establishment and description of baseline scenario

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The actual baseline is the use of non renewable biomass. Methodology AMS II.G states that “in the absence of the project activity, the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs”. This is a conservative approach to determine the baseline emissions. In absence of the project activities, the intended beneficiaries of the project would continue using the traditional inefficient cooking stoves, consuming high quantity of nonrenewable biomass.

The baseline scenario is continued use of non renewable biomass for cooking. Majority of households in the project districts use firewood to meet their cooking needs. National Climate Change Impact Survey 2016¹, conducted by the Central Bureau of Statistics, Govt. of Nepal, 88.7% households reported use of firewood for cooking..

¹

https://climate.mohp.gov.np/downloads/National_Climate_Change_Impact_Survey_Report_2016.pdf

The use of other fossil fuels like kerosene and LPG is insignificant. Research indicates that use of firewood has a low sensitivity to economic determinants².

The survey report conducted by Nepal Environmental and Scientific Services (NESS) is check whether the reduction in the consumption of firewood is subject to the trends defined in AMS II.G: increasing amount of time needed or distance travelled for firewood gathering, increasing firewood prices or changes in the type of firewood used. The indicators selected to monitor the continued displacement of NRB by the project activities are:

- 1) Increase in time needed to gather firewood; and
- 2) Increase in distance travelled to gather firewood.

The trend reported in the above survey is also confirmed by another study by Jean-Marie Baland³, where forest in the Nepalese Himalayas is reported to be degrading at an alarming rate, which could have serious environmental and economic consequences. The following are some of the findings of this study:

Nepal's forest cover declined at an annual rate of 1.8% per year between 1980 and 2000.

Forest degradation leads to increased fuel scarcity. "The time needed to collect firewood has increased 60% over the past quarter century, while collections per household have decreased by 40%."

Deforestation "is partly irreversible as fertile topsoil is being washed out by soil erosion in deforested areas."

The report also concludes that collection time is a good indicator of forest degradation since "A major impact of forest degradation for the villagers is the resulting increase in collection time."

The Environmental Impact of Poverty: The Evidence of Firewood collection in Rural Nepal, 30 June 2007, Page 8.

http://amid.cepr.org/files/working_papers/baland1.pdf

³Jean Marie Baland, "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal", Boston University - The Institute for Economic Development Working Papers Series, 30 June 2007.

A report by the Ministry of Population and Environment⁴ confirms deforestation trends in Nepal and connects them with firewood use:

“The forest area has declined from 45 per cent in 1966 to 29 per cent by the end of the 20th century. The quality of forest has also declined as the shrub land area has doubled from 4.8 per cent in mid-1980s to 10.6 per cent in mid-1990s. The annual deforestation is estimated at 1.7 per cent with 2.3 per cent in the Hill, and 1.3 percent in the Terai.”

“In general, forest depletion is increasing due to firewood collection, cattle grazing, and conversion of forests to agricultural land.”

“Although firewood consumption is slightly decreasing over the years, forest depletion and deforestation is increasing as a majority of the people depend on it.”

The price of firewood is not used as indicator for firewood scarcity since very little firewood used is bought from the market.⁵ The main source of firewood is from government forests controlled by the Ministry of Forest and Soil Conservation which allocates forest areas to the Timber Corporation of Nepal (TCN). Since supply from TCN is insufficient, unofficial firewood extraction for self-consumption and trade remain substantial, also in government forests.

Many government policies are in place to promote ICS in rural Nepal. Once such policy is National Rural and Renewable Energy programme⁶. The program’s main objective is to improve the living standards of rural and vulnerable communities, increase employment and productivity, minimize reliance on traditional energy, and attain sustainable development through integration of alternative energy with the socio-economic activities of women and men in rural communities. In 2015, the government

⁴His Majesty's Government of Nepal Ministry of Population and Environment, NEPAL National Action Programme on Land Degradation and Desertification in the context of United Nations Convention to Combat Desertification (UNCCD), Kathmandu, April 2004

⁵WECS (2010), Energy Sector Synopsis Report 2010, Water and Energy Commission Secretariat, Kathmandu, Nepal , Page 74

⁶⁶ <http://documents1.worldbank.org/curated/en/916571494854063344/pdf/Investment-prospectus-for-clean-cooking-solutions-in-Nepal-a-roadmap-to-national-goal-of-providing-clean-cooking-solutions-for-all.pdf>

listed approved designs of biomass cookstoves that meet national benchmarks and are eligible for subsidy. In 2016, the Renewable Energy Subsidy Policy was finalized. Developed flexible approaches for the implementation of the programme through the NGOs, GOs, CBOs and local NGOs.

The key to sustainable ICS dissemination is at this stage of experience believed to be the ability to create and consolidate the institutional and technical manpower with the rural communities, allowing these to continue ICS dissemination after withdrawal of external support. The local people, preferably women, would be trained as promoter who creates demand and receives the payment after installing the stoves. It is likewise crucial to promote and disseminate a range of different, affordable and culturally acceptable ICS to communities.

The project developer has conducted a field survey in order to determine and establish the baseline scenario and baseline biomass consumption and also prepare a survey report. A sample HH survey was conducted by Practical Action in Argakhanchi, Baglung, Chitwan, Myagdi, Parbat, Bara, Makwanpur, Syangja, Kaski and Gulmi districts, of Nepal. These districts of Nepal is one of the poorest district and most of the poor people works in the field to meet their livelihood. A lot of the people does not own the agricultural land and they work as a daily on wage basis in these fields. A total of 213 households were surveyed for baseline estimation. Total 10 districts are surveyed where the ICS are disseminated. PA caseworkers were engaged and who are trained Integrity in preparation for administering the community survey from 05 January to 10 March, 2018.

The following objectives were addressed by the baseline study.

- Baseline cooking devices
- Baseline fuel usages and types and sources
- Possibilities of Displacement of Tradition Cooking Stoves
- Assessment of reduction in drudgery in collecting firewood due to use of ICS

The study approach has been prepared based on four main components: planning (mobilization), field work, analysis and reporting.

Total of 213 households were randomly selected in each enumeration area, where the adult particularly female respondent was chosen at random using a specific tool. The one-on-one interview lasted approximately 40 minutes, and rigorous quality assurance checks were put into place by the supervisors to ensure sound sampling and interview methodology. The survey was conducted in two ways: perception

survey and experimental survey. In the perception survey, the Traditional Cook Stove users were interviewed about their usage pattern of the biomass for the household cooking using the traditional cooking stoves. In the experimental the interviewer also measured the actual biomass used in the traditional cooking stove for cooking the meals. The baseline survey was conducted following the General Guidelines For Sampling And Surveys For Small-Scale CDM Project Activities

Based on the baseline study objectives, the questionnaire/checklist was prepared. It mainly focused on the parameters required for the baseline identifications and usages. In addition to that, the factors in direct relation to ICS user benefits were of prime concern. A comprehensive database of the participating household has been created, including details such as family data, etc. This database will hold data and information that allow an unambiguous identification of participating household users and other relevant details.

The surveyed household's were interviewed regarding their cooking patterns and understand their cooking behaviors. Based on the data collected from the field survey, the baseline cooking patterns as well as cooking fuels has been analyzed.

From the household survey, it has been analysed that the rural communities uses traditional three stone fuel wood fire stoves for their day to day activities viz. cooking etc.

As per the survey fire-wood consumption per household per cookstove was determined and found to be 3.8 ton/year. It is designed to install and replace only one baseline cooking device with project ICS. Therefore, baseline emissions is estimated considering one project device per household.

B.5. Demonstration of additionality

The table below is only applicable if the proposed project is deemed additional, as defined by the applied approved methodology or activity requirement or product requirement.

<p>Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).</p>	<p>The project falls under the positive list of technologies and project activity types that are defined as automatically additional as per paragraph 4.1.9 (a) Positive list (Annex B) of GS4GG – community service activity requirements, version 1.2As per Annex B of para 1.1.3, “Project activities solely composed of isolated units where the users of the technology/measure are households or communities or institutions and where each unit results in <= 600 MWh of energy savings per year or <=600 tonnes of emission reductions per year”</p>
<p>Describe how the proposed project meets the criteria for deemed additionality.</p>	<p>The project uses isolated units i.e. improved cook stoves technology and the user of the technologies are the households and each unit (i.e. ICS) results in <=600 MW of energy savings per year or <=600 tonnes of emission reductions per year . The project falls under the positive list of technologies as per Annex B of GS4GG that renders the small scale project auto additional.</p>

B.5.1. Prior Consideration


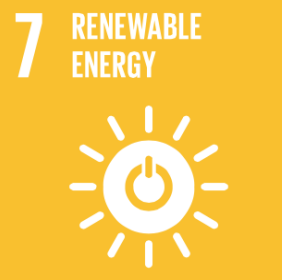

>> The project is a retroactive project. The project was submitted on 22/06/2020 which is one year from start date of project activity i.e. 22/06/2019.

B.5.2. Ongoing Financial Need

>>NA

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact Indicator (Proposed or SDG Indicator)
<p>SDG 03: Good Health and well-being</p>		<p>Target number - SDG 3.9.1 Mortality rate attributed to household and ambient air pollution</p> <p>The project will contribute to the SDG goal “By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”. The project replaces firewood consumption with biogas. Therefore, the indoor air quality at user point will improve and will contribute to the SDG goal</p>
<p>SDG 07: Ensure access to affordable, reliable, sustainable and modern energy for all</p>		<p>Target number - SDG 7.1.2. Proportion of population with primary reliance on clean fuels and technology</p> <ul style="list-style-type: none"> By 2030, ensure universal access to affordable, reliable and modern energy services
<p>SDG 13: Take urgent action to combat climate change and its impacts</p>		<p>Target number - SDG – 13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</p>

Discussion on the relevance of the chosen target –

SDG 3 – Due to the implementation of this project activity, air pollution will be less / zero (less in case of ICS) which in turn reduces the health issues caused by polluted air.

SDG 7 – The project will contribute towards access to clean, and affordable energy sources, since in the project ICS are efficient which uses less fuel or renewable sources which are clean source of energy

SDG 13 - The project will contribute towards improving education since less time will be spent on fuel wood collection by women & children and women will be able to give more time in educating their children's. It will also bring awareness toward climate change mitigation and develop human and institutional capacity building on climate change mitigation & adaptation.

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

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The key components of AMS II.G version 11.1 are the calculation of the emission reductions, differentiation between non-renewable biomass and demonstrable renewable biomass and the occurrence of leakage.

Emission reduction calculation

AMS II.G/v11.1 requires that the project participants assume that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels for meeting similar thermal energy needs. The actual baseline scenario is the use of NRB. Since NRB has higher carbon intensity than the fossil fuels proposed in AMS II.G, this assumption reduces the emission reductions significantly, making the outcome more conservative. According to paragraph 22 of methodology AMS II.G/v11.1, emission reductions would be calculated as:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y \quad \text{Equation (1)}$$

Where:

i	=	Indices for the situation where more than one type of project device is introduced to replace the pre-project devices ⁷
j	=	Indices for the situation where there is more than one batch of project device
ER_y	=	Emission reductions during year y in t CO ₂ e
$ER_{y,i,j}$	=	Emission reductions by project device of type i and batch j during year y in t CO ₂ e
LE_y	=	Leakage emissions in the year y

For household cook stoves (as guided by the methodology):

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_{fossilfuel}}$$

Equation (2)

Where:

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per cookstove device of type i and batch j during year y
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass (fNRB) ⁸
$NCV_{biomass}$	=	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
$EF_{projected_{fossilfuel}}$	=	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 63.7 t CO ₂ /TJ ⁹
$N_{y,i,j}$	=	Number of project devices of type i and batch j operating during year y

7 For example, in some instances, full replacement of the pre-project device would require the implementation of more than one project device (e.g. one stove suitable for cooking and the other stove suitable for cooking/boiling water).

8 Default values endorsed by designated national authorities and approved by the Board are available at <http://cdm.unfccc.int/methodologies/standard_base/index.html>.

9 This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. The value is calculated, based on the global average ratio of cooking fuels (the normalized ratio of kerosene and liquefied petroleum gas (LPG) excluding coal), i.e. 9 per cent for kerosene (71.5 t CO₂/TJ) and 91 per cent for LPG (63.0 t CO₂/TJ).

μ_y = Adjustment to account for any continued use of pre-project devices during the year y when applying equations 6 and 8 (fraction). Use 1.0 in other cases

Determining fNRB,y

The applied methodology AMS-II.G version 11.1 refer to 'methodological tool: calculation of the fraction of non-renewable biomass' version 01.0 to calculate fNRB. The fraction of woody biomass that can be established as non-renewable, is:

$$fNRB = NRB/(NRB+RB)$$

Where:

fNRB = Fraction of non-renewable biomass (fraction or %)

NRB = Quantity of non-renewable biomass (t/yr)

RB = Quantity of renewable biomass (t/yr)

NRB is calculated as below:

$$NRB = H-RB$$

Where, H is the total annual consumption of wood in the absence of the project activity which is determined as per paragraph 12 (a) of the tool 'Official statistics or reports or peer-reviewed literature'.

Data endorsed by Ministry of Forest and Environment, Nepal dated 25 November 2018 is considered for 'H'¹⁰.

Renewable biomass (RB) in the country/region/area is estimated using the equation below:

$$RB = (MAI_{forest,i} \times (F_{forest,i} - P_{forest})) + (MAI_{other,i} \times (F_{other,i} - P_{other}))$$

Where:

MAI_{forest,i} = Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas (t/ha/yr). This is calculated as per IPCC default value and considered as approved by Ministry of Forest and Environment, Nepal dated 25 November 2018

MAI_{other,i} = Mean Annual Increment of woody biomass growth per hectare in subcategory i of other wooded land areas (t/ha/yr). This value is considered same as MAI_{forest,i}.

F_{forest,i} = Extent of forest in sub-category i (ha). This value is considered as per Ministry of Forest and Environment, Nepal dated 25 November 2018.

F_{other,i} = Extent of other wooded land in sub-category i (ha). This value is considered as per Ministry of Forest and Environment, Nepal dated 25 November 2018.

¹⁰ http://data.un.org/Data.aspx?d=EDATA&f=cmID%3AFW%3BtrID%3A1231#f_1

Pforest = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (ha). This parameter is optional and not considered.

Pother = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other wooded land areas (ha). This parameter is optional and not considered.

i = Sub-category i of forest areas and other wooded land areas

Description of indicators	Units	Total quantity	Reference
Total Annual Consumption of Wood (H)	Million ton/year	128.00	Estimated and endorsed by Ministry of Forest and Environment, Government of Nepal
Extent of forest in sub-category (Fforest,i)	hectares	5962038	State of Nepal's Forest, Table 7
Extent of Other Wooded Land (Fother,i)	hectares	647892	State of Nepal's Forest, Table 8
Extent of non-accessible area within forest areas (Pforest)	hectares	1032604	State of Nepal's Forest, Table 10
Extent of non-accessible area within other wooded land area (Pother)	hectares	0	Not given, taken as 0 as conservative value
Mean Annual Increment of woody biomass growth per hectare in sub-category i of forest areas (MAIforest,i)	Ton/hactare /Year	3.19	Calculated (using IPCC guideline)
Mean Annual Increment of woody biomass growth per hectare in sub-category i of other wooded land areas (MAIother,i)	Ton/hactare /Year	3.19	Same value taken for other wooded land
Renewable Biomass (RB)	ton/year	17791669.94	
Non-Renewable Biomas (NRB)	ton/year	110208330.06	
Fraction of Non-renewable Biomass (fNRB)	Fraction	0.861	

Conservatively fNRB value is considered 86% as per confirmation letter from Ministry of Forest and Environment, Nepal dated 25 November 2018.

As stipulated in the paragraph 23 of AMS II.G/v11.1, $B_{(y,savings,i,j)}$ (Quantity of woody biomass that is saved) can be determined using one of the options:

PP has selected option 3: water boiling test (WBT)¹¹:

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}\right)$$

Equation (3)

Also, as per AMS II G, ver 10, para 32 (d), PP will monitor annually the the loss in efficiency annually from a representative sample of each batch and use the actual loss rate that is measured.

Also, during the crediting period , in case PP is unable to monitored the efficiency due to various reasons (e.g. calibration not done of WBT testing equipment’s etc), then as per AMS II G ver 11.1 para 32, (a), A default schedule of linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device. i.e. the life span of project device is seven (7) years which is based on manufacturer’s ICS lifetime certificate and project device has an efficiency of 41.24 per cent at commissioning then a 2.2 per cent decrease in efficiency every year shall be applied.

Also, if any ICS got damaged after the warranty period (5 yrs) and before the lifetime (7 yrs), PP will encourage the HH user to buy a new ICS system and if they (HH) did not buy new ICS, then it will be not accounted for emission reduction calculation and ERs form this system will not be claimed.

Leakage

As per the paragraph 34 of the methodology AMS II.G/v11.1, the following leakages are to be considered: The use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass used by the non-project households/users that is attributable to the project activity, then Bold is adjusted to account for the quantified leakage. Alternatively, Bold is multiplied by a net to gross adjustment

¹¹ Based on whether $\eta_{new,i,j}$ or $B_{y=1,new,i,j,survey}$ is used for monitoring, either equation (6) or (7) may be used respectively.

factor of 0.95 to account for leakages, in which case surveys are not required. PP has opted to use the adjustment factor of 0.95 in order to account for leakage.

Sustainable Development Goal parameters calculations –

In the proposed project, PP has consider to monitor SDG 3 (Good Health and Well being) & SDG 7 (Affordable and Clean energy) apart from SDG13 (Climate action).

For SDG 3,

Measurement through household surveys of user perceptions between baseline stove and new ICS system: perceived smoke levels, incidence of coughing, incidence of respiratory illness, Incidence of itchy eyes

PP will collect information from the HH user on the number of visit they made to the hospitals due to smoke related problems in a year. The value will be calculated (on qualitative basis) based on the total number of HH survey and the number of HH reported at least one time visit to the hospital for breathing related problem caused due to the smoke and HH reported no change in smoke and illness due to smoke.. Apart from this PP will collect information on incidence of cough, respiratory problem & incidence of itchy eye post usage of ICS in a given year and the value will be calculated (on a qualitative basis) on the number of incident reported by the HH users.

N_s = number of HH surveyed based on the sample calculations

N_1 = Number of respondent who said that smoke reduced drastically

N_2 = Number of respondent who said that smoke reduced to some extent

Percentage of HH who said that smoke reduced drastically = N_1/N_s

Percentage of HH who said that smoke reduced to some extent = N_2/N_s

N_3 = Number of respondent who said that they did not visit hospital for breathing related illness

N4 = Number of respondent who said that they visit the hospital or faced breathing related issues

So, % improvement in health due to the ICS system will be calculated as $= N3/Ns \%$

Nr = no of responded not faced respiratory problem

Nc = no of respondent not faced cough issues

Ni = no of responded not faced itchy eye incidence

% of respondent not facing respiratory problem = $Nr/Ns\%$

% of respondent not facing cough problem = $Nc/Ns\%$

% of respondent not facing itchy eye problem = $Ni/Ns\%$

For SDG 7,

For this project, the baseline is the number of households using clean energy for cooking before the implementation of this project.

$no = nb - np$

Where:

No = the increased number of households using clean energy for cooking after the implementation of this project

Nb = the number of households using clean energy for cooking before the implementation of this project. The value applied is 0.

Np = the number of households using clean energy for cooking after the implementation of this project is surveyed every year during the project.

In this project, each household will get only one set of ICS, thus

$Np = N$

Where:

N = The total number of ICS installed by the proposed project. The value adopted is 16,400.

SDG 13 Climate Action:

The methodology AMS-II.G. (Version 11.1) is applied in the proposed project and same has been discussed above.

B.6.2. Data and parameters fixed ex ante

(Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the design certification and remain fixed throughout the crediting period like IPCC defaults and other methodology defaults. Copy this table for each piece of data and parameter.)

SDG13

Data/parameter	Bold,HH
Unit	Tonnes/household/year
Description	Quantity of woody biomass used per ICS in the absence of the project activity
Source of data	Baseline Survey
Value(s) applied	3.80
Choice of data or Measurement methods and procedures	
Purpose of data	Calculation of Quantity of woody biomass that is saved in tonnes per device
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	ηold
Unit	Percentage

Description	Efficiency of the system being replaced (Traditional Cooking Stoves)
Source of data	approved methodology AMS II.G/v11.1
Value(s) applied	10%
Choice of data or Measurement methods and procedures	The default value of 0.10 is used as the replaced system is a three stone fire, or a conventional device with no improved combustion air supply or flue gas ventilation, i.e. without a grate or a chimney.
Purpose of data	Calculation of share of non-renewable biomass
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	fNRB _y
Unit	percentage
Description	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
Source of data	The value is calculated as per the tool referred in AMS-II.G version 11.1 which is duly approved by Ministry of Forest and Environment, Nepal
Value(s) applied	86.1%
Choice of data or Measurement methods and procedures	
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	EFprojected_fossilfuel
Unit	tCO ₂ /TJ

Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers.
Source of data	approved methodology AMS II.G/v11.1
Value(s) applied	64.40
Choice of data or Measurement methods and procedures	The value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. The value is calculated, based on the global average ratio of cooking fuels (the normalized ratio of kerosene and liquefied petroleum gas (LPG) excluding coal), i.e. 9 per cent for kerosene (71.5 t CO ₂ /TJ) and 91 per cent for LPG (63.0 t CO ₂ /TJ)
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

Data/parameter	LEy
Unit	Fraction
Description	Net to Gross adjustment factor
Source of data	approved methodology AMS II.G/v10:
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	Default value as prescribed by methodology applied
Purpose of data	Baseline Emission calculation
Additional comment	This parameter shall remain fixed for the crediting period.

B.6.3. Ex ante estimation of SDG Impact

>> (Provide a transparent ex ante calculation of baseline and project outcomes (or, where applicable, direct calculation of net benefit) during the crediting period,

applying all relevant equations provided in the selected methodology(ies) or as per proposed approach. For data or parameters available before design certification, use values contained in the table in section B.6.3 above. For data/parameters not available before design certification and monitored during the crediting period, use estimates contained in the table in section B.7.1 below)

According to methodology AMS II.G/v11.1, emission reductions shall be calculated as:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y \tag{Equation (1)}$$

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel} \tag{Equation (2)}$$

Where,

Description	Parameter	Unit	Type
Indices for the situation where more than one type of project device is introduced to replace the pre-project devices	i	NA	Calculated
Indices for the situation where there is more than one batch of project device	j	NA	Calculated
Emission reductions during the year y	$ER_{y,I,j}$	tCO2e	Calculated
Quantity of woody biomass that is saved	$B_{y,savings,I,j}$	tonnes	Calculated
Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass	$f_{NRB,y}$	%	Fixed ante ex-
Net calorific value of the non-renewable woody biomass that is substituted (0.0156 TJ/tonne)	$NCV_{biomass}$	TJ/tonne	Fixed ante ex-

Emission factor for the substitution of non-renewable woody biomass by similar consumers. (64.40 tCO2/TJ)	$EF_{\text{projected_fossilfuel}}$	tCO2/TJ	Fixed ante	ex-
Number of project devices of type i operating in year y	$N_{y,I,j}$		Calculated	
Adjustment to account for any continued use of pre-project devices during the year y when applying equations 6 and 8 (fraction). Use 1.0 in other cases	μ_y	NA	Fixed ante	ex
Leakage emissions in the year y	LE_y	%	Fixed ante	ex

The quantity of woody biomass that is saved ($B_{y,savings,I,j}$) shall be calculated using option 3 above as follows:

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}\right) \quad \text{Equation 6}$$

Where:

Description	Parameter	Unit	Type
Quantity of woody biomass that is saved	$B_{y,savings}$	Tonnes	Calculated
Quantity of woody biomass used in the absence of the project activity	B_{old}	Tonnes	3.80 (Baseline Survey)
Efficiency of the system being replaced	η_{old}	%	10% (Fixed ex-ante)
Efficiency of the system being deployed as part of the project activity	η_{new}	%	Test certificate (30.29%,41.24 %and 29.79%)

Therefore, baseline emissions per year = 35,362 tCO2/y

B.6.4. Summary of ex ante estimates of each SDG Impact

Year	Baseline estimate	Project estimate	Net benefit
Year 1	35,362	0	35,362
Year 2	35,362	0	35,362
Year 2	35,362	0	35,362
Year 4	35,362	0	35,362
Year 5	35,362	0	35,362

Total	176,810	0	176,810
Total number of crediting years	5		
Annual average over the crediting period	35,362	0	35,362

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13

Data / Parameter	$N_{y,i,a}$
Unit	Number
Description	Number of project devices of type i and age a that are operating in year y
Source of data	Annual ICS users' survey
Value(s) applied	To be monitored
Measurement methods and procedures	The information on the number of devices operational is determined by the ICS users' survey through monitoring of the user households drawn as random sample.
Monitoring frequency	Annually
QA/QC procedures	During the annual users' survey, survey team will inspect representative sample households to check if the devices are operating or not. Sample for this survey will be drawn as per the "Guidelines for sampling and surveys for CDM project activities and programme of activities, version 3 (EB 75, annex 8)".
Purpose of data	Emission reduction calculation
Additional comment	NA.

Data / Parameter	$\eta_{new,i,j}$
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Unit	Fraction
Description	Efficiency of the device (Stove) of each type i and batch j implemented as part of the project activity
Source of data	WBT Sample results/ default schedule of linear decrease in efficiency up to the terminal efficiency of 20% per para 32(a) of AMS II G ver 11.1
Value(s) applied	Initial efficiency of this type of stoves is 41.24% as tested by RET
Measurement methods and procedures	<p>Option 1 - WBT protocol ver 4.3.2 will be used to measure the efficiency of the stoves.</p> <p>Option 2 - Also, during the crediting period , in case PP is unable to monitored the efficiency due to various reasons (e.g. calibration not done of WBT testing equipment's etc), then as per AMS II G ver 11.1 para 32, (a), A default schedule of linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device. i.e. the life span of project device is seven (7) years and project device has an efficiency of 35.52 per cent at commissioning then a 2.2 per cent decrease in efficiency every year shall be applied.</p>
Monitoring frequency	Annual
QA/QC procedures	NA
Purpose of data	The monitored value of this parameter will be used in the determination of the ex-post emission reduction.
Additional comment	

Data / Parameter	NCVbiomass
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass, briquettes or charcoal used in project devices
Source of data	approved methodology AMS II.G/v11.1
Value(s) applied	0.0156
Measurement methods and procedures	As per approved methodology AMS II.G/v11.1

Monitoring frequency	Yearly
QA/QC procedures	NA since it is a default value as per applied methodology
Purpose of data	Emission reduction calculation
Additional comment	

Data / Parameter	μ_y
Unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y
Source of data	When applying equations 6 and 8, it is a fraction based on monitoring results. In other cases (i.e. applying equations 3, 5 and 7), use 1.0
Value(s) applied	To be monitored
Measurement methods and procedures	Surveys will be conducted since the use of data loggers to record the continued operation of baseline devices is not practical, because the baseline device is the three-stone fire.
Monitoring frequency	At least once every two years (biennial)
QA/QC procedures	NA
Purpose of data	For baseline emission
Additional comment	

Data / Parameter	Life Span
Unit	Number of years
Description	The operating lifetime of the project device. The life span should be reported in case where the PP are opting to account the efficiency loss as per paragraph 32.
Source of data	Manufacturer (certified by a national standards body or

	an appropriate certifying agent recognized by that body)
Value(s) applied	7
Measurement methods and procedures	NA
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures	NA
Purpose of data	Emission reduction calculation if using efficiency loss as per paragraph 32.
Additional comment	

Data / Parameter	Date of commissioning of project device i
Unit	Date
Description	Actual date of commissioning of the project device
Source of data	Internal records
Value(s) applied	To be monitored
Measurement methods and procedures	
Monitoring frequency	Fixed and recorded at the time of commissioning/distribution
QA/QC procedures	
Purpose of data	Emission reduction calculation
Additional comment	

Data / Parameter	$N_{d,HH}$
Unit	Number
Description	Number of project devices distributed per household

Source of data	Internal records
Value(s) applied	To be monitored
Measurement methods and procedures	
Monitoring frequency	Recorded at the time of commissioning/distribution of project devices
QA/QC procedures	
Purpose of data	Emission reduction calculation
Additional comment	

SDG 3

Data / Parameter	Air Quality
Unit	Qualitative (%)
Description	Users' perception on smoke reduction and Incidence of disease : perceived smoke levels, incidence of coughing, incidence of respiratory illness, Incidence of itchy eyes
Source of data	Sampling Surveys/ Annual usage survey/Monitoring survey
Value(s) applied	To be monitored
Measurement methods and procedures	Air quality will be assess through users interviews during the ICS User Survey. Observations as to inside/outside cooking area to confirm answers. During the survey HH users will be interviewed for the number of diseases caused by the smoke and also the number of times they (HH) visit hospitals for treatment related to breathing problems in the monitoring year.
Monitoring frequency	Annually
QA/QC procedures	
Purpose of data	Sustainable Development Assessment.
Additional comment	-

SDG 7

Data / Parameter	Access to affordable and clean energy services
Unit	Numbers
Description	Number of ICS under the project
Source of data	Commissioning records
Value(s) applied	To be monitored
Measurement methods and procedures	Sample survey to confirm if project ICS are operational. Operational status will confirm that the users are accessed to affordable and clean energy
Monitoring frequency	Annually
QA/QC procedures	N/A
Purpose of data	Sustainable Development Assessment.
Additional comment	

B.7.2. Sampling plan

>> (If data and parameters monitored in section B.7.1 above are to be determined by a sampling approach, provide a description of the sampling plan.)

(a) Sampling Approach:

- i. Objectives and reliability requirements: The objective of the sampling plan is to achieve unbiased and reliable estimates of the proportion or the mean value of the key variables over the crediting period. As per the sampling and survey standard (EB 94 annex 2, version 7, para 10) in case “where there is no specific guidance in the applicable methodology, project proponents shall use 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.” The methodology applied for the project (AMS.II.G version 10/para 41 requires the project proponent achieving 95 percent confidence interval and a 10 percent margin of error while for annual inspection 90 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampled parameters. Since it is small scale project and PP has opted for the annual inspection, the survey will be conducted to achieve the confidence/precision of 90/10 and this is in accordance with the requirements set out as per methodology and sampling standard. The table below provides the monitoring parameters that will be monitored annually:

Parameter	Type	Description
Ny,i	Proportional parameter	Number of project devices ICS (cookstoves) of type i and operating in year y (this also accounts the baseline stoves that are still in use)
Air Quality	Qualitative (%)	Users’ perception on smoke reduction and Incidence of disease: perceived smoke levels, incidence of coughing, incidence of respiratory illness, Incidence of itchy eyes

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- ii. Target Population: The target population for different parameters discussed in the table above are given below:
 - For the proportional parameter; the target population is the ICS users listed in the project database.
 - For the mean value parameter; the target population is the total number of operational ICS for which the emission reductions will be accounted for the monitoring period in question. The mean value parameter, unless and otherwise required by the estimated number of samples (if it is greater than the sample estimate for the proportional parameter) will be the subset of the operational ICS as identified during the annual monitoring surveys.

- iii. Sampling frame: All the households availed with the improved cooking stoves i.e. ICS by the project will be the sampling frame.

- iv. Sampling Method: A simple random sampling will be adopted for estimating the sample size for the monitoring surveys. Simple random sampling is suited to populations that are homogenous (EB 94 annex 02). From the population of ICS, the random numbers will be assigned for each ICS using excel function and the sample ICS will be extracted accordingly. The schema of the sampling method is given below:

- v. Sample Size: The calculation of the required sample size for each parameter will be calculated at 90/10 confidence/precision as required for the annual monitoring. The sample size is determined using the Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4)¹². As required by AMS II.G Ver 11.1, for annual surveys, the level of precision of 10% and a confidence level of 90% will be assessed for the monitoring parameters; efficiency of ICS, number of ICS in operation and displacement of traditional stoves.

The minimum sample size to determine number of ICS in operation and displacement of tradition stoves using the procedure outlined in para 12 of appendix 1, EB 86 Annex 4, Guidelines for Sampling and Surveys for CDM Project activites and Programme of Activities Ver. 4.0.

$$n \geq \frac{1.645^2 N \times p(1 - p)}{(N - 1) \times 0.1^2 \times p^2 + 1.645^2 p(1 - p)}$$

Where:

n= Sample size

N = Total number of ICS of type i installed under the project

p = expected proportion (0.5)¹³

1.645 = represents the 90% confidence required

0.1 = represents the 10% relative precision (0.1x0.5=0.05 = 5% points either side of p)

Substituting the values of "N" in equation above, the sample size will be deducted.

(b)Data:

(i) Field Measurements:

1. Checking of a representative sample of each type of ICS installed every year to ensure that they are still operating (Ny,i,a).

¹²Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB 86, Annex 4)

¹³The expected proportion has been taken as 0.5 for the first monitoring period. For the successive monitoring periods, the sample size will be deducted in accordance with the monitoring results of the first monitoring period.

2. Determination of the efficiency of a representative sample of each type of ICS either using field measurement or other approach given in the methodology.
3. The replaced low efficiency appliances are disposed of and not used within the boundary
4. The survey will be conducted annually with the objective to target 10 percent precision and to achieve 90 percent confidence.

(ii) Quality Assurance/Quality Control:

A survey questionnaire will be prepared to seek responses of operating status (yes or no) of ICS units by ICS using households. The survey will be performed by the project developer. During the survey, in order to anticipate any low response rate and answers bias, 10% oversampling will be applied.

(iii) Analysis:

1. Checking of a representative sample of ICS installed every year to ensure that they are still operating (Ny,i)
2. Determination of the efficiency of a representative sample of all devices
3. The replaced low efficiency appliances are disposed of and not used within the boundary;

The project developer will collect, compile and analyze the data to derive the number of ICS disseminated, the percentage of ICS in operation, displacement of traditional cooking stove by ICS users. The developer will prepare “monitoring report” based on the survey report.

The data collected will be compiled in Excel sheets and/or other software and analyzed to derive the percentage of ICS in operation.

(c) Implementation:

The survey questionnaire will be prepared, pre-tested and field personnel will be trained in conducting the survey to ensure the quality of data collected and the survey will be carried out once a year. The schedule for implementing the sampling effort shall be defined prior to the field activity.

Parameter	Objective	Timeframe	Method of	Use of Data	Target	Sampling
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		/ Frequency	Data Collection		Population	Frame
Ny,i,a	Total number of ICS that are operational	Measurement taken every year	Semi Structured questionnaire survey conducted among the user households	Monitoring will ensure that the ICS implemented through the project is operational and has displaced low efficiency appliances from the project boundary.	ICS user households	List of households having ICS installed/purchased.

B.7.3. Other elements of monitoring plan

>> Apart from the monitoring of the emission reductions, the developer shall monitor the following to assess project’s contribution to social and economic co-benefits.

- a. Number of persons trained (with disaggregation of gender data) by the project to manufacture ICS
- b. Number of persons (with disaggregation of gender data) engaged in the ICS supply chain
- c. Proportion of households perceiving reduction in indoor air pollution
- d. Proportion of households perceiving improvement in health condition after ICS installation.
- e. Proportion of households perceiving reduction in drudgery for firewood collection.
- f. Proportion of households perceiving the ease in cleaning cooking utensils.
- g. Proportion of households perceiving time saving due to installation and use of ICS.
- h. Aspects related to the use of saved time.

Annual household survey will be conducted by PP by their trained staff. The survey will be based on the sample survey. The village level staff comprising of women

member will visit randomly to the households to enquire about the project device i,e. ICS working and the benefits the end user has received due to its usages. Apart from this , the village level staff & technician will monitor the project ICS maintenance & breakdown activities. All the HH users are provided with a single customer care number where they can log their complaints regarding the ICS

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

>> The start date of the project is 22/06/2019

C.1.2. Expected operational lifetime of project

>> 7 years

C.2. Crediting period of project

C.2.1. Start date of crediting period

>> 22/06/2019 or two years prior to the date of Project Design Certification, whichever is later.

C.2.2. Total length of crediting period

>> 5 years renewable(renewable twice)

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in [Appendix 1](#), ongoing monitoring is summarised below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 7.1 Emissions	Monitoring of Co2 emission will be done annually.
Principle 7.2 Energy Supply	Fuel wood consumption will be monitored
Principle 3. Community Health, Safety and Working	Workplace Health & Safety trainings will be conducted regularly during the project operation

Conditions	
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D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

<p>Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?</p>	<p>The project respects the key gender issues and requirements of gender-sensitive design and implementation of the project. SDG#3 is one of the impact areas of the project. The project is aimed to replace conventional cook stoves with Improved cook stoves. This will result in reducing use of firewood consumption.</p>
<p>Question 2 - Explain how the project aligns with existing country policies, strategies and best practices</p>	<p>The project does not involve in any form of based on gender, race, religion, sexual orientation or any other basis as per the country policies, strategies and best practices.</p> <p>The Government of Nepal¹⁴ reaffirms its commitment to work for the realization of constitutional guarantee of equality, social justice and non-discrimination on the basis of sex, caste, community, language and religion. The project positively contributes towards the national mission for empowerment of women through improvement of health and attaining vision for empowerment of women under national policy for women¹⁵ (<i>Women participation will be ensured in the efficient use and</i></p>

¹⁴ https://www.un.org/sustainabledevelopment/wp-content/uploads/2017/07/Nepal_Advocacy.pdf

¹⁵ <https://www.npc.gov.np/images/category/Study-the-effectiveness-of-programmes-targeted-to-women.pdf>

	<p><i>spreading the use of solar energy, biogas, smokeless chulas and other technological applications to have positive influence on their life styles and a long term impact on meeting sustainable development goals)</i></p>
<p>Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?</p>	<p>No gender experts will be required for the Gender Safeguarding Principles & Requirements, as this requirement is not mandatory. However, the team will redouble its efforts to fit the project into the gender policy required by the GS methodology</p>
<p>Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?</p>	<p>No gender experts will be present at the Stakeholder Consultation, as this requirement is not mandatory. However, the sustainable carbon team, which will be present on the day of the consultation, has extensive experience in conducting this type of meeting, and will follow the Gold Standard Stakeholder Consultation and Engagement Requirements, which includes gender guidelines, and specifies which social groups must be included in the consultation. Therefore, the team will be able and willing to address and assist any gender issues at the Stakeholder Consultation.</p>

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

E.1. Summary of stakeholder mitigation measures

>>

The live meeting was organized as per the Gold Standard GS4GG rules and requirements on 12/03/2021. There were many people who were concerned about the maintenance of the ICS. But they were assured that this will be maintained. All category of stakeholders as per GS4GG requirement was invited. All aspects of the projects including GS4GG safeguarding principles were discussed in the meeting .

E.2. Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	A Grievance book will be placed at each district for recording the grievances of household users.
GS Contact (mandatory)	help@goldstandard.org
Other	

		<p>monitored.</p> <p>e. No, the project is not designed such that it increased workload of women and their care responsibilities. By introducing stoves with better efficiency, the overall performance of women in kitchen will be more efficient. This will enable them engage in other activities. The parameter will not be monitored.</p> <p>f. The project will enhance social participation and decision making role of women. Moreover, the women are expected to develop entrepreneurial skills which will enable them economically to deal with the household problems. The potential of the project to enable women economically will help reduce discrimination against women rather than deepening it. The parameter will not be</p>	
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		<p>monitored</p> <p>g. Limiting women’s ability to use, develop and protect natural resources is not likely with the project implementation. Moreover, the project will create awareness among the people on the conservation importance of the standing biomass. The parameter will not be monitored.</p> <p>h. No, the proposed technology for dissemination is relatively safe compared to the open fire traditional cooking stoves. This will decrease the exposure of women and girls to further risks and hazard. The parameter will not be monitored</p>	
<p>2. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women.</p>	<p>No</p>	<p>2. No, the project doesn’t directly or indirectly lead to/contribute to adverse impacts on gender equality. In contrast, the project will contribute to health and well-being of women. Moreover,</p>	

		the project will deploy adequate measures to foster social status of women. The parameter will not be monitored	
3. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work.	Yes	3. The project shall embrace the spirit of the Labor Regulations providing equal remuneration to the male and female workers without making discrimination when they are engaged in works of similar nature. For all the staffs employed by the project, principle of equal treatment shall prevail. The parameter will not be monitored	
4. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks.	No	There are no specific gender risks identified during the project design. Howsoever, if any assessment is required to frame gender risks associated	

		<p>with the project, the project participant ensures its full commitment to do so.</p> <p>The parameter will not be monitored.</p>	
Principle 3. Community Health, Safety and Working Conditions			
<p>1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community</p>	No	<p>Construction and installation of the mud ICS doesn't involve any activity that trigger safety requirements. Product preparation process involves sourcing of mud, curing it and moulding it. The stoves prepared are light in weight and do not trigger any risks of ergonomic significance.</p> <p>Parameter to be monitored is included in section B.7.1</p> <p>The parameter will not be monitored</p>	
Principle 4.1 Sites of Cultural and Historical Heritage			

<p>Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?</p>	<p>No</p>	<p>Not relevant. The project does not involve sites or objects with historical, cultural, artistic, traditional, or religious values or intangible forms of culture.</p>	
<p>Principle 4.2 Forced Eviction and Displacement</p>			
<p>Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?</p>	<p>No</p>	<p>The project does not involve any settlement areas. Thus, this project does not cause the physical or economic relocation of peoples. The project activity does not involve any alteration of existing roads as well as it does not add additional traffic. Hence, there is no additional burden to the existing traffic.</p>	
<p>>></p>			
<p>Principle 4.3 Land Tenure and Other Rights</p>			
<p>Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?</p>	<p>No</p>	<p>Not relevant. The project does not involve any land tenure arrangements and/or other rights.</p>	

>>			
Principle 5. Corruption			
<p>1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects</p>	<p>No</p>	<p>The project doesn't involve any transaction of cash and/or kind between the project participant and the beneficiary. The project participant will facilitate the implementation of the project by capacitating the local people with necessary technical expertise to prepare and install the stoves. There are no specific permit and/or approvals required to implement the project. Finally, anything generated as project revenue shall be spent towards the project monitoring, repair and maintenance, project operation and costs against project verification and issuance of the emission reduction credits. Therefore, the project is not expected to involve any corrupt practices or reinforce the same.</p>	

		Conclusion: the parameter will not be monitored	
Principle 6.1 Labour Rights			
<ol style="list-style-type: none"> 1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: <ol style="list-style-type: none"> a) Working hours (must 		<ol style="list-style-type: none"> 1. This issue is protected by Labor code and UN Agreement on Human Rights¹⁶. 2. the people working for the project will not be salaried staffs to the project. Therefore the possibility of workers forming labour unions and joining labour organizations is not applicable for the project. 	

¹⁶ <https://www.ohchr.org/EN/Countries/AsiaRegion/Pages/BDIndex.aspx>

<p>not exceed 48 hours per week on a regular basis), AND</p> <p>b) Duties and tasks, AND</p> <p>c) Remuneration (must include provision for payment of overtime), AND</p> <p>d) Modalities on health insurance, AND</p> <p>e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND</p> <p>f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave.</p> <p>4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)</p> <p>5. The Project Developer</p>		<p>3. Project employs few administrative staffs to support secretarial functions. Each staff is provided with a set terms of reference highlighting the responsibilities, terms of payment and terms of detachment.</p> <p>4. The project is complying with all relevant national laws regarding child labor. will not employ children in any shape or form for their works. There is not involvement of any equipment or machinery during the project</p>	
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<p>shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures</p>		<p>implementation. Therefore, accidental injuries resulting from the operation of machines and equipment are not applicable to the project. Therefore the project doesn't trigger the safeguard requirement under consideration. Therefore the safeguarding principle under discussion will not be triggered</p>	
<p>Principle 6.2 Negative Economic Consequences</p>			
<p>1. Does the project cause negative economic consequences during and after project implementation?</p>	<p>No</p>	<p>The project has positive economic benefit due to less utilization of firewood in cook stoves.</p>	
<p>>></p>			
<p>Principle 7.1 Emissions</p>			

Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	Implementation of the project will result in reduction of firewood and ultimately the GHG emission reduction.	
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The will use existing biomass based fuel for cooking purpose in the improved cook stoves which will use less biomass as compared their old traditional cook stoves.	
>>			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	Not relevant	
>>			
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or	No	Not relevant	

indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?			
>>			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	Not relevant	
>>			
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	Not relevant	
>>			
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination,	No	Not relevant	

collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?			
>>			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	Not relevant	
>>		The activity involves the uage of improved cook stoves and reduction in fuelwood. Hence pollution amount is reduced.	
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	Not relevant	
>>			
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	Not relevant	
>>		The project does not involve any activity that requires the use of pesticides or fertilizers.	

Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	Not relevant. The project activity does not involve harvesting of forests.	
>>			
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	Not relevant. The project does not affect the quantity or nutritional quality of food available.	
>>			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	Not relevant. The project does not involve animal husbandry	
>>			
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	Not relevant. The project does not affect any of these aspects.	
>>			

Principle 9.11 Endangered Species			
<p>Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?</p> <p>AND/OR</p> <p>Does the Project potentially impact other areas where endangered species may be present through transboundary affects?</p>	No	<p>Not relevant.</p> <p>The project does not affect any of these aspects.</p>	
>>			

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Value Network Venture Advisory Services Pvt Ltd	
Registration number with relevant authority	AAA-1130	
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Personal e-mail	-	
	-	
	sandeep@vnvadvisory.com	

APPENDIX 3- LUF ADDITIONAL INFORMATION

Risk of change to the Project Area during Project Certification Period:	
Risk of change to the Project activities during Project Certification Period:	
Land-use history and current status of Project Area:	
Socio-Economic history:	
Forest management applied (past and future)	
Forest characteristics (including main tree species planted)	
Main social impacts (risks and benefits)	
Main environmental impacts (risks and benefits)	
Financial structure	
Infrastructure (roads/houses etc):	
Water bodies:	
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	
Where indigenous people and local communities are situated:	
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

Please refer to Annex A of [Principles and Requirements](#) for more information on procedures governing Design Changes

NA

Revision History

Version	Date	Remarks
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1	10 July 2017	Initial adoption