



Sustainable Development Verified Impact Standard

MADAGASCAR FAHATOKIANA IMPROVED COOKSTOVE PROGRAM



冰川环境

Document Prepared by Guangzhou Iceberg Environmental Consulting
Services Co., Ltd.

Project Title	Madagascar Fahatokiana Improved Cookstove Program
Version	02
Date of Issue	15/10/2024
Project Location	The Republic of Madagascar
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Project Lifetime	06/08/2022 –05/08/2032(expected time); 10-year lifetime
History of SD VISTA Status	No previous attempts at SD VISTA certification made to date
Other Certification Programs	Verified Carbon Standard, Project ID: 3239
Expected Future Assessment Schedule	Validation is expected in 2025

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1 SUMMARY OF SDG CONTRIBUTIONS

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
1)	Improved cookstove is a basic service necessary to lead a healthy and productive life, including saving time and money for wood fuel at the household level. The project proponent will distribute 100,000 improved cookstoves (hereinafter referred to as "ICSs"), and the ICSs are produced in local factory. Therefore, the implementation of the project results in more job opportunity and more income.	1.1	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status, and geographical location (urban/rural).	Implement activities to decrease	3.2, #4	Claim
2)	The project improves food security and nutrition status, particularly for children and women by reducing inadequate cooking, the burden of firewood collection, the time to prepare food, the cost to buy firewood.	2.1	2.1.1 Prevalence of undernourishment.	Implement activities to decrease	3.2, #1	Claim
3)	By using ICS, it reduces people's exposure to high PM2.5 and high CO due to higher efficiency of combustion leading to faster cooking and more complete combustion. It also reduce the burn risk, significant to children and	3.2 3.9	3.2.1 Under-five mortality rate. 3.9.1 Mortality rate attributed to household and ambient air pollution.	Implemented activities to decrease	3.2, #2	Claim

	toddlers due to enclosure of the fire in the combustion chamber.					
4)	The project reduces the time spend on firewood collection for children, especially for girls, which increases their time for education. The implementation of project needs plenty of local people to participate in production, distribution or use steps, who gets relevant skills and sustainable development and global citizenship education through training by project proponent and its local partners.	4.3 4.7	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex 4.7.1 Number of persons who receive education for sustainable development and global citizenship	Implement activities to increase	3.2, #3	Claim
5)	The project reduces women and children's drudgery through time savings in reducing time spent on cutting, collecting, and carrying firewood from trees far away from households as well as cooking over toxic smoky open fires.	5.4	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age, and location.	Implemented activities to decrease	3.2, #3	Claim
6)	The project protects an important water related ecosystem-forest	6.6	6.6.1 Change in the extent of water-related ecosystems over time	Increase	4.2, #2	Claim
7)	The ICS distributed to Household is a clean cooking technology. The project increases the proportion of population with primary reliance on clean fuels and technology in project area.	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology in the project area.	Implement activities to increase	3.2, #1	Claim
8)	The manufacturer which produces ICS is a local enterprise. It hires more workers to produce ICSs for the project. During the project crediting period, the project proponent is in charge of maintenance and monitoring plan,	8.3 8.5	8.3.1 Proportion of informal employment in total employment, by sector and sex.	Implement activities to increase	3.2, #4	Claim

	which also needs to hire local people, including persons with disabilities and minority.		8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities			
9)	The local factories which produce ICS for the project are small-scale industries, which expands production capacity to satisfy the needs. Thus, the upstream and downstream supply chain benefits from the project.	9.3	9.3.1 Proportion of small-scale industries in total industry value added	Implement activities to increase	3.2, #5	Claim
10)	The project promotes the investment in a least developed country-Madagascar for the manufacturing of ICSs.	10.b	10.b.1 Total resource flows for development, by recipient and donor countries and type of flow	Implement activities to increase	3.2, #5	Claim
11)	The project provides ICSs with high thermal efficiency to reduce the consumption of firewood. It helps achieve efficient use of an important type of nature resources, non-renewable biomass.	12.2	12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	Implement activities to decrease	4.2, #2	Claim
12)	The average annual GHG emission reduction from the project is expected to be 343,519 tCO ₂ e due to less firewood combustion for cooking in the households.	13.0	Tonnes of greenhouse gas emissions avoided or removed	Decrease	VCS project description	SD VISta-labeled VCU
13)	The project helps local people consume less firewood as the ICS has higher thermal efficiency and it results in a reduction of deforestation.	15.1 15.2	15.1.1 Forest area as a proportion of total land area 15.2.1 Progress towards sustainable forest management	Implemented activities to increase	4.2, #2	Claim

2 PROJECT DESIGN

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)



Before the implementation of the project, most of the local people in the project location use non-renewable biomass for cooking with open fire or three-stone fire. The project distributes fuel-efficient ICS to replace the baseline cookstoves in households. The project enables and enhance households to achieve several sustainable development objectives:

Improved cookstove is a basic service necessary to lead a healthy and productive life, including saving time and money for wood fuel at the household level. The project proponent will distribute 100,000 ICSs, and the ICSs are produced in local factories. Therefore, the implementation of the project results in more job opportunity and income. (SDI 1.1.1)

The project improves food security and nutrition status, particularly for children and women by reducing inadequate cooking, the burden of firewood collection, the time to prepare food, the cost for buying firewood. (SDI 2.1.1)

Most of non-renewable biomass local people used for cooking is firewood, which generates high PM2.5 and high CO biomass smoke when inefficiently burnt. By using ICS, it reduces people's exposure to high PM2.5 and high CO due to higher efficiency of combustion leading to faster cooking and more complete combustion. (SDI 3.9.1). And it also reduce the burn risk, significant to children and toddlers due to enclosure of the fire in the combustion chamber. (SDI 3.2.1).

The project reduces the time spent on firewood collection for children, especially for girls. It increases their time for education. The implementation of project needs plenty of local people to participate in production, distribution or use steps. They get relevant skills and sustainable development and global citizenship education through training by project proponent. (SDI 4.3.1, 4.7.1).

The project reduces women and children's drudgery through the time savings in cutting, collecting, and carrying firewood from trees far away from households as well as cooking over toxic smoky open fires. These tasks, if being undertaken without relief, are a major cause of gender inequality. (SDI 5.4.1).

The project protects an important water related ecosystem-forest through reducing deforestation by firewood collecting. (SDI 6.6.1). The project increases the proportion of population with primary reliance on clean fuels and technology in project area. (SDI 7.1.2).

The factory which produces ICS is a local enterprise. It hires more workers to produce ICSs for the project. During the project crediting period, the project proponent and its local partners are in charge of maintenance and monitoring plan, which also needs to hire local people, including persons with disabilities and minority. (SDI 8.3.1, 8.5.1). The local factories are small-scale industries. They expand production capacity to satisfy the needs of the project. Thus, the upstream and downstream supply chain benefits from the project. (SDI 9.3.1).

The project promotes the investment in a least developed country-Madagascar for the manufacturing of ICSs (SDI 10). The project provides ICSs with high thermal efficiency to reduce the consumption of firewood. It helps achieve efficient use of an important type of natural resources, non-renewable biomass. (SDG 12.2).

The average annual GHG emission reduction from the project is expected to be 343,519 tCO₂e due to less firewood combustion for cooking in the households. (SDG 13).

The project helps local people consume less firewood as the ICS has higher thermal efficiency and it results in a reduction deforestation compared to the baseline scenario. (SDI 15.1.1, 15.2.1).

2.1.2 Description of the Project Activity

The project involves distribution of fuel-efficient portable ICSs in The Republic of Madagascar. The ICSs disseminated through this project replaces the old low efficient baseline cookstoves. The ICSs are produced by local factories.

Through this project, Guangzhou Iceberg Environmental Consulting Services Co., Ltd. (hereinafter referred to as “Iceberg”) will distribute approximately 100,000 ICSs free of charge to households in project area. The Iceberg also dedicates to enhance the community’s awareness of health, well-being, climate change and sustainable development. Local employees are trained on production skills, sampling and conducting survey of the ICS users.

Before the implementation of the project, local people mostly use traditional solid-fuel cooking solutions such as open fire or three-stone fires. They spend plenty of time to collect firewood every day due to low combustion efficient. The ICSs burn wood more efficiently thereby improve thermal transfer to pots, hence saving firewood. The project reduces the GHG emission by less firewood combustion, which also reduce the rapidly progressing deforestation in project area.

The scenario existing prior to the implementation is widely used traditional solid-fuel cooking solutions such as open fire or three-stone fires. Due to low income, people would have continued to use them to meet thermal energy needs without project activity.

2.1.3 Implementation Schedule

Date	Milestone(s) in the Project’s Development and Implementation
02/06/2022	Stakeholder meeting
26/07/2022 to 02/08/2022	Baseline survey
06/08/2022	Date of starting distributing ICSs
16/06/2023 to 24/07/2023	Fuel Consumption Survey
18/08/2023 to 24/01/2024	Project Survey, which including Usage Survey
12/2024	Planned time of finishing distribution of 100,000 ICSs

2.1.4 Project Proponent

Organization Name	Guangzhou Iceberg Environmental Consulting Services Co., Ltd.
Role in the Project	Project proponent
Contact Person	Ji BAO
Title	General Manager
Address	No.106 Fengze East Road, Nansha District, Guangzhou, China
Telephone	+8613560420840
Email	baoji@icebergchina.com ; hanjin@icebergchina.com

2.1.5 Other Entities Involved in the Project

No other entities involved.

2.1.6 Project Type

The project is categorised under type/category as below:

- a) Sectoral scope: 4 - Energy
- b) Type: II – Energy efficiency improvement projects

The project is not a grouped project.

2.1.7 Project Location

The project location is the geographic boundary of The Republic of Madagascar.

Table 1: Geographical coordinates of Madagascar

Orientation	Latitude/Longitude
East	50°23'49"E
West	43°13'24"E
South	25°35'19"S
North	12°09'49"S



Figure 1: Map of Sylhet and Chittagong Divisions, Madagascar

2.1.8 Baseline Scenario

Madagascar is an island country in the Indian Ocean, approximately 400 kilometres off the coast of East Africa across the Mozambique Channel. It consists of the island of Madagascar (the fourth-largest island in the world) and numerous smaller peripheral islands.

Madagascar is one of the least developed countries in the world. On the Human Development Index, Madagascar is ranked 164th out of 189 countries¹. Due to persistent severe drought, the consequences of the COVID-19 pandemic and various plant and livestock pests and diseases, the humanitarian situation has exacerbated recently.



The Gross Domestic Product per capita of Madagascar is 514.9 US dollars², far below the average for other sub-Saharan African countries. More than 81% of people in Madagascar are estimated to be living on less than \$1.90 per day (international poverty line)³.

Over a third of households lack adequate food in the whole year⁴. At least half a million children under the age of five are malnourished including 110,000 in severe condition⁵.

Madagascar is one of the African countries which most severely affected by climate change impacts. The southern Madagascar suffering severe drought which last four years has

¹ <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>

² <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MG>

³ <https://www.worldbank.org/en/country/madagascar/overview>

⁴ <https://www.usaid.gov/madagascar/agriculture-and-food-security>

⁵ <https://www.unicef.org/press-releases/malnutrition-among-children-expected-quadruple-southern-madagascar-drought-worsens>

irreversible damaged their growth and development. An extreme food shortage has driven the country to the brink of what experts are calling the world's first “climate change famine.”⁶

The island nation of Madagascar has developed its own distinct ecosystems and extraordinary wildlife since it split from the African continent an estimated 160 million years ago.

Approximately 95 percent of Madagascar's reptiles, 89 percent of its plant life, and 92 percent of its mammals exist nowhere else on Earth⁷. Hence it is extremely important for the world's biodiversity. As we all know, forest is an important habitat for species. Reducing deforestation by human activity means a lot to human and nature.

2.1.9 Causal Chain(s)

See appendix A for the Causal Chain image.

2.1.10 Threats to the Project

Natural-induced threats

Threat: More and more difficult to collect firewood for stove due to deforestation and degradation

Solution: Due to low income of end-users, they tend to use free firewood for stove instead of other fuel. The project ICSs distributed to them reduces the consumption of the firewood.

Threat: The COVID-19 pandemic might affect the process of the project

Solution: Iceberg has found reliable local partners to overcome the difficulty from international travel limit between China and other countries. They are experienced in operating ICS donation project, including conducting stakeholder' consultation and field visits. Iceberg and local partners are communicating smoothly by telephone and internet. And now the COVID is over, the representatives of Iceberg have met with local partners in Madagascar.

Human-induced threats

Threat: The households may not want to accept the ICS

Solution: Iceberg and its local partners do research on the reason why some local households do not want to use the ICSs if it happens. First of all, the end-user households should be chosen carefully to avoid this problem. Only the poor households who do not have similar cookstoves are chosen to receive our donation. Through the training, they can easily understand the benefits of the ICS, such as the reduction of air pollution and cost on wood fuel. The households accepting the ICS share their experiences in the training to encourage higher usage rate. Iceberg and its local partners continuously improve the training as well as other measures to increase the acceptance of the ICS.

⁶ <https://www.worldbank.org/en/country/madagascar/overview>

⁷ <https://www.worldwildlife.org/places/madagascar>

2.1.11 Benefit Permanence

The project will distribute approximately 100,000 to households, which are produced in local factories. Hence the implementation of the project needs plenty of local people to participate in production, distribution or use steps, which results in more job opportunity and income. It trains skilled workers for Madagascar industry, which benefits both themselves and the country even after the project activities have ceased. The project will have long-term positive influences on the health of end-users, especially the women and girls who mainly undertake the cooking in the households through the improvement of air condition. The time saved for education from cooking and firewood collection will have permanent positive influences on the children, especially the girls who are mainly in charge of these two tasks. The forest saved by the project through the reduction of non-renewable biomass consumption protects the environment and biodiversity for a long time. In addition, the project proponent plans to distribute new ICSs to replace the old ones from the sixth year of the crediting period. Since the lifetime of the ICSs is seven years, they can be still used for 2-3 years after the end of the crediting period. If the operation of the project can achieve the expectation of the project proponent, it plans to implement more ICS projects in Madagascar.

2.2 Stakeholder Engagement

2.2.1 Stakeholder Identification

The process used to identify stakeholders likely impacted by the project shows below:

1. Initial Scoping and Community Engagement:

Conduct preliminary research to identify target communities and hold initial meetings with local leaders for preliminary feedback.

2. Stakeholder Mapping:

Identify key groups including households, community organizations, local businesses, government agencies, and NGOs, ensuring vulnerable groups are considered.

3. Detailed Stakeholder Analysis:

Perform social and economic impact assessments to evaluate how different groups will be affected.

4. Documentation and Communication:

Document all findings and clearly communicate project objectives and potential impacts using various channels.

Thus, the ICS end-users, stove manufacturer are identified as stakeholders. Iceberg also identifies and encourages anyone who are interested in the project. Iceberg invites local authorities participate in the decision of the project. And the local people employed under this project who are directly impacted by the project.

2.2.2 Stakeholder Description

Relevant stakeholders have been identified as:

(a) The ICS end-users

The ICS end-users are directly affected by the project. It reduces the drudgery of the local people, through time savings in cutting, collecting, and carrying firewood from trees far away from households as well as cooking over toxic smoky open fires.

(b) Stove manufacturer

The manufacturer which produces ICS is a local enterprise. It hires more workers to produce ICSs for the project. The manufacturer and employees are directly influenced by the project.

(c) Local authorities

The support from local government is very crucial for the implementation of the project. It provides indispensable information and authorization for the project. It also help the project implementers to collect feedback from end-users.

2.2.3 Stakeholder Consultation

Stakeholder consultation process:

- For ICS end-users:

The project proponent has conducted a baseline survey in several villages to gather feedback, and understand local needs and concerns. According to the results of the survey, it is clear that women and girls spend more time in household chores. Specific demographic groups (e.g., women, youth, elders) were encouraged to participate the meeting. Utilize local community leaders and representatives to facilitate the consultation process and build trust.

- For stove manufacturer:

The producing of the project ICSs needs more workers. The project proponent has conducted targeted outreach and consultations with women and low-income households to encourage to apply for the jobs created by the project.

- For local authorities:

The project proponent met with regional and municipal authorities to align the project objectives with local development plans and policies.

The official languages of Madagascar are Malagasy and French. For the convenience of stakeholders, an invitation letter in French was sent to them. The letter was also broadcast in villages in Malagasy and French to make sure villagers can receive and understand. For local officers, invitation letters were sent to them as formal invitation. Other local people and officials were invited in person with invitation letters for convenience. National government officials, local and international NGOs were invited by email.

Figure 2: Invitation letter



The meeting was held at 2 pm on 02nd June 2022 in the village of Avaratanana, in the commune of Ambohimananarina, Antananarivo Madagascar. Representatives of the local government of the commune of Antananarivo IV, local NGOs, and villagers signed the participation in the meeting on which they recorded their names, jobs and contact details with their signatures.

Figure 3: Photos of stakeholder meeting on 2nd, June, 2022



At the meeting, after welcoming the participants, all authorized persons who were present at the meeting introduced themselves respectively. Then, the wife of the deputy of the commune welcomed all the participants and especially thanked the promoter of the project for the collaboration with the local authorities to implement the project in the district to provide the ICSs. She told the participants that the purpose of the meeting was to receive feedback on the project from all stakeholders involved so that everyone would be free to present their views on the project, which will be taken into account during the implementation of the project.

In her opening speech, the president of the fokotany said that this project is very important because of the lack of means to cook food in most communes in Madagascar. She said collaboration between the district government and partners is necessary to achieve the goals of this project.

The explanation of the project was made by RAVALITERA Joan RIJA using the technical summary translated into French and Malagasy by RASOARIMALALA Maminirina. Each participant received the copy and it was therefore easy to follow all the explanations related to the project. The explanation was to focus on the protection of the environment.

Information about potential cost, risks and benefits was shared with each stakeholder group:

- For ICS end-users:

The project enables rural people of Madagascar to have access to clean cookstove, reducing time on collecting firewood and cooking, as well as save money on buying firewood. Project is financed by the project proponent, with no cost or risk to ICS end-users.

- For stove manufacturer:

The project needs plenty ICS produced locally, which enables stove manufacturer to expand its production capacity. It hires more workers, and the employees have a stable income and improved standard of living. There is no cost or risk to them.

- For local authorities:

The ICS is a basic livelihood service. There is no cost or risk to local authorities.

Since there is no negative opinion received from stakeholders during stakeholder consultation, no project design has been changed accordingly.

During the baseline survey and awareness-raising visits, we have paid special attention to optimizing benefits for any marginalized and vulnerable groups. Women, the elderly and low-income groups were the focus of attention, and their demands and opinions were carefully listened to. And those who had the ability to work were encouraged to actively apply for job opportunities.

2.2.4 Continued Consultation and Adaptive Management

Discussion on the Ongoing Feedback and Grievance Mechanism also has been held on meeting. The participants discussed how to keep contact between the users of improved

cookstoves and the Iceberg and its local partners. They opted for safer means. The first way is to use the phone and they could report problems regarding the project by phone. The second way is to put a book in the cell offices and users could report comments in that book.

Representatives of the consultants the books each month to see the reported problems and find solutions with users. The third way is to report by email.

The following email address also be used to ask questions or comment on the project.

Iceberg: Mr. Ji BAO baoji@icebergchina.com

Local partner of Iceberg: Mr. RAVALITERA JOAN RIJA +261 34 48 940 43

They can also use our website (<http://www.icebergchina.com/ens/channels/274.html>) to submit any comment. And all information about the project can be found in this website.

The above mechanisms for stakeholder consultation at the project's inception maintain during the project's operation for ongoing communications. The project proponent and local partner seek input from stakeholders and consider their feedback in project design and implementation. Any significant input that necessitates updates to the project design will be reported as a project description deviation. This procedure expected to address disputes and concerns raised by stakeholders throughout the project's lifecycle.

2.2.5 Anti-Discrimination

Iceberg distributes ICSs to local people who uses traditional low efficiency cooking solutions without distinction in genders, races, religions, educational backgrounds or any other aspects. The local factories and NGOs cooperated with Iceberg also dedicate to the elimination of discrimination. They need more employees to implement the project. Iceberg and they make sure that women, persons with disabilities, and minority have equal chance to get the jobs. The workers have been trained for sexual harassment prevention and reporting.

2.2.6 Worker Training

The implementation of project needs plenty of local people to participate in production, distribution or use steps. They get relevant skills and sustainable development and global citizenship education through training by project proponent. Besides technical skills, the workers have been trained about the management structure, regulations and worker rights.

Training about monitoring plan has been provided to local partners, including survey method, data record and analysis. The monitoring plan has been carried out by qualified personnel trained for quality assurance and quality control. The workers have been trained for sexual harassment prevention and reporting, which is specialized for vulnerable female.

2.2.7 Equal Work Opportunities

Iceberg is dedicated to make sure that all stakeholders, no matter their genders, races, religions, educational backgrounds or any other aspects, have been given an equal opportunity to fill all work positions. Recruitment advertising for the local villages have been given before

the hiring of the full-time and part-time staff for the project. The recruitment advertisement have been provided in Malagasy for them to understand.

The project also encourages women, persons with disabilities, and minority to apply the jobs.

Equal opportunities are provided in the context of gender for employment and participation in consultation and project activities. This ensures that both men and women have the same opportunities to contribute to and benefit from the project. The project also mandates equal pay for equal work, ensuring that compensation is fair and non-discriminatory.

2.2.8 Workers' Rights

Iceberg and its local partners have a labour contract with each worker. Before the workers sign it, the contracts have been explained explicitly to make sure that they could understand their rights and obligations. The contract terms conform with, and uphold the principles and rights of, work addressed in the Core Labour Conventions of the International Labour Organization (ILO). And it also complies with national and local labour laws⁸. The workers have also been trained about the related regulations and laws.

2.2.9 Occupational Safety Assessment

The project activity involves producing and distributing ICSs. And monitoring plan also needs workers to implement. The occupational safety hazards may be production accident, landmines, transport-related accidents, stealing of parts. Iceberg has taken the above risks into consideration. To reduce the risks, Iceberg cooperates with local experienced organisation and hire local workers. They are very familiar with the communities, language and local culture. This understanding of traditional values, respect, and working environment in the communities helps Iceberg a lot.

The ICS uses firewood only. It is assumed not cause any extraordinary risks. Fire burn (especially for kids), road accidents, or minor social disputes during delivery and demonstration activities may be main risks. Risks are minimized by informing the end-users and workers about them.

2.2.10 Feedback and Grievance Redress Procedure

Iceberg and its local partners have already established grievance mechanism in the project area, which has been explained to the stakeholders during stakeholder meeting and the project implementation progress. The stakeholders or anyone who had not previously been identified but affected by the project can express any complaint.

They have put opinion books in villages so that stakeholders can write down their grievances.

The details on procedure for feedback and grievance have been made public on website of Iceberg as the following, which is accessible to all stakeholders of the project:

⁸ https://www.ilo.org/dyn/natlex/natlex4.countrySubjects?p_lang=en&p_country=MDG

<http://www.icebergchina.com/ensnew/contents/304/96.html>

People can complaint to local leaders or the local partner of Iceberg directly by calling, cell phone message, email and opinion books. They can contact Iceberg by calling and email too. The local partner reports the feedbacks to Iceberg periodically.

2.2.11 Feedback and Grievance Redress Procedure Accessibility

The details on procedure for feedback and grievance have been made public on website of Iceberg as the following, which is accessible to all stakeholders of the project:

<http://www.icebergchina.com/ensnew/contents/304/96.html>

Additionally, it has been socialized and publicized to communities throughout the project location on local notice boards in Malagasy.

2.2.12 Stakeholder Access to Project Documentation

The project details were explained to stakeholders in the stakeholder consultation meeting before it was implemented. The full project documentation has been uploaded on VERRA website and the same ones have been publicized on the Iceberg website during the whole crediting period of the project as the following linkage:

<http://www.icebergchina.com/ensnew/contents/304/96.html>

2.2.13 Information to Stakeholders on Assessment Process

Iceberg and its local partners inform end-users that they are participating in a project that distributes the ICS free of charge to improve their respiratory health, the family economy, and the environment. They are informed in advance that the use of ICS generates carbon credits which in turn are used to cover the cost of ICS production and distribution through donation and carbon transfer agreement. To make sure that all the stakeholders know the process of SD VISta project assessment, including the site visits of assessors, Iceberg and its local partners inform them through the website linkage, phone, email or in person.

2.3 Project Management

2.3.1 Avoidance of Corruption

Iceberg has rules and regulations about the avoidance of corruption, code of conduct, and business ethics. All the staff of Iceberg should abide by them. These rules and regulations also have been provided to Iceberg's local partners, who should promise to comply with them for cooperation with Iceberg and avoid any form of corruption, including bribery, embezzlement, fraud, favouritism, cronyism, nepotism, extortion and collusion. Any person or organization which violates the anti-corruption rules and regulations of Iceberg cannot continue to work for or cooperate with Iceberg. Iceberg ensures that the implementation of project in accordance with all legal requirements and is held to the highest standard of operation.

2.3.2 Statutory and Customary Rights

The project activity involves distribution of ICSs to individual households only and it not involve any land use or acquisition.

2.3.3 Recognition of Property Rights

Iceberg distributes ICSs to individual households free of charge. The property right of ICS belongs to end-users while that of carbon credits generated from the project belongs to Iceberg. The end-users have signed donation and carbon transfer agreements with Iceberg when they receive ICSs to confirm the property rights of ICSs and carbon credits.

2.3.4 Free, Prior and Informed Consent

The project is voluntarily implemented by Iceberg and its local partners, and end-users are free to choose whether they take part in the project or not. Free, prior, and informed consent takes place before distribution through signing of the donation and carbon transfer agreements when the end-users receive the ICSs, which clarify the property rights of the ICSs and the carbon credits generated from the project.

2.3.5 Restitution and/or Compensation for Affected Resources

The project activity involves distribution of ICSs to individual households only and it has not affected any resources.

2.3.6 Property Rights Removal/Relocation of Property Rights Holders

The project activity involves distribution of ICSs to individual households only and it has not led to any removal of property rights or relocation of property rights holders.

2.3.7 Identification of Illegal Activities

Theft and corruption may be identified during the implementation of the project. Iceberg and its local partner have avoided any corruption as per Section 2.3.1 of this document. The project proponent has rules and regulations about the avoidance of corruption, code of conduct, and business ethics. All the staff should abide by them. These rules and regulations have also been provided to its local partners, who should promise to comply with them and avoid any form of corruption, including bribery, embezzlement, fraud, favouritism, cronyism, nepotism, extortion and collusion, for cooperation. End-users have been reminded to keep their ICSs in safe places to reduce theft when they receive the ICSs.

2.3.8 Ongoing Conflicts or Disputes

The project activity involves distribution of ICSs to individual households only. There is no ongoing or unresolved conflicts or disputes over rights to lands, territories and resources and any disputes that were resolved during the last twenty years.

2.3.9 National and Local Laws and Regulations

Relevant local, regional and national laws, statutes and regulatory frameworks in Madagascar:

- Environmental Code⁹

This code promotes sustainable management of natural resources, which includes initiatives for improved cookstoves to reduce deforestation and improve air quality. The project ICS is a clean cooking service which has a higher thermal efficiency, result in reducing the consumption of woody biomass and deforestation. Thus, the implementation of the project is in line with this code.

⁹ <https://faolex.fao.org/docs/pdf/mad11726.pdf>

2.3.10 Project Ownership

Iceberg purchases ICSs and distributes them to end-users free of charge. Before the distribution, end-users and Iceberg have signed an agreement to confirm that the property right of ICS belongs to end-users while that of the carbon credits generated from the project belong to Iceberg.

2.3.11 Grouped Projects

The project is not a grouped project.

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1 Condition of Stakeholders at Project Start



(a) The ICS end-users

Economic: Madagascar is a least developed country till now. The GDP per capita is 528.7 USD¹⁰. There is no significant change in this element in the past decade.

Social: The under-five mortality rate is 50.6 per 1000 live birth. The education condition is not optimistic too. The adult literacy rate is 74.8%¹¹. There is no significant change in this element in the past decade.

Culture: The life level of the local residents was low, most of them still use low efficiency traditional three-stone open fire at project start. They spend plenty time on cutting, collecting, and carrying firewood from trees far removed from households and exposed to toxic smoke. There is no significant change in this element in the past decade.

(b) Stove manufacturer

Economic: All the factories participating in the project are small scale enterprises. They do not have many manufacturing equipment and employees. The investment for the implementation of the project helps them obtain enough investment to purchase more equipment and hire more employees, which contributes to the development of stove industry in Madagascar. There is no significant change in this element in the past decade.

Social: The efficient and durable designs are more popular with users. This choice of technology reflects the local community's quest and expectations for energy efficiency and durability. There is no significant change in this element in the past decade.

¹⁰ <https://data.worldbank.org/country/madagascar?view=chart>

¹¹ <https://www.un.org/development/desa/dpad/least-developed-country-category-madagascar.html>

Culture: The thermal efficiency of stoves the manufacturer produced needs to be measured by a water boiling test to ensure that they are efficient. This constant focus on performance is part of the manufacturer's corporate culture. There is no significant change in this element in the past decade.

(c) Local authorities

Social: Local authorities face significant challenges in the provision of social services. Residents in many areas are unable to meet their basic needs owing to the lack of modern energy infrastructure. There is no significant change in this element in the past decade.

Economic: Local authorities have limited financial resources and rely mainly on agricultural income. However, due to inefficient production and poor market channels, agricultural revenues are difficult to meet public expenditure needs. This economic situation limits local government investment in infrastructure development, social services and economic development projects. There is no significant change in this element in the past decade.

Culture: Kenya is home to over 40 ethnic groups, each with its own customs, languages, and governance practices. Local authorities often reflect the cultural values and priorities of these communities.

Diversity and the interactions:

The ICS end-users vary widely in terms of family size, education levels, and gender roles. Women often play a central role in cooking and are thus primary users of cookstoves. The implementation of project creates plenty job opportunities for local people. Households rely on local authorities for support, while local authorities act as intermediaries between households and project implementers. Local authorities interact with all these groups to provide regulatory support and technical assistance.

Local officers welcome the project because the implementation of project improves the living standard and economic situation within project boundary.

3.2 Expected Impacts on Stakeholders

Impact #1	Access to ICS
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	ICS end-users

Resulting Change in Well-being	Reduce inadequate cooking, the burden of firewood collection, the time to prepare food, the cost to buy firewood. Especially for women and children.
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Impact #2	Improved Health Status
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	ICS end-users
Resulting Change in Well-being	Reduce people's exposure to high PM2.5 and high CO due to higher efficiency of combustion. It also reduce the burn risk, significant to children and toddlers due to enclosure of the fire in the combustion chamber.

Impact #3	Less time spent on unpaid domestic and care work
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	ICS end-users
Resulting Change in Well-being	Reduce the time spent on firewood collection and cooking for people, especially for women and children.

Impact #4	More income
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Stove manufacturer and employees

Resulting Change in Well-being	It hires more workers to produce ICSs for the project. During the project crediting period, the project proponent and its local partners are in charge of maintenance and monitoring plan, which also needs to hire local people.
Impact #5	Expand production capacity
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Stove manufacturer
Resulting Change in Well-being	The manufacturer expands production capacity to satisfy the needs of the project. Thus, the upstream and downstream supply chain benefits from the project.

3.3 Stakeholder Monitoring Plan

The project activity is distributing ICSs to households, which has a net positive impact on overall well-being of the people in the project site. A monitoring plan is needed to identify the monitored stakeholder groups, the types of measurements, the sampling methods and the frequency of monitoring and reporting.

Sampling method

The sustainable development indicators mentioned above have been monitored, which include impacts on mostly stakeholders of the project. The “health status” and “time spent on unpaid domestic and care work” need to be monitored by multi-stage sampling method as per “Standard sampling and surveys for CDM project activities and POAs (Ver9.0)” and “Guideline for sampling and surveys for CDM project and POA (Ver 4.0)”:

Parameter	Description	Purpose	Affected Stakeholder Group(s)	Frequency
$N_{y,i,j}$	Number of project devices of type i and batch j operating during year y	Determination of Impact #1	ICS end-users	At least biennial
Health status	Monitored in project survey through questionnaire	Determination of Impact #2	ICS end-users	At least biennial

Time spent on unpaid domestic and care work	Monitored in project survey through questionnaire	Determination of Impact #3	ICS end-users	At least biennial
Income	Monitoring through communication with partner, which have provided statements	Determination of Impact #4	Stove manufacturer and employees	At least biennial
Production capacity	Monitoring through communication with partner, which have provided statements	Determination of Impact #5	Stove manufacturer	At least biennial

Sampling plan

The target population for the multi-stage sampling is all the population who receives the project ICS. The sampling method combines the cluster and simple random sampling approaches in a two-stage sampling scheme which enables us to randomly select some villages from all the villages and then randomly sample some households from all the households within those sampled villages. Iceberg and its local partners collect data through interviews, surveys, direct observations and group discussions about stakeholders' financial, health and employment records. Local partners are experienced in operating donation projects, and Iceberg also trained them to make sure they follow closely to the monitoring plan. They collect primary information through regular visits and interviews with the end-users and other stakeholders. The data from these interactions has been compiled into reports and submit to the Iceberg. To make sure the data is credible, the data may be cross checked by a third-party or Iceberg.

Considering the heavy workload of collecting data, Iceberg and local partners may use an app and storage cloud to collect data. Surveys are designed to monitor stakeholders' improvements and benefits by implementation of the project.

Identification and sensitization visit

Before the implementation of the project, local partners of Iceberg should conduct a one-time identification and sensitization visit to local villages. Local partners identify and visit villages which are suitable for the project activity. They have discussions with the leaders of villages and villagers. They also communicate with other stakeholder such as local officers and NGOs, and search for their support and cooperation. In discussion with stakeholders, they explain the project and its benefits on health, nutrition and climate change. Any questions raised are recorded and responded. After the project plan is accepted, a community-wide training session is held to introduce the project to all interested households. The training includes information on the multiple benefits and how they can participant in the project.

Distribution visit

The project ICSs are produced by a local manufacturer, which are portable and easy to use. When distributing ICSs to end-users, technicians explain how to use and maintain the ICSs.

Local partners respond to any doubts or questions and leave a telephone number so end-users can contact Iceberg or local partners when needed. Before completing the visit, local partners ensure that the end-users are capable to prepare meals on their new ICSs.

Verification visit

During each time of the project verification, Iceberg and/or local partners conduct a multi-stage random sampling survey on the implementation of the project, including all the effects identified in the project's causal chain related to stakeholder well-being. End-users' using experience and stove condition are monitored and recorded in the questionnaires. Other stakeholders' opinion and suggestion also has been recorded.

3.4 Net Positive Stakeholder Well-being Impacts

(a) The ICS end-users

Improved cookstove is a basic service necessary to lead to a healthy and productive life, including saving time and money for wood fuel at the household level. The project reduces the drudgery undertaken by them especially for women and children through time savings in cutting, collecting, and carrying firewood from trees. The project also improve food security and nutrition status by reducing inadequate cooking. By using ICS, it reduces people's exposure to high PM2.5 and high CO due to higher efficiency of combustion, which leads to faster cooking and more complete combustion. It also reduce the burn risk, significant to children and toddlers due to enclosure of the fire in the combustion chamber.

(b) Stove manufacturer:

The manufacturer which produces ICS is a local enterprise. It hires more workers to produce ICSs for the project. The project contributes to the scale-up of local business and organizations with the potential to create jobs in cookstove industry, such as productions, assembly, marketing and distribution of related devices.

(c) Local authorities

The living standard and economic income are improved by the implementation of the project, which have positive impacts to local governments on governance and tax revenue.

4 BENEFITS FOR THE PLANET

4.1 Condition of Natural Capital and Ecosystem Services at Project Start

Almost half of Madagascar's assets lie in its natural capital, which includes abundant crop and pasture land, water resources, mineral and non-mineral subsoil assets, as well as the biodiversity that underpins the tourism industry. Natural resources also support a large majority of the country's predominantly poor and rural population, and could become an important driver of development.

Madagascar is the world's important supplying country of vanilla, cloves and ylang-ylang. It is also the biggest supplier of the world's natural vanilla who accounting for 80 percent¹². Other key agricultural resources include coffee, lychees and shrimp. Key mineral resources include various types of precious and semi-precious stones, and it currently provides half of the world's supply of sapphires¹³.

Madagascar is a megadiverse country with a high concentration of endemic species. Its ecosystems include many types of forests, savannah, steppes, rivers, lakes, wetlands, mangroves, drylands and reefs. Currently, these unique ecosystems are home to approximately 12,000 species of vascular plants (96% endemic), 586 species of ferns (45% endemic), 194 species of palms (97% endemic), 1000 species of orchids (85% endemic), 389 species of reptiles (90% endemic), 278 species of amphibians (100% endemic), 282 species of birds (37% endemic), 159 species of fish (66% endemic), 104 species and subspecies of lemurs (100% endemic), 60 species of non-flying small mammals (92% endemic), 43 species of bats (73% endemic) and 13 species of carnivore (77% endemic). With 5,600 km of coastline, coastal areas are composed of natural environments that are among the richest and most diversified in the Indian Ocean region, including coral reefs, mangroves, phanerogam seagrass beds, estuaries and coastal marshes. Studies and literature reviewed indicate the presence of 752 coral fish species in Madagascar. The diversity of Malagasy marine mammals is represented by 28 species, including 27 cetacean species, and only one species of the order Sirenia¹⁴.

In Madagascar, the general trend of biodiversity degradation, both for flora and fauna, is caused by destructive human activity, such as the clearing for cropland or residential area¹⁵. About 40 percent of the island's original forest cover was lost from the 1950s to 2000 according

¹² Pilling, David (5 June 2018). "The real price of Madagascar's vanilla boom". Financial Times. Archived from the original on 20 September 2018. Retrieved 20 September 2018.

¹³ Pezzotta (2001), p. 32

¹⁴ <https://www.cbd.int/countries/profile/?country=mg>

¹⁵ "Everglades, Madagascar Rain Forest on UNESCO List". ABC News. 30 July 2010. Archived from the original on 11 May 2011. Retrieved 11 February 2011.

to conservative estimates¹⁶. More recently, the impact of climate change on biodiversity has become apparent, particularly in the marine and coastal environments.

4.2 Expected Impacts on Natural Capital and Ecosystem Services

Impact #1	Tonnes of greenhouse gas emissions avoided or removed
Type of Impact	Positive, actual, direct
Affected Natural Capital and/or Ecosystem Service(s)	GHG concentration of atmosphere, climate change
Resulting Change in Condition	The average annual GHG emission reduction from the project is expected to be 343,519 tCO ₂ e due to less firewood combustion for cooking and heating in the households.

Impact #2	Avoided deforestation due to consume less firewood of ICS
Type of Impact	Positive, actual, direct
Affected Natural Capital and/or Ecosystem Service(s)	Forest area, biodiversity, and water and soil, etc.
Resulting Change in Condition	The project helps local people consume less firewood as the ICS has higher thermal efficiency. It will save 232,899t non-renewable biomass every year and it will result in a significant reduction of deforestation.

4.3 Natural Capital and Ecosystem Services Monitoring Plan

Sampling method

To monitor the impact on natural capital and ecosystem services, the following parameters need to be monitored, determined by multi-stage sampling method as per "Standard sampling

¹⁶ Harper, Grady J.; Steininger, Marc; Tucker, Compton; Juhn, Daniel; Hawkins, Frank (2007). "Fifty years of deforestation and forest fragmentation in Madagascar". *Environmental Conservation*. 34 (4): 325–333.

and surveys for CDM project activities and POAs (Ver9.0)” and “Guideline for sampling and surveys for CDM project and POA (Ver 4.0)”:

Parameter	Description	Purpose	Affected Stakeholder Group(s)	Frequency
$N_{y,i,j}$	Number of project devices of type i and batch j operating during year y	Determination of Impact #1 and #2	ICS end-users	Biennial
$B_{y=1,new,i,survey}$	Quantity of woody biomass used by project devices in tonnes per device of type i and batch j	Determination of Impact #1 and #2	ICS end-users	Determined in the first year of project implementation

The above data is collected through survey and fuel consumption test, which is the responsibility of the local partners. Iceberg trains its local partners about the monitoring plan and supervise their work. The end-user households where the survey and test are conducted through multi-stage random sampling. The data from test and survey is recorded, analysed and reported by Iceberg and its local partners. The monitoring and reporting will be conducted each time when verification of SD-VISta is conducted.

4.4 Net Positive Natural Capital and Ecosystem Services Impacts

By replacing traditional low efficient three-stone fires with high efficiency improved cookstove in households, the project increases energy efficiency resulting in less fire wood combustion, thus generate net GHG reductions. The average annual GHG emission reduction from the project is expected to be 343,519 tCO₂e. The crediting period is expected to be 10 years. Hence the total GHG emission reduction is 3,435,193 tCO₂e. The project will save 232,899t non-renewable biomass every year and it will result in a significant reduction of deforestation.

APPENDIX

Appendix A: Causal chain.

