Sustainable Development Verified Impact Standard

INSTALLATION OF HIGH EFFICIENT COOK STOVES BY EKI ENERGY SERVICES LIMITED (VCS ID 2664)

STEERING THE PLANET TO NET ZERO

Project Title	Installation of High Efficient Cook Stoves by EKI Energy Services Limited (VCS ID 2664)
Version	01
Date of Issue	28-DEC-2022
Project Location	India
Project Proponent(s)	EKI Energy Services Ltd. Contact – +91 99075 34900 Email - manish@enkingint.org and registry@enkingint.org
Assessor Contact	To Be Updated
Project Lifetime	15 February 2020 – 14 February 2027; 7-year lifetime
History of SD VISta Status	NA

Other Certification Programs	Verified Carbon Standard
Expected Future Assessment Schedule	Not Known

CONTENTS

1 SUMMARY OF SDG CONTRIBUTIONS 3

2 PROJECT DESIGN 8

2.1 Project Objectives, Context and Long-term Viability 8

2.2 Stakeholder Engagement 24

2.3 Project Management 34

3 BENEFITS FOR PEOPLE AND PROSPERITY 387

3.1 Condition of Stakeholders at Project Start 387

3.2 Expected Impacts on Stakeholders 41

3.3 Stakeholder Monitoring Plan 44

3.4 Net Positive Stakeholder Well-being Impacts 45

4 BENEFITS FOR THE PLANET 46

4.1 Condition of Natural Capital and Ecosystem Services at Project Start 46

4.2 Expected Impacts on Natural Capital and Ecosystem Services 47

4.3 Natural Capital and Ecosystem Services Monitoring Plan 48

4.4 Net Positive Natural Capital and Ecosystem Services Impacts 48

APPENDIX 49

1 SUMMARY OF SDG CONTRIBUTIONS

The initiative will produce exceptional benefits for the environment, the local community, and their prosperity. The initiative is situated in India, where some 800 million people still cook using conventional mud stoves. Since India ranks third in terms of CO2 emission while being a non-industrialized country, the distribution of upgraded cookstoves will particularly aid in reducing the consequences of climate change on the entire planet. The project's activities will be able to focus on a variety of interconnected aspects of rural living that are often overlooked in discussions about scientific and societal improvement. The results and effects of this study are covered in detail in the table below:

Table 1: Summary of Project SDG Contributions

Row number	Estimated Project Contribution by the End of Project Lifetime	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Section Reference	Claim, Asset or Label
Sequential row number	*Brief description of the quantifiable impact of the project's activities related to the SDG indicator*	*SDG target number*	*SDG indicator number, where directly related to an indicator, and exact text of indicator*	*Indicate the project's net expected contribution to the indicator*		
1)	Contribute to providing access to basic services (clean cooking technology considered as basic service under access to modern energy) to the poor and	1.4[1]	1.4.1 Proportion of population living in households with access to basic services –	Implement activities to increase	Section: 3.2 Impact #1	SD VISta labeled VCUs

[1] https://unstats.un.org/sdgs/metadata/

	vulnerable communities of India. The project will lead to providing access to approx. 35,045 clean cookstoves by the end of its lifetime.		Clean Technology - will be the same as SDG indicator 7.1.2 - Percentage of population with primary reliance on clean fuels and technology.			
2)	The project activity by replacing approx. 35,045 traditional cookstoves with energy efficient project cookstoves will contribute to improved health and well-being brought about by reduced levels of fine particulate matter ($PM_{2.5}$) emissions within households. Thus, the project will achieve SDG Goal 3: Ensure Healthy lives and promote well-being for all at all ages.	3.9[2]	Project specific indicator: Reduction in $PM_{2.5}$ emissions which indicates improved health of end users.	Implemented activities to decrease	Section: 3.2 Impact #2	SD VISta labeled VCUs
3)	Contribute to increasing vocational and relevant skills of local individuals by providing non-formal education and training on issues related to climate change, with specific skill building in operations and surveying activities related to stove distribution and its monitoring under VCS. The project through its targeted youth and women program will lead to train approximately 210 number of individuals in its region of implementation. Thus, the project will achieve SDG Goal 4: Ensure inclusive and equitable quality	4.3[3]	Project specific indicator: Number of individuals who received any informal training to enable their employment in project activity or elsewhere.	Implemented activities to Increase	Section: 3.2 Impact #3	SD VISta labeled VCUs

[2] https://unstats.un.org/sdgs/metadata/

[3] https://unstats.un.org/sdgs/metadata/

	Education and promote lifelong learning opportunities for all.					
4)	Contribute to reducing drudgery and reducing gender inequality, especially for women and children by saving time spent in collecting fuel wood and cooking, considered at an average of 1 hour/day default factor, per household, for rural areas using an open fire or similar traditional cook stove. The project will lead to time savings and reduced drudgery in 35,045 households translating to equal number of women as they are primary cooks and fuel wood collectors in most of the households. The women can use the time saved for doing more productive activities or personal care. Thus, the project will achieve SDG Goal 5: Achieve Gender Equality and empower all women and girls	5.4	5.4.1 Time spent on unpaid domestic and care work, by sex, age, and location.	Implemented activities to Decrease	Section: 3.2 Impact #4	SD VISta labeled VCUs
5)	Contribute to increasing access to clean cooking technology with Improved Cook Stove (ICS) installations in approx. 35,045 Indian households that have been using traditional three stone fire, over the project lifetime. Thus, the project will achieve SDG Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all.	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Increase	Section: 3.2 Impact #1	SD VISta labeled VCUs

6)	Contribute to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting locals with a target employment of 210 employees for varying lengths of time over the project lifetime with a focus on hiring females. Employment comprises all persons of working age who, during a short reference period (minimum one week), or full time (more than 6 months) will be engaged in any activity to produce goods or provide services for pay. Since, the project leads to generation of employment opportunities, it achieves SDG Goal 8: Promote Sustained, inclusive, and sustainable economic growth, full and productive employment, and Decent Work for all.	8.3	8.3.1 Proportion of informal employment in non-agriculture employment, by sex.	Increase	Section: 3.2 Impact #5	SD VISta labeled VCUs
7)	Contribute to GHG emission reduction through an estimated reduction of ~42 tCO_2e per stove due to replacement of baseline stoves with ICS over 7 years of first crediting period. Thus, the project will achieve SDG Goal 13: Take urgent action to combat Climate Change and its impacts	13.0	Project Specific Indicator: Reduction in GHG emissions as compared to the baseline scenario (open fire)	Implemented activities to decrease	VCS validation/verification report	SD VISta labeled VCUs
8)	Contribute an estimated reduction in removal of woody biomass to the tune of ~24 tons/stove over the 7 years first crediting period, from forests surrounding the communities thereby leading to an increase in above ground biomass in these forests.	15.2	15.2.1 Progress towards sustainable forest management by increasing above ground biomass in forests	Implemented activities to increase	Section: 4.2 Impact #1	SD VISta labeled VCUs

	Thus, the project will achieve SDG Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.					

2 PROJECT DESIGN

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)

Distribution of fuel-efficient Improved Cook Stoves (ICS) in state of Assam, Indian is the project's primary goal. The low-efficient baseline cook stoves will be replaced by the ICS distributed as part of this project.

Compared to conventional cookstoves, these stoves will be more efficient. The stoves' innovative air-induction technology improves combustion of Fuel and thus greatly lowers smoke emissions and fuel consumption.

The project activity will enable household level access to sustainable development by, distributing, installing, and maintaining fuel-efficient ICSs in India. The project aligns with and will contribute to sustainable development objectives outlined in Table 1: Summary of SDG Contributions.

	SDG Goal Addressed	**Target beneficiary**	**Impact envisaged through the project's lifetime**
Economic Well Being	SDG 1	End users receiving project stoves	35,045 households
	SDG 8	Employees hired during various stages of project implementation & operation.	210 numbers of men & women

Social well Being	SDG 4	Staff receiving non-formal education & training	210 numbers of men & women
	SDG 5	Women and girls	35,045 women who are primary cooks in 35,045 households
	SDG 7	End-user households	35,045 project beneficiary households will have access to clean technology which they would not have been able to afford.
Environmental well being	SDG 3	End-user households with a focus on women who are primary cooks	35,045 households are expected to experience reduced indoor air pollution.
	SDG 13	Natural Capital	Avoided emissions to the tune of ~42 tCO2e per stove over the 7-years of first crediting period.
	SDG 15	Natural Capital	Avoided removal of approximately 3.4 tons of woody biomass per stove per year over the 7-years of first crediting period, from forests surrounding the communities.

Through the distribution and implementation of ICS
Aims of the of this project activity are,

1. Reduction of demand for woody biomass as fuel,
2. Slowing down local deforestation,

3. Reduction of the drudgery of collecting wood fuel– performed mainly by women and children,
4. Reduction of time spent on cooking over open fires resulting in extended exposure to toxic smoke,
5. Increasing time spent on improving quality of life i.e., through economic endeavors and knowledge dissemination,
6. Improving the health status through reduced exposure to household air pollutants (HAPs).

Summary of objectives listing goal to claim for SDG labels and further corresponding evidence of the project activity are as follows:

1. Economic Wellbeing

The project will provide access to a basic service, i.e., modern energy in the form of clean cooking alternative to the rural and peri-urban communities of India. The project will lead to a distribution of 35,045 energy-efficient ICS throughout its lifetime. Thus, the project will achieve:

(i) **SDG GOAL 1:** ICS will provide clean energy which is a basic service necessary to lead a healthy and productive life, including saving time and money at the household level (1.4)[4]

Further, the project will result in generating employment opportunities, both long-term as well as short-term, for the local individuals in the state of Assam, India. Long-term employment under the project refers to engaging individuals for at least six months while short-term refers to an engagement of a minimum of 1 week.

(ii) **SDG GOAL 8:** Contracting of individuals on full-time and part-time basis with a focus on hiring local people and women (8.3) [5].

2. Social Wellbeing

The project is envisaged to improve the overall social well-being within the project implementation area by yielding human health benefits, increasing awareness levels, reducing gender inequality, and providing access to clean cooking technology to economically weaker sections of the society that does not have affordability and access to this technology. Each of the benefit aligned with respective SDG has been explained in the following points:

[4] Applies to employment of individuals who were absent from the formal sector and previously lived near, at, or below the international poverty level.

[5] Applies to employment of staff at full and productive levels with decent work for all, specifically in non-agriculture employment with equal pay for work of equal value across sexes – the ethos of SDG 8.

The projects will address SDG 3, SDG 4, SDG 5, and SDG 7 in the following ways:

- **SDG Goal 3:** Reduced emission of fine particulate matter ($PM_{2.5}$) resulting in lowering of household air pollution due to use of the ICS, improving well-being for women and children (3.9)[6]**.** Apart from improving the health of women, the stoves also
  - reduce accidental burns in infants and children due to its design comprising of a closed combustion chamber and stable base (3.0).
  - Reduce consumption of poorly prepared foods (3.0).

- **SDG GOAL 4:** Contribute to increasing vocational and relevant skills of local individuals by introducing them to issues related to climate change, and bring awareness about importance of sustainable development, health, nutrition, and well-being, through formal and informal training which will enhance their avenues for getting decent jobs and employment opportunities (4.4).

  The employed individuals will be provided with regular trainings to enhance their vocational skills related to various aspects of project implementation and monitoring which would increase their employability and chances of getting long-term employment even after the completion of the project. Field executive officer, will be specifically trained in stove operation and GHG awareness.

- **SDG Goal 5:** Usage of ICS will reduce women and children's drudgery through times savings by reducing time spent cutting, collecting, and carrying firewood from trees far removed from households and reduce time spent cooking over toxic smoky open fires. These tasks are a major cause of gender inequality in rural communities of India which will be addressed by the project activities by providing the women and children opportunities to involve in more productive activities (5.4)[7].

  By switching to fuel in small, twig-sized pieces of woody biomass, women, and girls save time collecting, cutting, and carrying heavy wood over long distances. Also, as the ICS burns at a higher temperature, with less fuel used, due to combustion chamber and stove design, cooking the day's meal takes approximately an hour less than it would take to cook the same meal with the baseline stove.

[6] https://www.sciencedirect.com/science/article/pii/S0160412018324772
[7] https://www.nature.com/articles/s41599-020-0488-2

Children, particularly girls, are frequently kept at home to support household chores, like cooking and collecting firewood, estimated on average to be 10 hours per week, with an ICS more time can be dedicated to education – attending school and studying.

- **SDG Goal 7:** The primary activity under the project is distribution of ICSs free of cost to state of Assam, Indian population that are predominantly reliant on wood fuel based basic stoves for meeting their cooking need and are unable to afford improved cookstoves. Being a clean cooking technology, ICS provides an essential tool to address energy poverty and ensuring sustainable energy security in approximately 35,045 households in India during the project lifecycle, the project will generate an overall positive impact on the community.

3. Environmental Wellbeing

The distribution of ICSs is expected to reduce the fuelwood consumption for cooking purpose which will not only reduce the amount of GHG emissions being released in the atmosphere but also reduce the burden on forest ecosystems in and around the project area. Thus, the project will contribute to SDG 13 and SDG 15 in the following ways:

(i) Goal 13: Reduce carbon emissions by approximately 42 tCO_2e per stove in the first crediting period (13.0)

(ii) Goal 15: Reduce deforestation and degradation by up to 24 tons, per stove, in the first crediting period (15.3). Forest, observed as a public place is often used for the collection of fuelwoods, which significantly contributes to deforestation and degradation. The distribution of the ICSs will reduce fuelwood consumption and hence reduce the pressure on the forests. Due to ICS's efficiency and widespread community use, there will be a reduction in firewood cutting from live trees resulting in better management of protected areas.

2.1.2 Description of the Project Activity

Improved Cookstove distribution:

The project activity's goal is to provide enhanced efficient cookstoves (ICS) to rural and semi-urban households throughout state of Assam, India. The project activity seeks to accomplish two goals: distribution of effective ICS in this state's rural and

semi-urban families, and creation of livelihood opportunities for the rural families in relation to this distribution.

In order to improve efficiency, decrease fuelwood use, minimise smoke emissions, improve the health and wellness of women, and free up time that may be put to better use, the ICS will deploy a straightforward technical intervention in traditional cookstoves. *For families, communities, and non*-households, high thermal efficiency improved cook stoves (ICS) are being distributed and installed through this project. The ICS will improve thermal energy transfer to pots and increase the efficiency of wood burning, saving fuel, and reducing greenhouse gas emissions. Not only will this slow down the quickly advancing deforestation, but it will also lessen the health risks posed by indoor air pollution (smoke) and require women and children to spend less time gathering firewood.

Therefore, the proposed project activity aims to reduce greenhouse gas emissions by providing state of Assam's rural and semi-urban households with fuel-efficient cookstoves. Old, inefficient cookstoves that release more smoke and other GHGs will be replaced by new, upgraded cookstoves that consume less fuel and emit less smoke as part of the project activity (ICS). The overall goals are to reduce greenhouse gas emissions, reduce the amount of firewood consumed, protect forests and woods, and improve the health of ICS users by reducing drudgery in daily cooking and improving indoor air quality.

The project is anticipated to reduce greenhouse gas emissions by an average of 6 tCO2e annually for each project activity instance (ICS) and 211,856 tCO_2e annually for the group project activity throughout the course of the crediting period.

TECHNICAL DETAILS:

A)	Cook Stove Type/Category	AGNEEKAA ECO MINI STOVE MODEL4	
		Natural Draft	
B)	Secondary Air Supply	Through Natural Draft	
C)	Stove Material Used	Body	Galvanized Iron Sheet
		Body Material Thickness	0.6mm
		Combustion Chamber	Stainless Steel SS 202 grade
		Combustion Chamber Material Thickness	1 mm SS 202 grade
		Insulating Material	Thermal Wool
		Insulating Material Thickness	6 to 8mm
		Top Plate	Stainless Steel SS 202 grade
		Top Plate Material Thickness	1 mm
D)	Physical Structure	External Dimension	Length: 260mm
			Width: 260mm
			Height: 248mm
		Combustion Chamber Dimension	Diameter: 125mm
E)	Grate Thickness	2 mm Material HR sheet	
F)	Wight Of the Stove	3.8 Kg	
G)	Type of Fuel Wood	Firewood up to 50 mm diameter	
H)	Feeding Process	Continuous Feeding Front Loading	
I)	Expected life of stove	7 Years	
J)	Guarantee /Warranty Period	1 Year	
K)	Box Dimension	Outer Side Box Dimension	Length: 300mm
			Width: 300mm
			Height: 270mm
L)	Thermal Efficiency	32.19%	

The project cycle of the ICS is mentioned below:

Apart from the distribution of improved ICSs in state of Assam, India, there is another activity under the Grouped project and its impact is as follows:

Training & development:

The project while training the trainers, Project Proponent (PP) provides a one-day course on climate change and combustion theory, including impacts of household pollution on health and well-being, as an introductory background to the efficient cookstove intervention. Training will generate positive impacts to community groups by enabling community members to build alternative skills and build capacity. These interventions are expected to advance socio-economic status, generate greater community capacity for sustainable livelihoods, and increase climate resilience.

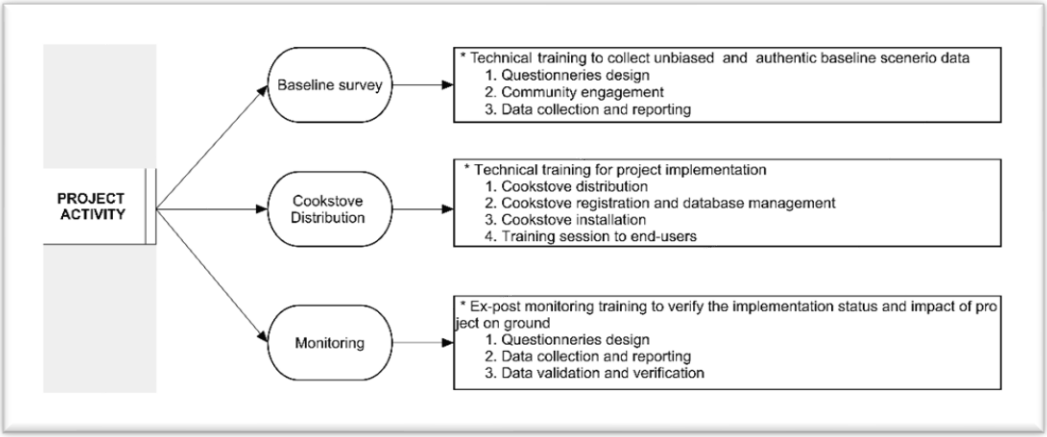
PP uses a team of well-trained field executive officer of distribution partner to distribute, monitor and maintain the ICS project. In order to track project objectives and beneficiary data and monitor and evaluate implementation performance, PP conducted multiple surveys with standardized questionnaires. All these activities require extensive training of the stakeholders involved in these activities. The training positively impacts community groups by allowing residents to develop new skills and capacities. These initiatives are projected to improve socioeconomic status, build community capacity for sustainable livelihoods, and boost climate resilience. Broadly, the topics covered in the training are:

A. One-day course on climate change and combustion theory, including impacts of household pollution on health and well-being, as an introductory background to the efficient cookstove intervention to the Implementing partners and distribution agencies.

B. On-ground training to the field executive officers of distribution partner on conducting various surveys such as Baseline Survey, registration, follow-up surveys, monitoring and verification surveys.

C. On-ground training on road safely to truck drivers carrying ICSs from manufacturing facility to distribution site and

D. Training to welders & fitters to produce ICS and quality control of the stoves.



2.1.3 Implementation Schedule

Date	Milestone(s) in the Project's Development and Implementation
15/02/2020	Project Start date: Project Activities commence with ICS installations
23/11/2021	Listing of VCS PD on VERRA
23/11/2022	Registration of project under VCS
27/12/2022	PP applies for VERRA's Sustainable Development Verified Impact Standard (SD VISta) SDG labeling.

2.1.4 Project Proponent

Organization Name	EKI Energy Services Ltd.
Role in the Project	Project Proponent
Contact Person	Manish Dabkara
Title	Managing Director & Chief Executive Officer
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91 99075 34900
Email	manish@enkingint.org and registry@enkingint.org

2.1.5 Other Entities Involved in the Project

Organization Name	EKI Energy Services Ltd.
Role in the Project	Project Consultant
Contact Person	Ramkrishna Patil
Title	Director - Operations
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91 9096562065
Email	ramkrishna.patil@enkingint.org and registry@enkingint.org

2.1.6 Project Type

The sectoral scope and type of project applicable are as below:
Sectoral scope: 03 - Energy demand
Project Type: II – Energy efficiency improvement projects.
The project is a grouped project.

2.1.7 Project Location

All the project activity instances in the proposed grouped project activity would be located within geographical boundaries of Indian states of Assam in Udalguri district.

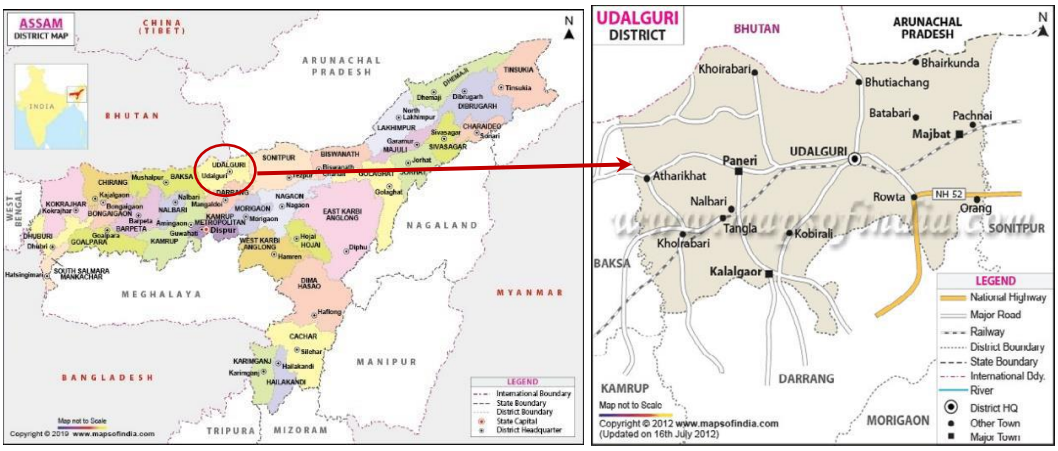
The geographical boundary for projects located in Udalguri district of Assam and is delineated in the form of extreme geographic coordinates of Udalguri district of Assam as follows:

Latitude - 26°46' N

Longitude - 92°08' E
Please refer below web link for the range of co-ordinates:

https://udalguri.assam.gov.in/resource/detail/district-profile


India
International Boundary
Road
River
National Capital
City or Town
0 200 400 KM
0 200 400 Miles
© 2018 Geology.com
TURKM.
UZBEK.
TAJIKISTAN
Termez
Mazar-i-Sharif
Kunduz
AFGHANISTAN
Kabul
Gilgit
Indus
Line of control
Darya-ye Helmand
Peshawar
Islamabad
Kargil
Srinagar
Leh
Karakoram Pass
Kargilik
Hotan
Indian claim
Chinese line of control
CHINA
Jhelum
Chenab
Jammu
Pathankot
Kandahar
Zhob
Lahore
Amritsar
Shiquanhe
Indus
Ravi
Quetta
Multan
Ludhiana
Shimla
Chandigarh
Dehradun
Yamuna
Sutlej
PAKISTAN
New Delhi
Bareilly
Xigaze
Lhasa
Zayu
Brahmaputra
NEPAL
Kathmandu
Cona
Dibrugarh
Tinsukia
Itanagar
BHUTAN
Thimphu
Gangtok
Sukkur
Bikaner
Jaisalmer
Agra
Lucknow
Gorakhpur
Jodhpur
Jaipur
Kanpur
Ghaghara
Dispur
Shillong
Kohima
Myitkyina
Karachi
Hyderabad
Gwalior
Ganga
Patna
Kota
Chambal
Jhansi
Allahabad
Varanasi
Ganga (Ganges)
Son
Silchar
Imphal
BANGLADESH
Udaipur
Agartala
Bhuj
Dhaka
Azawl
Chindwin
Ayeyarwady
Gandhinagar
Ahmedabad
Bhopal
Jabalpur
Ranchi
Jamnagar
Indore
Rajkot
Vadodara
Narmada
Son
Rihand
Jamshedpur
Kolkata
Khulna
Porbandar
Haldia
Mandalay
Mahanadi
Mouths of the Ganges
Cox's Bazar
Diu
Surat
Raipur
Balasore
MYANMAR
Daman
Silvassa
Nagpur
Cuttack
Sittwe
Nay Pyi Taw
Paradip
Bhubaneswar
INDIA
Godavari
Mumbai
Pyay
Bhima
Pune
Solapur
Hyderabad
Visakhapatnam
Yangon
Kakinada
Krishna
Krishna
Pathein
Vijayawada
Bay of Bengal
Panaji
Vasco da Gama
Guntakal
Arabian Sea
Mangaluru
Chennai
Bengaluru
Kaveri
ANDAMAN ISLANDS
Port Blair
Puducherry
Cuddalore
Kozhikode
Coimbatore
Andaman Sea
Kavaratti
LAKSHADWEEP ISLANDS
Kochi
Madurai
Palk Strait
Jaffna
NICOBAR ISLANDS
Thoothukudi
Thiruvananthapuram
Trincomalee
Gulf of Mannar
SRI LANKA
Laccadive Sea
Colombo
Galle
MALDIVES
INDIAN OCEAN
INDONESIA



2.1.8 Baseline Scenario

Traditional biomass cookstoves are used to meet the cooking needs of millions of people in India. These conventional cookstoves use more biomass than the project scenario because they are less fuel efficient. The common usage of these old-fashioned cookstoves raises health hazards for homes, particularly for women & infants. Use of contemporary, upgraded cookstoves that are fuel-efficient could reduce or eliminate these concerns. Additionally, the majority of the fuel which is woody biomass for these cookstoves is gathered from forests. According to numerous research, this tendency is unlikely to alter without the application of new technologies.

Additionally complicating the issue of gathering firewood is the fact that forests are dwindling as a result of the conversion of forest lands to agricultural land adds to the difficulty of gathering firewood. Therefore, fuelwood is getting more and more limited as demand rises. Conflicts between people and animals as well as governmental restrictions on entering forested areas are other issues. All of these increase the time demands on rural homes and are related to issues like gender inequality, poverty, and local residents' health and welfare. The time burden on women is increased by the fact that they typically gather more fuelwood for household uses. It takes a lot of work and time to gather fuel wood and carry it back to their home while trekking long distances. If the guy of the family relocates to a different location in search of better possibilities, the time commitment on the woman will increase even more because she will now be legally responsible for taking care of her family. Due to the physically demanding nature of the job, women are also more likely to sustain long-term bodily harm, particularly in the event of an assault, an insect bite, or a fall from a tree while collecting fuel wood. Increasing household firewood needs may lead girls to leave school.

2.1.9 Causal Chain(s)

See appendix A for the Causal Chain image.

2.1.10 Threats to the Project

Human-induced risks and natural-induced threats are the other two types of potential threats to the project activity. This section explains the potential hazards and measures that the PP will take to neutralize these threats to ensure the project activity's smooth implementation.

Human-Induced Threat:

Threat 01:

The perception of a larger fire as superior limits the acceptance of upgraded cookstoves, and it is typically challenging for people to modify their behaviours.

Solution:

In order to convey the advantages of the cookstoves in local languages and from their cultural viewpoints, the project's the project's proponent will conduct awareness drive in distribution areas.

Threat 02:

Due to budgetary limitations, many households cannot buy the new ICS.

Solution - Project's proponent will distribute ICSs at free of cost.

Threat 03:
Stove users' lack of upkeep of stove resulting in either malfunctioning of the stove as designed or lack of stove use.

Solution:
PP conducts routine spot audits early in the stove's distribution in each main geographic focus area for mass stove installation to detect defects in stove maintenance and sub-optimal stove use. PP requires its Distribution Partners (DPs) to hire, train, and supervise individuals to visit each household to inspect the stoves once a year. This reduces the threat listed above. Additionally, PP local staff to perform spot checks or sample size reviews to identify lapses in stove upkeep. Moreover, each stove has unique identification (I.D.) number and QR code embossed on metal plate and attached with each ICS for proper identification and all users are registered on a mobile based app. As soon as user found any problem with the ICS, they can call on the helpline number, given in the ID card provided

with the ICS. They will be located easily by the I.D. of the ICS and local DP will address the problem immediately.

Threat 04:
Failure of behavior change resulting in high levels of non-adoption.

Solution:
Research outcomes, whether formal or informal, are included in future training and community sensitizations to continue to positively, shape knowledge, enhance positive peer-to-peer influence, follow-up visits by the Implementing partner (once a year), and increase women's sense of empowerment, feeding into social cognitive theory on identity and self-belief.

Threat 05:
Carbon-financed stove distribution is not shown to have an increased impact on household uptake.

Solution:
Co-benefits like as time savings and increased health advantages (reduced morbidity/mortality from HAP and decreased acute respiratory disease for mothers and children) are connected with the adoption of ICS work as key motivations for increasing uptake of these stoves. PP's training emphasizes that, while ICS is offered free of charge, variables such as time savings, health advantages, and so on are more essential in large-scale adoption. Furthermore, raising knowledge about the benefits of cooking with ICS is being utilized to combat this menace.

Project Proponent (PP) discussed project benefits with the stakeholders during all stages of the project implementation:

Before distribution – PP's representatives discuss the project benefits with the district and Village level authorities.

During distribution – Distribution Partner provides detailed presentation to the end-users on stove performance, how to use the stoves, its benefits, carbon waiver agreement etc. PP uses project flyer and pictorial illustrations to educate the end-users on project benefits.

Post distribution - Distribution Partner follow-up visits each household once in a year with an objective to ensure the proper usage of project cookstoves and to explain the beneficiaries regarding the cookstove maintenance, best practices, and health benefit.

Nature-Induced Threats

Threat 01:
Climate crisis-induced displacement/migration (shock-related drought or flood) causing households to change location.

Solution:
The ICS installed under the project are portable type of stoves which can be easily transported. This technology can travel easily with the household in their migration and can be installed and used at a new location by the end-user. The end user is also provided with the knowledge and requisite training on the stove maintenance should the need arise.

Threat 02:

Continued deforestation and degradation make firewood an untenable source of biomass.

Solution:
Although increased scarcity would support the use of the ICS, there exists a potential threat that as the population continues to expand, there may be a point when firewood becomes an untenable source. Although access to modern fuels may not be physically or financially accessible to ICS households in the future, creating more dependence on biomass cooking. The ICS being distributed by PP is designed for using small branches and twigs, and crop residues to ensure a close-to-home source of regenerative biomass.

2.1.11 Benefit Permanence

The purpose of the project activity is to change the cooking pattern of households by distributing improved ICSs, which will

- enable households to reduce their fuel consumption,
- saves the cooking time,
- improve their health conditions by reducing indoor air pollution and
- enhance the employment opportunities available to them.

Post project activity, it is ensured that the rural and urban households will continue to use improved cookstoves in future, due to the benefits associated with them, and thereby accrue significant environmental as well as socio-economic benefits. The project activity also ensures the benefits are permanent in nature and will not be reversed until the project devices are functional.

PP has also developed a continuous grievance redressal mechanism which continuously addresses the challenges associated with distributed cookstoves or any other concern associated with the project activity to impart trust and belongingness among the beneficiaries. PP also provides technical trainings to the Distribution Partners and local staff to ensure effective implementation of the project and minimizing non-adoption. This also includes knowledge dissemination regarding the benefits and co-benefits aligned with the adoption of ICS.

2.2 Stakeholder Engagement

2.2.1 Stakeholder Identification

Stakeholders have been identified based on the criteria outlined in Section 2.2 of the SD VISta Standard. The key constituency that will be most likely to be influenced by project activity will be represented by the stakeholders. The communities living in rural and semi-urban areas of Assam depend on and engaged in laborious fuelwood collection activities or commercial fuelwood purchases and depend on inefficient conventional cookstoves are the stakeholders that have been identified. Women in the communities are typically required to go get wood for their kitchens' heating and cooking needs. Therefore, it was crucial to interact with some household members in these areas, particularly.

Therefore, the following individuals have been designated as stakeholders:

- **Direct Stakeholders**: These are group of people who are directly impacted by the project, such as end users, ICS manufacturers, training personnel, etc.
- **Indirect Stakeholders**: Group of people, organisations, or communities' expressed interest in the initiative.

These stakeholders were further evaluated based on how deeply affected they may be by the Project, and those most impacted have been included in the stakeholder engagement.

Description of Local Stakeholder Consultation meeting process engagement:
The brief process followed for local stakeholder consultation is as below.

- The locations have been identified for baseline survey and details of local personnel, official representatives of local community, local NGOs were taken for survey.

- The public notice has been placed as common places of location and Civil authority personnel of the desired region have been invited via means of physical and digital medium to consult and receive their feedback.

The Project proponent have further planned to organize a local stakeholder consultation meeting to be held in each of the project territory (state of Assam) across India. The question raised by the stakeholders will be recorded and it will be ensured that stakeholders are satisfied from the overall socio-economic impacts of the project implemented by the project activity and their feedback is recorded for future reference.

2.2.2 Stakeholder Description

The stakeholders can be classified as:

A. Directly affected parties
B. Indirectly affected parties

A. Directly affected parties:

Directly affected parties can be further subdivided into four categories:

a) **Current Beneficiary (ICS registered users):** These beneficiaries are identified as any family/individuals/women who are involved in cooking in the household of the project area and interested to adopt the improved and clean technology. Beneficiary families are those living in or sharing the same family compound as project beneficiaries. During distribution of ICS, PP gives priority to the households whose extended family has already demonstrated successful adaptation to the new technology. PP also has a strict policy against providing Improved cookstoves to family members of those who have intentionally altered or destroyed a previously installed stove. The distributed technology i.e., ICS is being distributed free of cost by the PP to increase economic productivity and reduce the health impact due to indoor air pollution of the family.

b) **Potential beneficiaries (New Users and potential adopters):** PP seeks out new beneficiaries through marketing, sensitization activities, active engagement and interaction with community leaders, organizations such as Self-Help Groups and community forums, local collaborations with university and government institutions, and stakeholder consultation. Considering project's target, demographics are individuals and households in rural settings, present and future beneficiaries often have similar characteristics within India. This strategy is intended to minimize the demand for the traditional cookstoves.

c) **Distribution Partner-Organizations collaborating with PP:** Distribution Partners have a local presence, community networks, and experience with on-ground scenarios, giving them an advantage in setting the project on the ground. The initiative directly benefits or influences the Distribution Partners through learning, improved employability, and monetary benefits resulting from project implementation.

d) **PP's on-ground staff:** PP carries out its development activities in host nations by engaging the local workforce at various project development and implementation stages. These individuals receive employment and additional training opportunities throughout the project from the organization, improving their chances of landing a job after the project's completion.

B. Indirectly affected parties:

a) **Governmental Authorities:** Through "Courtesy Calls," PP and implementing partners approach local governments to provide information and input on proposed projects and target populations. Through these "Courtesy Calls," PP teams obtain authorization from local authorities to operate in certain regions.

b) **Environment, Health, and Nutrition public-sector agencies:** In-country organizations that work in parallel with PP's programs via implementation may operate in the same geographical regions or oversee initiatives that may touch on comparable sectors as PP's projects.

c) **Academic Institutions:** PP welcomes interested academic institutions to study their work at any level and is dedicated to collaboration and financing. To better understand the advantages and disadvantages as well as how to highlight the positive aspects and mitigate the negative ones, PP are especially interested in doing direct household-level research of beneficiaries for PP.

d) **Local and International NGOs:** In-country partners who collaborate with PP on project execution may operate in the same geographical areas or on initiatives that touch on similar sectors as the programs implemented by PP.

e) **Others, as applicable and interested:** PP encourages input and interest in the initiatives from sources not indicated in this description. However, PP reserves the right to act on feedback and communicate with the party providing feedback to ensure it is constructive.

2.2.3 Stakeholder Consultation

Consultations with local stakeholders are essential steps in implementing a project. Different stakeholders participated in interactive training and demonstration sessions led by the project proponent and Distribution Partners. These sessions gave the participants details on the benefits of improved cookstoves, the advantages for the environment and human health, how to use ICS, and maintenance. PP welcomed any inquiries about stoves from the stakeholders throughout the consultation. The villages were identified and village representatives like village heads, sarpanch were taken survey. For the proposed project activity, household owners (end users), village heads, distributors, and their representatives are relevant main local stakeholders. The public notice was placed as common places of villages and village heads were invited telephonically to consult their feedback.

Three stakeholder meetings were conducted the details of which are as follows:

Meeting Date	Location	District	State
13/01/2020	3 no. Uttar Dimakuchi	Udalguri	Assam
13/01/2020	2 no. Hattigon	Udalguri	Assam
13/01/2020	Tangla Ward no. 2	Udalguri	Assam

The overall response from the local stakeholders on the project was encouraging and positive. No adverse or negative comments or response received in the meeting. The participants of the meeting had not raised any significant concerns nor seek any clarification related to potential impacts of the project activity or any other issue. The project as a whole gives positive impression towards the issue of sustainable development of the country. Copy of public notice, minutes of meeting and attendance register submitted for verification.

Modalities of stakeholder's engagement:

Villagers at each of the three locations are being informed about the consultation meeting one month in advance through public notice at key places/ points of public gathering and also by informing key members of Gaon Panchayats (GPs) including Sarpanch about the purpose and agenda of the project and stakeholders' consultation meeting for dissemination of information regarding the consultation meeting. Concerned institutional stakeholders were also invited through invitation letter submitted directly at the office/institutions of the stakeholder's concerned.

Public input during local stakeholder consultation:

Beneficiaries from diversified work profile including housewife's attained the stakeholder's consultation meeting at three locations including both men and women.

Meeting date	Location	Male	Female	Total	Profile
13/01/2020	3 no. Uttar Dimakuchi	7	19	26	Farmers, Housewife
13/01/2020	2 no. Hattigon	25	5	30	Farmers, Housewife

13/01/2020	Tangla Ward no. 2	21	9	30	Business personnel, Housewife, Worker

The stakeholder's attending the consultation meeting are being provided with feedback form for providing inputs and suggestions regarding the project activity in addition to the grievance register being maintained at the meeting site for submission of input/ grievance if any related to the project activity. The physical query by stakeholder's (during question-and-answer session) were noted and, the query along with the response provided by the project proponent are captured by the representative of the project proponent. The copy of the minutes of meeting is provided to the DOE.

In addition, the contact details of the project proponent and local representative/ partner of the project proponent were also provided to the stakeholder's attending the consultation meeting for sharing suggestions/queries either through call/messaging/ e-mailing post meeting.

Consideration of input

No negative input has been received during the consultation. The inputs and concerns were positive in nature and therefore no requirement of updates to the project design is required.

Mechanism for ongoing communication

As a part of on-going communication, beneficiaries were informed about grievance register, and provided with the details of the point of contact and contact information including that of the project proponent and its local authorised representatives. The grievance register is maintained by the distributors (authorised representatives of the project proponent) of the cookstoves, and the distributors focal point for a particular geography is assigned with the responsibility for recording the grievance and convey the same to the project proponent so as to address the stakeholder's concern.

In addition, each of the cookstoves users were provided with the contact details of distributor's local authorised representatives (local) and project proponent during handover of the improved cookstoves and were also explained about the grievance submission/recording process and its redressal mechanism.

As a part of the grievance submission mechanism the beneficiary can either visit the distributor facility for submission of grievance or can inform the distributor

representative over call. In case the beneficiary is not satisfied with the distributor, beneficiary can reach out to project proponent for intimation of the same. The beneficiary might also record the grievance (in grievance register) during periodic visit of the distributor representative for maintenance purpose.

Thus, ongoing communication of stakeholders is followed through grievance mechanism. If any concerns received during operation of project activity, same will be addressed if relevant to project activity.

Grievance Redressal

For comments/grievance that is being received during the consultation meeting, project proponent and the distributor will adopt appropriate measures for its resolution during the meeting.

On receipt of intimation of grievance/complaint from the beneficiary after the stakeholder's consultation meeting, the distributor will convey the same to project proponent. Based on the nature of complaint, the distributor will act immediately for resolution of the issues in consultation with the project proponent.

2.2.4 Continued Consultation and Adaptive Management

As a part of on-going communication with local stakeholders, end users are being provided with an ID Card which is having a helpline number for registering grievance. The field survey team will also have the responsibility to take grievances regarding the project activity during the field survey and same will be conveyed to PP during operation of the project activity. Thus, ongoing communication of stakeholders will be followed through grievance mechanism. If any concerns received during operation of project activity, same will be addressed if relevant to project activity.

Every direct stakeholder, including local leaders, shall have their comments taken into account as soon as possible and as needed. Women and other direct users of cookstoves were continuously consulted during the design of the ICS, and this practise of soliciting user input will continue. If a meeting is necessary to discuss potential remedies in the event of any complaints, it will be set up as soon as possible. Users will receive advance invitations to all such meetings on their registered phone numbers, and there will also be a public announcement in the neighbourhood village panchayat office.

Also, meetings will be held in each zone by local women who are employed as field executive officers and resource persons to discuss and collect feedback on the

improved cookstoves. The project's promoter will make an effort to start a comprehensive transformation in the socioeconomic circumstances of the surrounding districts. Although changing cookstoves may seem like a minor concern, PP's social surveys have shown how closely cookstoves are related to other socio-economic problems. The project's supporters will follow the sustainable development goals for India throughout its existence as a guide to community involvement and community welfare. The project activities will include community development initiatives.

PP also collects feedback from beneficiaries through various methods throughout the project life, ranging from informal meetings to more formal local stakeholder consultations, and additional channels of surveys that include questions specifically about ICS use and uptake to ensure ongoing progress and feedback from stakeholders, particularly the beneficiaries, and future beneficiaries.

2.2.5 Anti-Discrimination

The project's participants will make sure that an equal number of women and people from other underrepresented groups have the chance to apply. They do not discriminate on the basis of gender, race, religion, sexual orientation, etc. The same is governed by government regulations, and any form of discrimination is illegal in the country where it occurs. The project has harmonised India's labour policies with the "Convention on the Elimination of All Forms of Discrimination Against Women," to which it is a party.

2.2.6 Worker Training

There will be precautions taken during the planning and execution of project activities to reduce hazards to worker safety. Workers will always be taught in safe work procedures and advised of potential risks. Building capacity and educating employees will be crucial components of the project's functioning. To guarantee that they address current community concerns and give priority to community needs, training and capacity building initiatives will be developed in partnership with the communities. The staff working on the assembling, distribution, and maintenance of ICS will receive training. All project staff members will have access to these trainings, with a focus on those hired from stakeholder villages.

2.2.7 Equal Work Opportunities

The project will train all staff members regardless of gender and encourage women in the surrounding communities to pursue work in the project activity according to

their skills. The project guarantees equal opportunity and remuneration for men and women in accordance with its human resource policy. Additionally, the project activity will give women greater chances through self-help groups, contributing to the general empowerment of women.

2.2.8 Workers' Rights

Every single one of PP's employees is covered by a contract that outlines their duties and rights. A variety of labour laws exist in India as well, including those that forbid discrimination and child labour, ensure fair and humane working conditions, offer social security, a minimum salary, and the freedom to organise, establish unions, and enforce collective bargaining. India also has several strict laws governing layoffs and retrenchments of employees, as well as requirements for government clearance of any change in employee status in a company, regardless of whether the reason is related to the state of the economy. Additionally, India has ratified six ILO conventions. They are as follows:

- Abolition of Forced Labour convention (No. 105)
- Forced Labour convention (No. 29)
- Equal Remuneration convention (No. 100)
- Minimum age Convention (No. 138)
- Discrimination (employment occupation) convention (No. 111)
- Worst Forms of Child Labour Convention (No. 182)

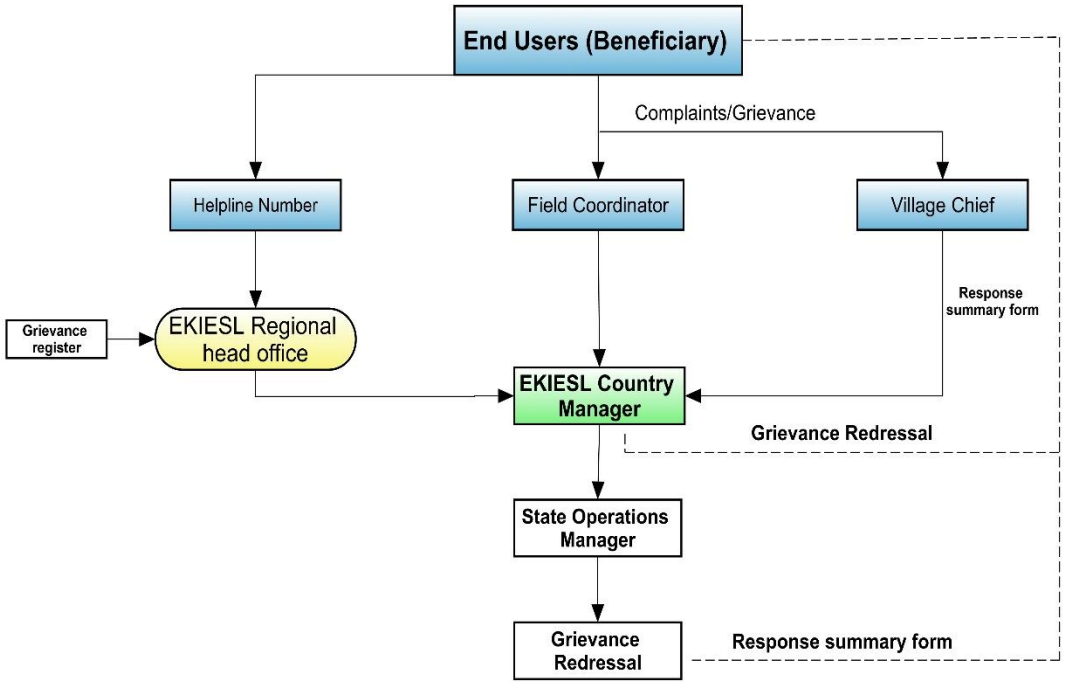
2.2.9 Occupational Safety Assessment

There won't be any unusual risks associated with the project activity. Road accidents or minor social conflicts during delivery and demonstration operations could pose risks. By educating employees about potential risks, providing them with best practises training, and providing suitable tools and equipment, risks can be reduced. These risks will be discussed verbally with the workers throughout their initial training, orientation, and refresher training sessions. SOPs have also been created for the proper use of personal protective equipment and occupational safety and health. All employees will receive the SOPs in their native tongues. When undertaking field activities, first aid and medical kits will be provided.

2.2.10 Feedback and Grievance Redress Procedure

The Feedback and Grievance Redress Policy and Procedure are designed for all high-efficiency wood-burning stoves projects in India implemented by PP. The primary aim is to lay down the procedures which have to be followed to address

community and individual grievances related to project stove installation and its operation. These measures are taken to enhance PP's accountability and transparency and to support the project initiatives.



A two-step approach is adopted to identify, register, assess and respond to the complaints of the end-users.

2.2.11 Feedback and Grievance Redress Procedure Accessibility

The contact detail for the grievance redressal procedure is announced to all stakeholders during the stakeholder consultation and information is available on the ID Card of each ICS provided to the end users.

2.2.12 Stakeholder Access to Project Documentation

Stakeholders were asked for their opinions on any project-related concerns after the project's specifics were given. The VERRA website will host the project documents, and stakeholders have been made aware of this. They were also given information on the project during the stakeholder engagement. When possible, notifications will be made in local publications as well as posted on the panchayat notice boards in every village about the availability of any summary or essential project documentation.

2.2.13 Information to Stakeholders on Assessment Process

During the regional stakeholder consultation, the stakeholders were informed in full on the registration process under the GHG programme. Additionally, they will receive more information when VVB assesses them during validation and verification. Additionally, during surveys intended to gather information for monitoring the usage of cookstoves and their advantages, users will be interviewed to supply the data for monitoring parameters.

PP inform their beneficiaries and their families that they are participating in a project that distributes the ICS at no cost to improve their respiratory health, the family economy, and the environment. They also inform them of their need to track their successes and monitor key data, such as money spent on wood fuel among other economic indicators.

2.3 Project Management

2.3.1 Avoidance of Corruption

The PP has policies in place to inform management and employees about the avoidance of corruption, code of conduct, and business ethics. These policies are applied by all project staff, including company management to ensure that the organization is run in accordance with all legal requirements and is held to the highest standards of operation.

2.3.2 Statutory and Customary Rights

The project activity would not entail any land acquisition; instead, it will involve distributing upgraded cookstoves to specific homes.

2.3.3 Recognition of Property Rights

Since no property is required for the project activity, which is distributing better cookstoves to specific families, there is no impact on any property rights.

2.3.4 Free, Prior and Informed Consent

Since no property is required for the project activity, this is “Not Applicable”.

2.3.5 Restitution and/or Compensation for Affected Resources

The project activity entails distributing upgraded cookstoves to certain families; it will not affect access to any resources and won't have any negative effects.

2.3.6 Property Rights Removal/Relocation of Property Rights Holders

As the project activity will not involve any property right removal/relocation of property rights holders.

2.3.7 Identification of Illegal Activities

The project participant will monitor and keep track of the ICS distribution, and no unlawful acts have been discovered throughout project implementation or operation.

2.3.8 Ongoing Conflicts or Disputes

There is no ongoing conflict related to the planned project activity.

2.3.9 National and Local Laws and Regulations

PP adheres to subsequent local and national laws. There are no laws and regulations governing the use of improved cookstoves in Indian households. The project is a voluntary effort by the project proponent.

2.3.10 Project Ownership

The project ownership is with EKI Energy Services Limited.

The ICS are distributed to end users (households) at free of cost. The end users are informed in advance that the use of ICS generates carbon finance which in turn is used to cover the price of ICS and for recovering project implementation costs. The participating household will sign a declaration to transfer the ownership rights of the carbon assets generated from this project to the PP, also undertaking is provided by PPs for projects ownership. The undertaking from manufacturer and distributor and end user agreement has been submitted to confirm that cook stove ownership is with PP.

2.3.11 Grouped Projects

The project is a grouped project.

Eligibility Criteria:

For the inclusion of new project activity instances, the project proponent shall ensure that it meets the eligibility criteria below:

No.	Criterion	How the new project activity instances to comply
1	Meet the applicability conditions set out in the methodology applied to the project	New project activity instances (Energy Efficient Cook Stoves) will meet the applicability conditions set out in Section 3.2 of the VCS PD where the target of the end-user is household and the ICS deployed is at least 25% of thermal efficiency.
2	Use the technologies or measures specified in the project description.	The technology used for project activity is energy efficient cook stoves. Only energy efficient cook stoves to be adopted in the project by replacing traditional cook stoves in household.
3	Apply the technologies or measures in the same manner as specified in the project description.	Only energy efficient cook stoves to be adopted in the project by replacing traditional cook stoves in household.
4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The new project activity instances will be installed within India subject to the same baseline scenario determined in Section 3.4 of the VCS PD as "continued use of non-renewable wood fuel (firewood/charcoal) or fossil fuel (coal/kerosene) by the target population to meet similar thermal energy needs as provided by project cook stoves in absence of project activity."
5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	All new project activity instances will use the activity method for demonstration of additionality. Step 1: Regulatory Surplus There is no mandated government programme or policy in host country of this project ensuring the distribution of new energy efficient cook stoves for each project activity instances. Step 2: Positive List

		The inclusion of new project activity instances will comply with positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology.
6	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: Each project activity instance that exceeds one percent of the capacity limit shall be identified. Such instances shall be divided into clusters, whereby each cluster is comprised of any system of instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	No project activity instance shall exceed the applicable limit, which is 180 GWh_{th}/y. Since the project activity instances have same model, hence expected annual energy saving for each instance is 0.0160 GWh_{th}/y which is 0.02% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters.

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1 Condition of Stakeholders at Project Start

Current and Potential beneficiaries:

At the beginning of the ICS stove project, households were cooking over traditional three-stone hearth – a simple open fire on the floor.

Indigenous reverence for fire and the three-stone hearth, as well as economic factors, have led to continued use of open fires within the home for both cooking and heating. Traditional home structures, with thatched roofs (coated with soot from the inside, which acted as a sealant) filtered out the smoke and worked in harmony with traditional cooking methods. New construction technologies have led to concrete homes with tin roofs, lacking sufficient air circulation. In traditional Indian culture, the women are responsible for the preparation of food. Because women spend so much time in the kitchen with their children, they are the most at risk for the negative health effects of HAP created by burning wood fuel in the home. Toxic smoke penetrated deep into the lungs of the female beneficiaries and their children, causing a range of deadly chronic and acute health effects.

Diseases such as childhood pneumonia, lung cancer, chronic obstructive pulmonary disease and heart disease, as well as low birth-weights in children are prevalent amongst families who cook over open fires. In children under five years, respiratory problems were the leading cause of death. Frequent exposure to cookstove smoke also caused cataracts. Children were also frequently badly burned by falling into open cooking fires, resulting in disfiguring scarring. Daily exposure to health hazards from traditional cooking practices are conditions that continue to threaten the health of prospective beneficiaries.

Smoke trapped in the home can cause acute lower respiratory infections and long-term complications such as chronic pulmonary obstructive disease and cataracts and contributes to the risk of pneumonia in infants. Over time, HAP can also cause stroke and ischemic heart disease according to the WHO. The fire on the floor is a burn risk for small children who can fall into it.

Not only are these open fires dangerous, they are wasteful. The ICS design for efficient combustion and distribution of heat, burns approximately 70% less wood.

Families who purchase their wood for an open fire and switch to an ICS stove will save cooking & wood collection time and money.

Families who search for and collect wood will save two days/week on average, time that can be redirected towards other income producing activities.

Inefficient combustion of open fires and poorly designed wood-burning stoves requiring large amounts of wood fuel, combined with growing populations throughout India (the country is experiencing the largest population growth in Asia) has worsened localized deforestation and caused a local firewood deficit.

Non-renewable biomass has been in use since 31 December 1989, which can be established through demonstration of gap between the demand of fire wood and silvicultural permissible production of biomass from forest and tree outside forest. The fact is established using published literature referring to the following studies: "Food and Agricultural Organization of United Nation8 Regional Wood Energy Development Programme in Asia". The literature highlights gap in demand and supply of fuel wood across the country. In accordance to the study, fuel wood consumption in real terms is much higher than the recorded production of about 30%; thus, leaving a wide gap leading towards unsustainable extraction of fire wood. Moreover, on account of population pressure, demand for firewood has outstripped natural regeneration and planting, so much so that in some areas there is food to eat but not enough wood is available to cook it (Mathur, 1987)". The report also highlights the statistics from Forest Survey of India (FSI1988:46) which estimated a gap of 130 million tonne between the demand and internal production of firewood in the country in 1987.

The "State of Forest Report 1987[9], MoEF, Govt. of India" highlights gap between the demand and production of fire wood as major cause of deforestation. The reported consumption and production across the country within silviculturally permissible limit across the following years is indicated as follows –

Year	Consumption in million tones	Recorded Production in million tones
1953-54	86.3	6.49

[8]Regional Wood Energy Development Programme In Asia GCP/RAS/154/NET, RWEDP Report No 57, The Wood Fuel Scenario and Policy issues in India. Published by the FAO Regional Wood Energy Development Programme in Asia, Bangkok, Thailand

[9] https://fsi.nic.in/documents/sfr_1987_hindi.pdf (refer page 44 of document, section 3.4 of Chapter III Demand On Forests"

1960-61	99.6	8.15
1965-66	109.3	9.16
1970-71	117.9	11.62
1975-76	133.1	19m. from forest and 30 m. from tree outside forest

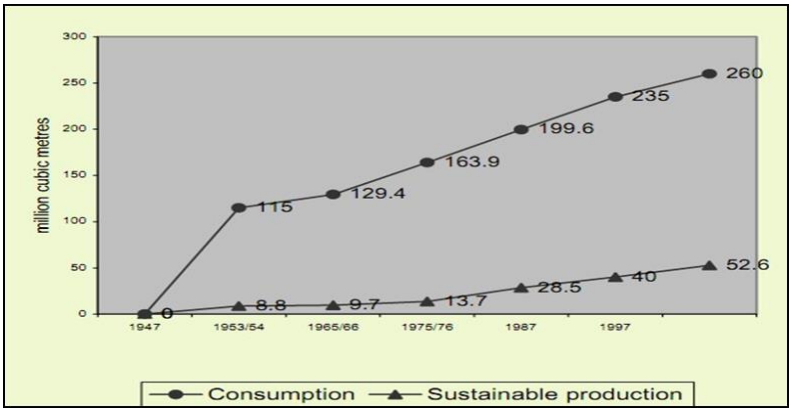
In accordance the gap between demand and production is met through pilferage leading to continuous depletion of forest land.

According to "Wood Fuel Trade in India: Food and Agricultural Organisation of United Nation" the demand- supply gap which has referred the expert committee report of MoEF dated 30.01.1998 as below –

	In million cubic metres		
Year	**Consumption**	**Sustainable Production**	**Gap**
1953-54	115.0	8.8	106.2
1965-66	163.9	13.7	150.2
1975-76	199.6	28.5	171.4
1987-88	235.0	40.0	195.0

Rural Energy data sources and estimations in India – TERI10

The report refers to gap between consumption and recorded production of fuel-wood has however, increasing, indicating seriousness of the fuel-wood scarcity in India.



Fuel wood consumption and sustainable production since 1947

[10] https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.581.9840&rep=rep1&type=pdf

Also, as per Forest Survey report 2011 (This is latest survey report for India where demand and supply is determined. Due to COVID-19 pandemic, no survey done for year 2022) , (https://fsi.nic.in/cover_2011/chapter7.pdf) has been considered for production of fuelwood from forests 1.232 Million Tonnes (table 7.4.2) and availability of fuel wood from trees outside forest is 19.254 million tonnes (table 7.4.3) annual fuel wood consumption is 216.421 million tonnes (table 7.4.7). This indicates that demand is more than sustainable production/availability of wood, thus in present scenario, the non- renewable biomass is used in the project region

Therefore, it can be concluded from above paragraph, a staggering gap exists between the demand and potential for sustainably extractable fuel wood from forest land. While the first three studies refer to the fuel wood supply scenario and the gap that were precedent before 1989; the study by TERI highlight the widening of gap between the demand and supply of biomass after 1989. The widening of the gap has been both due to the increased population pressure as well as the conversion of dense forest to medium dense, scrub and open type forest land due to unsustainable extraction even after the government's initiative towards promotion of afforestation. Thus, it can therefore be concluded that the gap exists from and before 1989 and continued thereafter, forcing the population in using biomass extracted in un- sustainable manner which is identified as non-renewable component

The project activity will not only save forest by reducing fuel wood consumption for cooking but also divert money away from acquiring wood fuel and back into the family economy. PP installing ICS stoves that save families on average about Rs. 100/monthly or two days/week in time spent gathering wood.

Employees of the Distribution Partner in the host country:

According to Centre for Monitoring Indian Economy (CMIE), India's unemployment rate in October 2022 is 7.70%. In Urban India, it is 7.50% whereas in Rural India it is 7.70%[11]. There also exists immense gender biasness in the employment structure of the country. It has been observed that men folk have higher access to employment opportunities in comparison to females, however, this trend is experiencing slight change over the years. Also, considering the current influx of youth entering the labor market there is immense need of generating employment opportunities. In view of this, the proposed project generates employment opportunities and hence impact the local individuals of the country.

[11] Unemployment Rate in India 2022 | Statewise Unemployment Rate – The Global Statistics

3.2 Expected Impacts on Stakeholders

The anticipated impacts of project activities on each stakeholder group over the project lifetime are as given below:

Impact #1	Proportion of population with primary reliance on clean fuels and technology
Type of Impact	Positive actual direct impact on ICS user household. Impact will be monitored as "reduction in fuel required for cooking in households".
Affected Stakeholder Group(s)	ICS users.
Resulting Change in Well-being	Distribute 35,045 high-efficiency, clean burning ICSs to benefit over 140,180 individuals (considering 4heads on average/household)

Impact #2	Reduced exposure to smoke, HAP and other dangers.
Type of Impact	Positive actual direct impact on ICS user household. Impact will be monitored as "Reduction in $PM_{2.5}$ emissions".
Affected Stakeholder Group(s)	ICS users.
Resulting Change in Well-being	• Lowered risk of developing COPD or worsening COPD. • Less instance of acute lower respiratory illness and anticipated reduction of burns due to contained flames. • Improved overall respiratory health

Impact #3	Trainings imparted on climate change, project implementation and monitoring procedures.
Type of Impact	Positive actual direct impact on ICS . Impact will be monitored as "Average training manhour".
Affected Stakeholder Group(s)	Village community, Beneficiaries, Distribution Partner Staff
Resulting Change in Well-being	Training and skill development related to community engagement, survey conduction, technical trainings like conducting Water Boiling Tests (WBT) will be provided to many stakeholder groups which is envisaged to empower their lives by not only providing long-term employability but also through increased awareness levels regarding issues related to climate change, social equity.

Impact #4	Reduce Average time saving associated with cooking and fuel collection
Type of Impact	Positive actual direct impact on ICS user women. Impact will be monitored through survey of "Average time spend for cooking and fuel collection"
Affected Stakeholder Group(s)	Beneficiaries (most notably, female, elderly, and children, primarily girls).
Resulting Change in Well-being	• Females will have a predicted time saving which can be redirected to income-generating activities or relaxation time. • Contributing to enhanced conditions for gender equity.

Impact #5	Enhancing Job opportunity
Type of Impact	Positive actual direct impact on Distribution Partner staffs. Impact will be monitored as "Informational employment generation".
Affected Stakeholder Group(s)	Local Citizens (Men's & Women's) – Staffs of Manufacturing unit and Distribution Partners.
Resulting Change in Well-being	Help in economic growth through creating more job opportunities by implementing project activity. It will help families to come above BPL.

Impact #6	Reduced fuel wood expenditure
Type of Impact	Positive actual direct impact on ICS user household. Impact will be monitored as "reduction in fuel wood expenditure in households".
Affected Stakeholder Group(s)	ICS users.
Resulting Change in Well-being	Money saved for those families that regularly purchase their wood fuel, time saved for other economic activities for families that collect their wood.

3.3 Stakeholder Monitoring Plan

This project uses the installation of improved cookstoves as an opportunity to create a net positive impact in overall wellbeing of the people in the project site. Monitoring mechanisms are employed to ascertain the project's impact on all major stakeholders. The project plans to collect data through interviews, surveys, direct observations, group discussions, and other employment, financial, and health records. Village resource personnel and women monitors will collect primary information through regular visits and interviews with the households. They will be

tasked with monitoring the changes after installation of improved cookstoves. field executive officers will conduct group discussions, and other interviews regarding the same. The data from these interactions will be compiled into reports and forwarded to the senior analysists.

Also, as a part of on-going communication with local stakeholders, end users are being provided with an ID Card which is having a helpline number for registering grievance. The field survey team will have the responsibility to take grievances regarding the project activity during the field survey and same will be conveyed to PP during operation of the project activity. If any concerns received during operation of project activity, same will be addressed if relevant to project activity.

3.4 Net Positive Stakeholder Well-being Impacts

Demonstrate that the anticipated net impacts of the project activity(s) are positive for each stakeholder group.

All of the impacts identified generate a positive impact of the following combined, long-term sustainable development benefits for the project's stakeholders:

- A higher proportion of the population will live in a household with access to basic services and will primarily rely on clean fuels and technology to prepare meals. Open cooking fires will be eliminated in the homes serviced.
- Beneficiaries below the international and national poverty lines will have a greater capacity to save money that would otherwise be spent on energy bills/wood fuel, and/or time that would otherwise be spent collecting wood. This is especially relevant for the rural areas PP serves.
- Fewer individuals will be at risk of death attributed to household and ambient air pollution as they will no longer be at risk of cardiovascular diseases, cancers, or chronic respiratory diseases that are caused by exposure to HAP.
- Fewer pregnancies will be at risk of ending prematurely due to complications arising from exposure to HAP.
- Fewer children under-five will be at risk of falling into open cooking fires.
- Female beneficiaries will spend a lower proportion of time on unpaid domestic and care work.

- Local individuals will be trained and have better vocational skills enhancing their long-term employability and influencing their overall social and economic wellbeing.

4 BENEFITS FOR THE PLANET

4.1 Condition of Natural Capital and Ecosystem Services at Project Start

The Biennial report of Forest Survey of India, 2021 revealed that usage of 85000 tones as firewood across India is a challenge which needs to be dealt with.

Firewood collection destroying biodiversity and nature. To majority of rural population and a large number of people living in small towns, the only fuel is woody biomass (firewood) which is burned to cook food. Firewood collection contributes much to the depletion of nature. In India, a recent observation revealed that felling of small trees for use as firewood and timber exceeds fresh plant growth. In some people allows to collecting head loads of dead wood from forests for personal use. However, deadwood is actually manufactured, trees are axed, and their barks girdled and live trees become personal head loads to find their way to home. If the present trend continues, within few years these groves will become treeless. Outright felling of live trees to meet firewood requirement is common in lightly wooded areas in many countries.

Carbon stock which refers to biomass in forests in form of living forms, soil, dead wood and litter of Carbon-based materials. The dependency of fuel wood needs to be brought down to conserve this carbon stock in the forests of the country.

4.2 Expected Impacts on Natural Capital and Ecosystem Services

Impact #1	Progress towards sustainable forest management by increasing above ground biomass in forests due to lesser demand for non-renewable woody biomass
Type of Impact	Positive, Actual, direct. Monitored through survey of woody biomass consumption per ICS user household per month.
Affected Natural Capital and/or Ecosystem Service(s)	Biodiversity and Species Richness, Soil and Water Conservation.
Resulting Change in Condition	Lowering the use of wood fuel as a source of nonrenewable biomass for cooking. Households will utilize less woody biomass that is not renewable. The ensuing decline in demand slows deforestation, raising the proportion of renewable energy in the project area's overall final energy consumption.

Impact #1	Avoided emission of GHGs made possible by using ICS
Type of Impact	Positive, predicted, direct. Emission reduction will be calculated through monitoring of parameters as mentioned in the section 5.2 of the published VCS PD in VEERA website.
Affected Natural Capital and/or Ecosystem Service(s)	Biodiversity and Species Richness, Soil and Water Conservation
Resulting Change in Condition	The project stoves require less firewood for producing the same amount of thermal energy, therefore, resulting in lesser CO_2 emission in the atmosphere. As CO_2 is a greenhouse gas, its reduced emission has a positive impact on climate change.

4.3 Natural Capital and Ecosystem Services Monitoring Plan

In order to determine the net ecological impact from the project, project proponent will also conduct regular monitoring in the project area. The following data will be procured from the monitoring activities - Survey the amount of natural firewood required by the project device in preparation of meals in a month and comparing it against the amount of firewood required by the baseline device. This will enable understanding the positive impacts from the project device in meeting the thermal energy requirements of the project area. Data from the above monitoring activity will reflect the annual net forest area change rate.

4.4 Net Positive Natural Capital and Ecosystem Services Impacts

By replacing inefficient traditional cookstoves with ICS technology and performing energy efficiency improvements in existing wood fired cookstoves, the project reduces energy demand in the form of woody biomass use, thus generating net GHG reductions. The project activities generate an estimated 18,900,000 tCO2e emission reductions over the 7 years project crediting period.

APPENDIX

Appendix A: Causal Chain