



SEE - Clean Cooking

Gender Equality and Social
Inclusion: Lessons and Good
Practices from Clean
Cooking Programmes

SEE – Clean Cooking

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Acronyms

ABC	African Biodigester Component
BDS	Business Development Services
CCTs	Controlled Cooking Tests
CEP	Cooking Energy Poverty
EnDev	Energising Development
ESG	Environmental, social, and governance
FGD	Focus Group Discussion
GESI	Gender and Social Inclusion
GIZ	The Deutsche Gesellschaft für Internationale Zusammenarbeit (The main German Development Agency)
HTC	Higher-Tier Cooking
HTCC	Higher-Tier Cooking Component
LFIs	Local Finance Institutes
MEMR	Ministry of Energy and Mineral Resources
NDCs	Nationally Determined Contributions
RBF	Results-Based Financing
RVO	Rijksdienst voor Ondernemend Nederland (the Netherlands Enterprise Agency)
SEE – Clean Cooking	Strengthening the Entrepreneurial Ecosystem for Clean Cooking
SNV	Stichting Nederlandse Vrijwilligers ("Foundation of Netherlands Volunteers". A Dutch NGO)

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Foreword

Some 2.3 billion people globally do not have access to clean cooking methods. This affects their quality of life, economic development, and the climate. Small- and medium-sized enterprises can help to speed up access to better forms of energy. With the Strengthening the Entrepreneurial Ecosystem for Clean Cooking (SEE-Clean Cooking) programme, funded by the Netherlands Ministry of Foreign Affairs, the European Commission, and the Danish International Development Agency (DANIDA), the Netherlands Enterprise Agency (RVO) introduces a new approach to support innovative businesses and local entrepreneurs in Africa and Asia to scale markets for clean cooking solutions.

Women, youth and socially excluded groups take a central role in these markets: as owners and managers of modern cooking technology businesses; as designers and manufacturers of innovative cooking solutions; as thought-leaders, multipliers and sales agents who introduce better cooking alternatives to their local communities; as sector professionals and policymakers who create the networks and conditions for clean cooking markets to grow and reach more people; and as users of cleaner cooking methods themselves.

In fact, through our SEE-Clean Cooking programme we see that some of the most effective endeavours to make better cooking solutions available to more people are led by women, youth and socially excluded groups. Supporting them is therefore not optional: it is an essential prerequisite for success. We need to be clear that clean cooking support programmes cannot and will not be successful if they do not consider the role individuals from these groups play in the creation and growth of vibrant clean cooking markets.

And yet, too often still clean cooking support programmes do not consider the needs of women, youth and socially excluded groups sufficiently to enable them to be effective agents of change, and to provide them with the targeted support they need to be successful. These groups face an entirely different set of challenges in the clean cooking sector compared to their counterparts. It should be clear then that these specific needs and barriers faced should take centre-stage, and should be addressed as a matter of priority in clean cooking interventions.

This consideration of gender and social inclusion is central to the SEE-Clean Cooking programme. With this publication we want to provide implementers of the SEE-Clean Cooking programme - as well as other sector practitioners - a practical and inspiring collection of best practices that demonstrate how challenges that women, youth and socially excluded groups face in the clean cooking sector can be addressed and overcome.

The best practices and lessons presented in this publication are based on examples of what sector colleagues already practice. We believe it was worthwhile collecting them and sharing them with others, not least to offer a point of reflection to realize how much there is in our power as practitioners to address gender and social inclusion aspects in our daily work. We hope that you enjoy the read, and that you find something to take with you and in your daily practice.

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Executive Summary

Higher-tier clean cooking (HTC) markets are growing globally and have the potential to address the various harmful impacts of inefficient and polluting cookstoves that are a major cause of deaths among women and children. Polluting cooking fuels also entrench gender and social inequalities because their impacts are largely borne by women who are chiefly responsible for collecting firewood, preparing dung and cooking. At the same time, as higher tier cooking begins to grow, women and excluded groups remain on the margins of these growing markets. This is because they have more limited access than men to information about HTC, are more likely to have low incomes, which affects their purchasing power, and, even when they access HTC solutions, women in some cases lack the knowledge and confidence to sustain their use. On the supply side, women and excluded groups are marginal participants in HTC markets, and few of them are in high-level, decision-making and technical positions. When involved in supply chains, they are often in administrative positions or work as sales agents with low pay and little influence. While a few women lead and own HTC enterprises, these tend to be small-scale, informal and with low levels of professionalisation. These characteristics as well as gender and social norms in their communities and in the sector limit their access to finance including market-building mechanisms such as results-based financing (RBF).

Given the daunting challenges that women face as customers and supply-side actors, several actors in the sector have attempted to address them and there are lessons and good practices that have emerged from these attempts. This report highlights some of these lessons and good practices based on interviews, reviews of the literature, and ENERGIA's own experiences. The insights in this report show that gaining an understanding of gender and social inclusion disparities, and why they exist, through comprehensive gender analysis is a key starting point. Interventions must then be designed to respond to and address these disparities.

The first section introduces the Strengthening the Entrepreneurial Ecosystem for Clean Cooking (SEE – Clean Cooking) programme, which is supported by the Rijksdienst voor Ondernemend Nederland (RVO, the Netherlands Enterprise Agency), and its aims. It also presents the objectives of this report. Section 2 makes the case for considering gender and social inclusion when building markets for clean cooking. Additionally, the section outlines the challenges when engaging women in the SEE – Clean Cooking programme's countries.

Sections 3 and 4 highlight six key areas with lessons and good practices on both the consumer and the supply sides that programmes and entrepreneurs should address. Under each of these, the report presents three or four lessons and good practices supported by case studies and suggestions for how these lessons could be applied. In Section 3, the report addresses engaging women as consumers of HTC solutions. It addresses challenges and provides lessons and good practices on reaching men and women through communication and marketing campaigns, making HTC devices affordable, and promoting sustained use of HTC devices. In Section 4, the report presents lessons learned on how to support women's employment and entrepreneurship in the sector. These include extending business development services to women's businesses, facilitating finance for women-owned or women-led HTC businesses, and enabling women's businesses to access and benefit from RBF.

1. Introduction

The Netherlands Enterprise Agency (RVO) is supporting the Strengthening the Entrepreneurial Ecosystem for Clean Cooking (SEE – Clean Cooking) programme (2021 – 2025), a private-sector approach to promoting clean, affordable cooking solutions, focusing on biodigesters and higher-tier (tiers 3, 4 and 5) cookstoves such as electric cookers and advanced biomass stoves. The programme seeks to address the lack of access to modern cooking energy in Africa and Asia and has two components: the African Biodigester Component (ABC) and the Higher-Tier Cooking Component (HTCC). It is being implemented in Bangladesh, Burkina Faso, Cambodia, Ethiopia, Kenya, Mali, Niger, Uganda and the Sahel in partnership with the Energising Development programme (EnDev). Gender equality and social inclusion (GESI) are central to the SEE – Clean Cooking programme and to the sustainability of the clean cooking and bio-slurry markets that it seeks to establish. Involving women as users, entrepreneurs and employees is critical for generating demand, increasing adoption and achieving scale while, at the same time, benefiting women and their families. To this end, ENERGIA, the International Network on Gender and Sustainable Energy, is supporting the SEE – Clean Cooking programme in integrating gender and social inclusion in all its activities and outcomes. As part of this support, ENERGIA has developed this lessons-learned report that brings together lessons and best practices on integrating gender and social inclusion considerations into clean cooking programmes. It draws on ENERGIA's experiences, the rich and varied experiences from the eight countries in which the programme is being implemented, and the experiences of the various development partners that have sought to address gender equality and social inclusion in clean cooking markets in Africa and Asia. These lessons and best practices were gathered through interviews with 21 clean-cooking, gender and bio-slurry practitioners from Asia and Africa as well as a literature review on GESI in biodigester and HTC markets.

While this document will have relevance for a range of policymakers and practitioners in the clean cooking field, it is primarily targeted towards the SEE – Clean Cooking programme's implementers. The lessons presented in this document are aligned with the following two broad areas that are crucial for building clean cooking markets:

Demand side, which deals with what consumers want and how entrepreneurs address consumer demand: how different technologies and fuels are accepted and used; what influences user behaviour in choices, adoption and use; cultural beliefs around traditional cooking; gender norms and gender dynamics related to large household purchases; bottlenecks in switching to new technologies; and concerns about new cooking energy options.

Supply side, which deals with what roles women can play as entrepreneurs and sellers of HTC devices: what constraints they face, and what kind of services and capacity building inputs they need.

For each of these areas, the document maps the existing challenges, good practices and lessons learned, drawing from the experiences of the SEE – Clean Cooking programme and, where available, presents example cases.

2. Engaging women in clean cooking initiatives: context, opportunities and challenges

2.1 The landscape

Today, some 2.3 billion people — about one-third of the global population — are living in cooking energy poverty, relying on polluting, traditional fuels and technologies to cook. Currently, the goal of universal energy access by 2030 remains elusive: some 1.9 billion people will still lack access to clean cooking options in 2030 if current trends continue. Almost six out of every ten people without access to clean cooking in 2030 will reside in Sub-Saharan Africa (IEA, IRENA, UNSD, World Bank and WHO, 2023). The World Bank estimates that the cost of unclean cooking energy to human health, women's productivity and the environment is at least US\$2.4 trillion annually. Beyond cooking energy poverty (CEP), an estimated 4 billion people lack *cooking decency*, i.e. they lack access to cooking solutions that are clean, efficient, convenient, safe, reliable and affordable (ESMAP, 2020). Various studies have shown that women and children living in poverty bear the brunt of CEP and lack cooking decency because, in most countries with high levels of CEP, women are responsible for sourcing fuels and cooking, often executing the related tasks while taking care of children (ESMAP, 2020).

Key adverse impacts that women bear due to CEP include:

- Drudgery from walking long distances and carrying heavy loads, chopping wood and making dung cakes.
- Exposure to household pollution from emissions from traditional fireplaces and inefficient cookstoves which results in 3.2 million premature deaths every year, many of whom are women and children.
- Time-poverty related to the collection and processing of fuels, and use of inefficient cookstoves.
- Exposure to physical and sexual violence.

Recognising the adverse impacts of cooking energy poverty, governments and the development community have, over the last 10 to 20 years, accelerated efforts to address the issue. As of October 2021, 67 countries have included clean cooking and other household-energy-related goals in their NDCs (Clean Cooking Alliance et al., 2022). Several countries, such as India, Kenya and Malawi, are now including clean cooking in their key national policies. Partnerships like the Clean Cooking Alliance, high-level policy dialogues, such as through the Health and Energy Platform of Action and the G20-endorsed Initiative on Clean Cooking and Energy Access, and research and innovation programmes are advancing new technologies, business models and financing mechanisms that enable affordable clean cooking solutions. At the same time, a vibrant industry of local and international producers is emerging. In some instances, clean cooking solutions such as electric stoves have become competitive with inefficient charcoal. Electric cooking appliances such as microwaves and electric pressure cookers represent an increasingly popular mode of clean cooking, particularly in urban areas and areas powered by grid electricity. However, approaches to developing clean cooking markets have not sufficiently included women and others from excluded groups in all aspects of the clean cooking market.

2.2 The case for considering gender and social inclusion in building sustainable markets for clean cooking

Women drive purchasing decisions and the use of clean cooking technologies

Women are the primary users of biodigesters and HTC solutions and, hence, any expansion of the market requires creating a demand among women for products and services. Within households, women are also key decision-makers or influencers in purchasing household products including biodigesters and HTC equipment as well as in agricultural purchases. In Uganda, Mercy Corps found that 81% of female-headed households and 55% of female spouses in the Karamoja region make key decisions on agriculture/health purchases (Mercy Corps, 2015). Women's product acceptance is therefore central to building markets for clean cooking appliances and fuels.

Further, because women are the predominant users of HTC solutions, their acceptance of these technologies and their learning of the new processes that accompany these (for example, preparing dung for feeding biodigesters) is crucial to adoption and therefore to market development and sustainability. Emerging experience from the SEE – Clean Cooking programme and other clean cooking programmes shows that, when households adopt clean cooking technology, women often become responsible for its daily operation and maintenance. In Kenya, a Cambridge University study found that women performed 80% of the daily maintenance on biodigesters (Grist et al., 2018). In India, Barnes et al. (2012) found that when chimney stoves were introduced, it was women that were responsible for their cleaning, which was a key factor in stove performance. In such situations, women's acceptance of these tasks could be crucial for building a sustainable market.

Businesses that impact women's empowerment are attractive to investors

Business investors are increasingly interested in environmental, social and governance (ESG) aspects of their investments, and gender is key among these. A survey of 19 funders, conducted by Energy4Impact, found that the most commonly sought impact metrics were on women's empowerment, including impacts such as women's representation in management and jobs created for women (MECS & Energy4Impact, 2022). Thus, for companies interested in growth and investment, gender should be at the core of their operations.

Women entrepreneurs provide a ready springboard for companies to expand HTC markets

In several countries where access to clean cooking is low, women form the majority of entrepreneurs and, hence, could be a conduit for building markets. In Sub-Saharan Africa for example, about 26% of the female adult population will start or manage a business (Global Entrepreneurship Monitor, 2017) compared to just 6% in Europe. In Cambodia, women own 62% of the country's micro and informal businesses (Shah & Chu, 2022). While women's profits tend to be lower than men's (Japhta et al., 2019) and they face more barriers to engaging in business than men, their strong propensity to be entrepreneurs means that, given a conducive environment, they can play a significant role in building sustainable markets including for biodigesters and HTC equipment in the developing world. Women are also able to leverage existing social networks and through these, companies can tap into local distribution networks and reach last-mile customers.

Women as energy entrepreneurs and sales agents can open doors and unlock demand

Gender differences as well as social norms often affect how supply-side and demand-side actors interact, and hence how and whether sustainable markets are established. A number of studies have found that it may not be socially acceptable for male sales agents to enter homes and interact with cooks, who are mostly women, especially when the men in a household are away (Catalán-Vázquez et al., 2018). Additionally, female sales agents can leverage their own experiences as the main cooks in their own homes to convince others, particularly other women, to invest in clean cooking.

Excluded populations remain an untapped business opportunity

Socially excluded groups, such as those in remote areas, people with disabilities and youth, remain largely unreached by clean cooking solutions. In 2021, access to clean cooking in urban areas globally was estimated at 86% compared to only 51% in rural areas. While the urban-rural divide is decreasing in Asia, it is almost stagnant in Africa, decreasing by only 0.1% annually since 2010 (IEA et al., 2023). The large proportion of unmet clean cooking needs in rural areas and among socially excluded groups therefore represents a market opportunity for biodigester and HTC entrepreneurs. However, there is a lack of market data on excluded groups, such as people with disabilities and youth, who often face unique challenges. Reaching the socially excluded will require innovations in technology, business models, sales techniques and sustainability measures.

2.3 Challenges in engaging women in clean cooking in the SEE – Clean Cooking programme countries

While the market for biodigester and HTC solutions is growing in most of the SEE – Clean Cooking programme’s countries, discussions with programme staff suggest that only a few women entrepreneurs and small local companies sell more than two hundred products per month. Additionally, many have not experienced substantial growth over the past five to ten years. The low volume of sales and poor growth among women-led biogas and HTC enterprises is a result of a range of challenges:

1. Biodigester and HTC companies led by women and by those from excluded groups have more limited access to working capital than those owned by men. Further, when they do have access, the amounts tend to be smaller and sometimes come at a higher cost than in male-led companies.
2. Women and people from excluded groups, such as those with disabilities and entrepreneurs from remote areas, face more mobility constraints than men. For women, mobility constraints include having less access to means of transportation (such as cars and motorbikes), cultural constraints on travelling outside their communities, which may be reinforced by spouses, male relatives or community members in general, and concerns over their safety while traveling to sell their products or expand their businesses. People with disabilities may not have access to suitable transport, while entrepreneurs from remote areas may face expensive and unpredictable transport.
3. Women are less likely than men to have market information, including on new products, markets and financing opportunities.

While instruments to improve access to finance, such as result-based finance (RBF), have emerged, women-led enterprises are less likely to apply and access these due to their lack of information, the onerous application processes and eligibility requirements.

3. Lessons learned in engaging with consumers of HTC solutions: the demand side

Engaging consumers is critical to building markets anywhere. In clean cooking markets, considerations regarding gender and social inclusion (GESI) are especially important in engaging consumers given the different roles that women and men take in accessing, purchasing and using clean cooking solutions. This section discusses the gender and social inclusion barriers, and the dynamics, related to engaging consumers with HTC solutions. It addresses challenges and provides lessons and case studies related to reaching women and men through communication and marketing campaigns, enhancing the affordability of clean cooking solutions, especially among women and low-income consumers, and promoting sustained use of the clean cooking solutions.

3.1 Reaching men and women through communication and marketing campaigns

Challenges

Given that, in most countries, women are more responsible for and experienced in cooking than men, they better understand the nuances of cooking and the desirable design features of cooking devices. However, there is a mismatch between those who use the technology and those who get the information on how to operate it. Further, the design process often fails to involve women at all on the basis that they lack formal technical qualifications even though their experiential knowledge could support technical design.

- Biodigester promoters tend to consider biodigesters as men's technology, in part because they are seen as advanced technology and as durable assets which, in many patriarchal societies, are typically owned by men. Communicating the advantages of biodigesters to men is also critical because the key input source – the animals that produce dung – are often owned by men. As such, women, who will handle and manage the biodigesters and be the main users of biogas, are often excluded from promotional, marketing and information activities. This mismatch between who gets information on the biodigester technology and who operates and maintains it, results in knowledge gaps that negatively affect women's capacity to operate and maintain the digesters, often leading to women abandoning the technology. On the other hand, electric cookers and advanced stoves are considered to be women's assets and are often targeted at women because they are the main cooks. However, their relatively high cost means that men also have a deciding role in their purchases. Women may or may not be able to convince their husbands to invest in HTC technologies such as electric cookers when men are not well-informed of their benefits to themselves and to their households.
- Women and men use different information sources and channels. For example, in Nepal, women are more likely to have first heard of induction electric stoves through friends and family members, whereas men are more likely to have heard of these from local cooperatives or sales agents (ENERGIA, 2021). In general, women are more dependent on their networks for information, whereas men rely more on markets, local offices and other, more formal, information channels.

- Attitudes towards technology can differ with age. For example, in Kenya, adult respondents view biodigesters positively, whereas younger people feel that biodigesters are fragile, difficult to repair, require a lot of time and effort, and that it is disgusting to cook with gas from animal or human waste. Further, 19 out of 33 (57%) female youths questioned had negative perceptions of cow dung, reporting that it smells, is dirty and can make someone sick (ABC Kenya, 2022). This may be because past awareness-raising programmes have not targeted youth.
- Information and awareness raising campaigns can explicitly or implicitly carry messages that may reinforce negative gender norms. In a review of randomly selected information, education and communication (IEC) materials on biodigesters and electric cooking, SEE – Clean Cooking programme staff concluded that there was an overemphasis on women cooking and men handling bio-slurry or selling electrical appliances to women. While this may be promoting HTC use, it also reinforces prevailing gender norms which are at odds with gender-responsive market development.

Lessons learned and good practices

Information and awareness campaigns must target women and men with specific information and messages that are of interest to them and through channels they readily access.

As far as possible, messages should align with the specific concerns of men and women (ESMAP, 2021). For example, given the social norms, benefits of clean cooking such as improved children's health and safety aspects may be more attractive to men than messages on women's health or environmental benefits, which are of greater interest to women. Men may also be interested in the potential for income generation from sales of HTC equipment and/or bio-slurry. It could also prove effective to target men with information relating to quickly available meals and financial savings from the use of more efficient cooking solutions.

Responding to the needs of women and men

The Indonesian Domestic Biogas Programme, popularly known as BIRU or Biogas Rumah, was funded by the Dutch Ministry of Foreign Affairs, and managed and implemented by the Dutch development organisation Hivos with the technical assistance of SNV, the Netherlands Development Organisation. Local stakeholders, including Yayasan Rumah Energi (Rumah Energi), supported on-the-ground implementation with support from the local Ministry of Energy and Mineral Resources (MEMR).

From baseline assessments and its long-term experience of working in the sector, Rumah Energi is conscious of the different needs of men and women and the importance of shared benefits. The organisation brings women and men together through focus group discussions to discuss their desired uses of proceeds from bio-slurry sales. Rumah Energi routinely conducts awareness campaigns on the economic opportunities of bio-slurry to ensure that both women and men understand the benefits that they can derive from investing in biodigesters.

It also provides technical support and capacity building for group administrators and members in accounting, administration, and product handling. With such support, a group of 25 women biodigester owners started, in 2013, to produce and sell vermicompost¹. Selling up to seven tonnes of vermicompost per month, they earn a gross income of about EUR 200 per month. Women are also using bio-slurry to grow and sell mushrooms, pineapple, dragon fruit and other crops which provides them with self-earned incomes

Source: Rumah Energi interview with M. Matinga, 2022

Awareness raising through appropriate channels

In Uganda, the World Bank funded the Uganda Clean Cooking Supply Chain Project and tailored its awareness-raising strategy to address the various women and men who were considered potential customers. The Bank's awareness-raising strategy includes market activation through a wide range of channels and approaches including radio advertisements, digital marketing, social media outreach (Facebook, Twitter and Instagram), trivia competitions and the use of community influencers (ESMAP, 2021). Using various communication channels contributed to a 20% increase in sales compared to the previous quarter. Further, the Uganda Clean Cooking Supply Chain Project created both long- and short-term sales access points in strategic locations ensuring that the cookstoves were easily accessible to women who might prefer to make purchases close to their homes or workplaces.

Source: World Bank, 2021

Supporting men to bring about changes in attitudes and gender norms.

Men, once they are convinced about the benefits of technologies that can improve women's welfare or incomes, can be great advocates for them. Such gender champions should be trained and provided with information to support their advocacy. They can then make the case for why households should invest in clean cooking. In doing so, they can advocate for safe workplaces, the importance of women's leadership in committees or groups, and the benefits of sharing proceeds from the sales of HTC technologies or by-products such as bio-slurry. Male gender champions can also share their experiences in supporting women's HTC entrepreneurship, employment, or operation and use. By doing so and amplifying such messages, they can become spokespeople for gender equality, women's empowerment and social inclusion, particularly among other men.

¹ Vermicompost is the product of the decomposition process using various species of earthworms, to create a mixture of decomposing vegetable or food waste, bedding materials, and vermicast. Vermicast is the end-product of the breakdown of organic matter by earthworms.

Helping men understand women's work burdens

In Nepal, because of social norms, women do not always feel free to express themselves in the presence of men or express an opinion that differs from a man in a public setting. To create spaces where women can freely express their needs and opinions, Practical Action Nepal conducts single-sex meetings where women can speak without feeling judged or silenced by men. Practical Action also conducts mixed-sex exercises for gender analysis, where both women and men together create activity profiles which detail the activities that each sex undertakes throughout the day. This becomes a starting point for discussing and helping men understand women's triple burden (i.e. the burdens of caring for family members, providing economically, and caring for their communities often on a voluntary basis) and changing attitudes related to gender roles. By facilitating discussions between the sexes, Practical Action Nepal has seen some improvements in the sharing of tasks in biodigester maintenance. Mixed-sex discussions also help women and men identify and address the family dynamics that maintain gender power imbalances.

"What we see is that the male members of the family are also using it [electric cooker] because they are the ones who initially learn how to use it. They are the ones who then teach the women members of the family how to use it. So, they're also involved in the family, in the kitchen chores, now. And women are slowly getting over the fear of electricity. They find that it's very easy to use an electric cooker".

Source: Practical Action Nepal interview with M. Matinga, 2022

Marketing messages and awareness campaigns must not reinforce gender stereotypes.

Attention should be paid to both the words and the images in messages being conveyed. For example, images showing women in roles that are considered men's roles could catalyse change in mindsets around what women can do. More women might be reached by providing information and conducting demonstrations among women's groups or networks, such as village savings and loans associations, and mothers' union groups. In other areas, especially with youth, social media and using influencers to showcase products are effective.

Obtain feedback from women and men on awareness campaigns

By monitoring and evaluating messaging and channels used, programmes can understand who is and who isn't being reached, as well as what messages resonate with various women and men. This can then inform adjustments to campaign designs.

Responding to the needs of women and men

Rumah Energi promotes biodigesters in Indonesia. To ensure that they understand and address the needs of both women and men, the organisation brings women and men together to analyse and discuss their desired uses of income generated from bio-slurry sales. Through this, both women and men can understand the benefits that they can derive from investing in biodigesters.

3.2 Making HTC devices affordable

Challenges

Who uses the technology and who pays for it? In most countries, it is the poorer households that do not have access to clean cooking. These households find it difficult to invest in clean cooking given the limited family incomes and competing priorities. Within households, women often have limited say in purchasing decisions, and may not be able to convince their spouses to invest in clean cooking solutions.

- Studies have shown that women and men value the benefits of clean cooking differently and have different capacities to access these technologies. Women tend to prioritise clean cooking but their access to clean cooking technologies may be hindered by their limited control over household finances, and men who have higher purchasing power may not prioritise clean cooking.
- In the case of biodigesters, a relatively expensive technology, women might need the permission and support of their spouses or other male household members to obtain them. Further, women living in poverty and those without dairy cows are less likely to have access to biogas and bio-slurry than livestock farmers since biogas is generally made from cow dung². In households with dairy cows, women may not have decision-making power over the cows, giving them limited access to products such as bio-slurry or the proceeds from its sales.
- Low-income women are particularly doubtful about, and slow to invest in, clean cooking solutions when the investments required represent a significant proportion of their incomes.
- Many SMEs working in the clean cooking field do not have the working capital or capacity to offer financing arrangements to their customers, thus limiting the consumer segments that can afford their products.

Lessons and good practices

A universally good practice is to match payment modes to women's and men's cashflows

In many of the SEE – Clean Cooking programmes, women and people from low-income households tend to have erratic incomes that are dependent on either agricultural seasons or small businesses. These groups may not be able to purchase HTCs outright or through regular monthly instalments. However, by analysing women's income patterns, and peaks and troughs in the demands on their cash, enterprises could optimise payment modes and frequencies to make it easier for women to make purchases. In some cases, pay-as-you-go (PAYGO) systems could help women use and pay for their HTC device as and when they have disposable cash.

In Zimbabwe, Lanforce Energy, a woman-led company, found that women were interested in its biodigesters, but that costs were often too high for them to pay upfront. To address this, the company allows customers to pay in instalments. It uses a PAYGO system making their

² Biogas can also be generated from kitchen waste. However, in many rural and low-income developing markets there is insufficient kitchen waste to justify investment in biodigesters reliant on kitchen waste. There are biogas backpacks that can be used to carry biogas from another source. However, this depends on other farmers having excess biogas to sell or the community having a central biogas plant that produces enough to sell. This is extremely rare in low-income communities.

biodigesters more accessible to households, including women-headed ones, that have less predictable incomes.

Some companies offer group loans for the acquisition of clean cooking devices.

Women typically have excellent repayment records, particularly with group lending schemes. In groups, women can pool resources and create revolving loan funds, or utilise group collateral to access external loans. However, external support with financial oversight and leadership might need to be provided if it is not already available within the group.

Bidhaa Sasa is a Kenya-based company that sells clean cooking, lighting and other products to last-mile communities. Women, however, often lack the cash to purchase the products outright and have limited access to consumer financing. To address this, Bidhaa Sasa uses a group liability lending model. Through this approach, Bidhaa Sasa trains and supports group leaders who create groups of clients. While groups can be of mixed sex, 69% of Bidhaa Sasa's clientele are women. Bidhaa Sasa then provides credit to the newly created group. Through the group lending and repayment approach, Bidhaa Sasa increases access for consumers, including for low-income women and men who do not have collateral and would therefore not qualify for loans. In addition, members are permitted to pay 10% of the costs upfront and the rest in instalments over a period of four to eight months.

In Kenya, BURN Manufacturing partners with *chamas*, rural village savings and loan associations, to provide them with information on HTC options and financing. A BURN agent will visit a chama and go to markets on market days to demonstrate stoves such as BURN Manufacturing's *jikopoa*, a Tier 4 biomass cookstove. After testing three types of financing models across various chamas, BURN started to provide interest-free financing plans called BURN Credit. Loans are repaid within two months as this is preferred by buyers³. Within twelve months of the programme starting, BURN Manufacturing sold 2,869 HTCs through the chama and market-day strategies.

Where no other options are available, companies may need to offer consumer finance directly.

Sistema Bio, a supplier of prefabricated biodigesters, provides in-house consumer finance. The company has created financial products to address the frequent lack of collateral among women and rural farmers. To assess eligibility for loans, the company assesses the conditions on the farm including cleanliness, animal health and the organisation of agricultural processes (an indicator that a biodigester operation will likely prove sustainable). Additionally, repayments are structured around income cycles, anticipated savings, or productivity. To address the problems associated with requiring a spouse or a male to co-sign, Sistema Bio loans can be co-signed by neighbours, friends or relatives.

Instruments such as results-based financing are starting to be used to improve affordability for consumers, especially those living in poverty.

In recent years, results-based financing (RBF) has emerged as a strategy for financing development based on results, including social and environmental outcomes⁴. In the clean cooking field, RBF can be used to boost demand for clean or more efficient stoves, to reach new or underserved markets and/or consumer groups, to stimulate technological innovations or new business models, and to improve the quality, standards and functionality of clean cooking technologies. For example, the RBF system adopted by the Global LEAP RBF pilot for electric pressure cookers (EPCs) in Kenya facilitated EPC adoption in Kenya's growing market by helping to expand consumer demand by allowing participating companies to order and

³ Initial trials showed that women preferred to pay for the stoves over the shorter two- to three-month period rather than over a five-month period that BURN Manufacturing also offered.

⁴ RBF is a development approach or intervention where a proportion of the available funds is linked to and provided after the delivery of pre-agreed and verified results (outputs, outcomes or impact). The results are often delivered by private sector or non-state actors under contract to a development partner.

distribute EPCs in bulk (MECS and ENERGY4IMPACT, 2021). Even though experiences with using RBF to reach women and people living in poverty are only just emerging for clean cooking endeavours, some programmes have started to include incentives to enable companies to reach women and other disadvantaged sections of society.

Using results-based financing (RBF) to increase access to biodigesters by women and people in marginalised communities

Building clean cooking markets in marginalised and poor communities is especially challenging due to the low buying power of consumers and, in many cases, high costs of distribution due to poor roads, limited mobile phone infrastructure, and long distances. Based on lessons from other programmes and a GESI analysis conducted during project inception under the ABC component of the SEE – Clean Cooking programme, SNV and GIZ Kenya aim to close the gap between marginalised and non-marginalised counties in Kenya in access to biodigesters. To this end, the ABC component in Kenya has intentionally included counties in arid areas that face greater poverty and marginalisation than other parts of Kenya, and where biodigester sales have historically been low. In addition to intentional targeting, ABC Kenya also provides an RBF premium on sales made in these selected counties. In this way, the RBF scheme ensures that private companies are incentivised to reach marginalised women and men in these areas.

Source: EnDev, 2020, discussions with ABC Kenya

3.3 Promoting sustained use of HTC devices

Challenges

Even when women acquire HTC devices, they often lack adequate know-how on how to operate and maintain the devices, leading to reduced adoption and use.

- In the case of new, modern technology such as electric stoves, women might initially lack the confidence to use the technology, largely because they do not have complete information. Sellers often do not take the time and effort required to explain the proper usage to women. Therefore, women are more likely to be fearful of using electric cooking devices than men and thus may be reluctant to use them.
- When it comes to biodigesters, there is often an imbalance between who manages (who puts in the effort required to use) the technology and who benefits financially from its operation. In most countries, biodigesters are operated, maintained and managed by women. Stakeholders across Africa and Asia interviewed for this report reported that women undertake the bulk of the work related to operating and maintaining biodigesters but, when the bio-slurry is sold, they are often neither involved nor do they share in the revenues. It is men who end up financially benefitting.
- Remote areas that have been traditionally excluded from economic and social development are also typically excluded from access to HTC systems because remote areas are expensive to get to and often have higher poverty rates and hence are likely to see lower sales.

Lessons and good practices

Hands-on product demonstrations and information on warranties and after-sales services.

Women's confidence in operating and maintaining HTC technologies can be increased through demonstrations where they can experience the devices. The success can be further enhanced when demonstrations are conducted by peers cooking local dishes.

Information on warranties, guarantees and after-sales service gives users, both women and men, the confidence to invest in new technology and can enhance sustained use. These aspects should therefore feature prominently in marketing materials, and should be simple and direct. This should include details on who to contact for repair or replacement. After-sales support staff should be trained on the different support needs of women and men, as well as how best to address them. Further, since women are the primary users, they should understand basic troubleshooting for the devices they use and what exactly to do in the case of a problem, including recognising when they need to seek help from a trained technician.

Reaching women and their networks is effective for sales, adoption and use.

Women's and men's confidence in investing in clean cooking solutions is increased through demonstrations, women-to-women sales, information on warranties and guarantees, try-before-purchase schemes, and the provision of GESI-responsive after-sales services. Shankar et. al (2015) found that women who purchased improved cookstoves from other women, rather than from men, were more likely to use the stoves consistently and correctly, and to recommend the technology to others. While this finding refers to improved cookstoves, it could well hold true for higher tier cooking technology. For example, in a recent review of entrepreneurs under the ABC Kenya programme, 80% of the referrals that one company were receiving were made by women (Interview, April, 2024), suggesting that women have been particularly successful in reaching out and getting new customers for the enterprises.

Reaching women through women

ATEC Global recognises that women are highly knowledgeable in cooking and related family dynamics. They are therefore considered to be better placed to explain and convince other households, including women, to transition to clean cooking. As a result, ATEC Global intentionally prioritises the recruitment of women as resellers of their electric stoves, yielding economic gains for both the company and the women. Based on a similar argument, but addressing clean cooking solutions, Practical Action in Nepal recruits women that cook with electricity to conduct peer and community demonstrations, and to engage other households in their communities in transitioning to clean cooking. The experiences of these first-mover women allow them share their real-life and context-relevant experiences with potential customers and gain their trust.

In Nepal, the Clean Cooking Alliance (CCA) found that female community workers/health visitors are highly respected and have long-term experience in communicating and catalysing change in their communities. The CCA piggybacked on this respect and trust by recruiting female community workers to promote clean cooking.

Obtaining women's feedback to ensure HTC designs are aligned with their needs

Households, especially in developing countries, have to make difficult choices on what to invest in given all the other demands on their, often low, incomes. Women and men are more likely to purchase HTC items if the products have a high utility for them, including in terms of performance, ease of use and compatibility with their cooking practices. Given that women are the main cooks in many of the settings where HTC markets are being established, ensuring women's inputs into HTC designs to align the devices with their needs can increase the likelihood of sustained use. Women's inputs can be solicited through focus group discussions at the design stage, through demonstration events and through try-before-you buy schemes.

Including women in the design of HTC solutions

Women are seen as users of HTC products but often have little or no input into the design of the technologies. A lack of technical skills is often cited as a key reason. EcoZoom Ltd, a company that manufactures advanced rocket wood stoves that reduce firewood and charcoal use by as much as 60%, is challenging this status quo. EcoZoom ensures that women's concerns and expertise are integrated into its product design by following a five-step process. The company first assesses households' fuel consumption and expense patterns, meals cooked, pots used, the available options and impacts, and other variables. These are then used to design a functional prototype that is tested in the laboratory to ensure that its efficiency and emission levels are acceptable. Once these are verified, the stove is field-tested with women users to solicit their feedback. The women's feedback is collected using single- and mixed-gender focus group discussions (FGDs), controlled cooking tests (CCTs), home trials and stove pilots. Based on the women's feedback, EcoZoom modifies the stove while maintaining its efficiency and emissions performance. The final stove, which incorporates both technical and user functionality, is then piloted among users during which EcoZoom again solicits feedback through one-to-one discussions with users. EcoZoom has used women's feedback to improve the durability, safety and convenience of their stoves (for example by adding accessories including solid slates with silicon handles and a tray to improve ash removal). By 2014, the company had involved over 200 women in its design process and moved from piloting 10,000 stoves to selling more than 22,000 units.

Source: ESMAP, 2022

4. Lessons learned in supporting women's employment and entrepreneurship in HTC devices: the supply side

Strong and diverse supply chains are the backbone of clean cooking markets. Including women in these chains can benefit both the market and the women involved. This section discusses the gender and social inclusion challenges to women's participation in HTC markets and provides lessons and case studies on how women have been included as employees and as entrepreneurs in the clean cooking market. It focuses on how best to tailor and deliver business development support that aligns with, and addresses, women's needs by enhancing women's access to finance and enabling women's access to results-based financing.

4.1 Extending business development services to women's businesses

Challenges

Currently, women's participation in the manufacturing and selling of clean cooking devices is very limited. In Bangladesh, a baseline survey found very few women in the sector. In other countries, such as Kenya and Uganda, women are beginning to enter the sector but often as sales agents: very few are owners, managers and leaders, or hold technical positions in clean cooking companies. In Cambodia, where the sector is dominated by imported HTC devices, women do manage shops that sell HTC solutions.

- While there are variations across countries and technologies, few women are active in high-level, decision-making and technical positions such as those involving masonry, biodigester installations or the manufacture and assembly of HTC technology. Where they are active, they are often in administrative positions or working as sales agents where remuneration and the power to influence the market tends to be low.
- Gender norms and unequal access to education means that women often lack the skills to take on technical jobs in HTC technologies such as managing electric cooker production or leading teams in electric cooker production and in biodigester installations and, consequently, they miss out on jobs with higher earning potential. Gender gaps especially persist in areas of sheet metalworking, welding, soldering and in masonry work for building biogas plants.
- Conscious and unconscious bias in communication materials, job adverts and recruiting processes mean that women are less likely to apply and be considered for jobs in biodigester and HTC activities, especially for positions other than those of sales agent or in customer services.
- Women's limited mobility means that women entrepreneurs often operate within small areas and easily saturate their local markets, which leads to poor business growth. They have fewer opportunities to network due to gender norms both in their communities and in male-dominated networks. One consequence is that they miss out on information about business opportunities.

- Gender-neutral business development support is often unsuited to women's needs. For example, the timing and location of training may conflict with competing demands for their time due to their care-giving roles. Travel constraints may also limit women's participation due to gender norms in their communities or because the information provided does not match their level of business development.
- Constructing a fixed-dome biodigester requires a mason to spend several days away from home which will often conflict with a woman's domestic roles, patriarchal norms that limit mobility and cultural expectations. Spending several days away at a client's home or outside their community can also expose women to the risk of gender-based violence. Discriminatory norms, sexual harassment and other forms of gender-based violence in male-dominated workplaces discourage women from participating in biodigester value chains.
- Constructing biodigesters is physically demanding. A lack of appropriate handling equipment reduces women's willingness to participate in biodigester construction as it can be physically harmful.

Lessons and good practices

Women's businesses, often characterised by their small size and informal nature, are likely to miss out on Business Development Services unless they are actively sought out.

In selecting participants for Business Development Services (BDS) programmes, one should ensure that the selection criteria are inclusive, and intentionally reach out to women, youth and people from excluded groups, for example through their existing networks, to encourage them to apply for the programmes.

BDS packages for women must be based on a systematic gender and social inclusion diagnosis.

One should first undertake a gender and social inclusion (GESI) diagnosis to understand the different support needs of women and of men, and then design and deliver a BDS package that takes account of the diagnosed gender-differentiated needs. Such an analysis should take place at the beginning of the capacity building process and will usually involve interviews and group discussions with both women and men, as well as clearly mapping the specific bottlenecks that women face and how to address them. A gender-sensitive value chain analysis is a useful tool that provides clarity on the roles that both women and men play along the value chain, the potential for improving the position of women and the benefits for the business.

Business development services for women must be responsive to their specific needs and concerns.

- Ensure that those delivering BDS have GESI training so that they can deliver GESI-responsive BDS and be able to recognise and address any GESI issues that might emerge while providing BDS. Delivering GESI-responsive BDS also requires having women and people from marginalised groups as part of the pool of service providers.
- Consider women-focused or women-only training, mentorships, coaching and networking, especially in communities where gender gaps are high and interactions between women and men are severely limited.

- For mixed-sex BDS programmes, set targets for the number or proportion of women that will take part.
- Providing multi-mode BDS can help reach more women and address the various barriers that women face in operating businesses. As far as possible, BDS should be provided in different forms, including face-to-face sessions, one-to-one on-demand mentoring and coaching, online learning and peer learning. Digital training materials should be easily downloadable, catering for those with poor and/or costly internet access. These materials should also take into consideration the literacy level of the target groups, for example by using local languages and favouring visuals over written text.
- All BDS packages should include financial literacy, leadership and agency training.
- Consider women's time, financial, technology, mobility and other constraints when designing a BDS package.
- Increase awareness of entrepreneurship options and job opportunities other than as masons or factory-based jobs by including those where women can more easily attain a work-life balance. For example, by becoming suppliers of biogas appliances or bio-slurry, or HTC stockists, they will not have to spend several days away from home as would be the case if they became fixed-dome masons. Further, becoming an HTC supplier or stockist can allow greater flexibility in working hours and can even be carried out from home in some cases.
- Increase awareness among private companies of the benefits of employing women in various roles. In Indonesia, the World Bank found that women were more likely to sell stoves to female customers (World Bank, 2018). By tracking sales, BURN Manufacturing found that about 20% of its top-performing sales agents were women. The company also found that given a GESI-responsive working environment, women are more likely to stay longer at the company than men. This could potentially reduce the costs of repeatedly recruiting and training new staff.

4.2 Finance for women-owned or women-led biodigester and HTC businesses

Challenges

How do women's businesses and entrepreneurs finance their businesses? Compared to men, women have less access to finance. Millions of women lack the documentation and other forms of identification required to open a simple savings account and they generally have fewer assets to pledge to a bank as women in many countries are legally excluded from owning or inheriting land.

- In general, the cost of finance is high. For women who typically own and operate small businesses, this deters them from applying for loans. Further, most financial institutions (FIs) prefer to focus on highly profitable business and distrust energy markets, in particular cooking energy technologies. Even when FIs are subsidised to reduce finance costs for women and small businesses, the number of women accessing such loans remains low. This is because other barriers such as intimidating

bank atmospheres, language barriers, the administrative burdens associated with loan applications and the need to travel far from their communities to reach banks may continue to deter women applicants.

- Women entrepreneurs are more likely to have difficulties in accessing formal financing than men because of limited business professionalisation, including a lack of registration and systematic business record-keeping, as well as an inherent GESI bias in formal financing products and services (such as the need for assets such as collateral that women often lack, their lack of formal documentation and credit bureau ratings and, in some countries, the bank requirement that women have to have loans co-signed by their husbands).
- Women business owners tend to have fewer interactions with formal institutions and may lack the confidence to do so when given the opportunity (e.g. when invited to pitch their business to an investor) which adversely affects their access to business growth opportunities.

Accessing and applying for finance can be onerous, especially when substantial amounts are required. Further, research in Cambodia shows that while there is hardly any gap between women and men in accessing finance, women tend to request less capital than men and less than they really need (UNCDF, 2018). In many other countries, women are less likely than men to be approved for debt financing and pay higher average interest rates than their male counterparts.

Lessons and good practices

Facilitating finance for women entrepreneurs requires working on multiple fronts.

Supporting women to obtain loans from both formal and informal institutions requires a number of inputs:

- Training and continuous mentoring of the entrepreneurs to strengthen their businesses.
- Educating women in financial literacy.
- Supporting the entrepreneurs in preparing bankable business plans.
- Assisting the entrepreneurs to approach local financial institutions.
- Training the entrepreneurs to keep proper track of repayments.
- Building relationships with local partners who can then recommend the entrepreneurs to the banks.
- Sensitising local finance institutions (LFIs) to the bankability of the entrepreneurs' energy businesses.
- Assisting banks in designing women-friendly loan products.

Women's businesses need to be trained in financial literacy.

It is crucial that entrepreneurs understand financial concepts and how to apply these to their businesses, including how to effectively manage their capital, how to keep accounts, tax and other liabilities, as well as managing their savings and investments.

Consider linking women to GESI-responsive funding sources.

These could include crowdfunding platforms such as KIVA and Lendahand and target those investors that intentionally seek to support women or generate a GESI impact. At the same time, business models such as micro-consignment (supplying goods to an entrepreneur who pays only for what is sold and may return what is unsold) through a programme or product supplier may also be helpful.

At ATEC Global, a clean cooking company that operates in 13 countries including Cambodia and Bangladesh, the need for capital is eliminated by using a consignment model. Using this model, ATEC Global provides its 200 resellers – all women – with inventory without having to pay upfront. They also support the resellers with other costs related to doing business such as transport and accommodation. This addresses the challenge of accessing capital as well as the risk of not selling or underselling.

In Bangladesh, the Infrastructure Development Company Limited (IDCOL), in partnership with Grameen Shakti and with funding from the World Bank, leverages in-house microfinance for products, including biodigesters. With biodigesters, households are required to make a down payment of 15% of the total cost and pay the remainder over two years at a flat-rate service charge of 8%. Such options are attractive to women who may not qualify for traditional loans.

Source: Interview with ATEC by Magi Matinga, 2023

4.3 Enabling women's businesses to benefit from results-based financing (RBF)

Challenges

The main economic effect of the RBF instrument is to decrease both costs and risks for enterprises, enabling them to provide clean cooking access in markets and to target groups that would otherwise be beyond commercial reach. These markets include households living in poverty and, in some countries, those headed by women. However, women's participation in RBF schemes is often at very low rates, if at all. Challenges to women's participation in RBF include:

- Women-led businesses tend to have little knowledge of RBF schemes and processes and, when they do, may not have the confidence to apply.
- Women-owned and local businesses are often small, informal and lack the human resources needed to meet the rigorous requirements of RBF. Eligibility requirements are often beyond the scope of what they can meet. Additionally, women may not have the skills to professionalise and digitise their operations to track and monitor sales or the finances to develop such systems.
- With RBF, payments are only made after independently verified results. This requires significant administrative inputs from the potential RBF recipients and onerous accounting. Rigorous reporting and verification requirements often require high levels of human resources and finance that small and women-led business often lack. For example, usage tracking systems for clean-cooking RBF systems can be a challenge. In terms of cost and availability, one participating company estimated that their tracking system cost US\$450 per month, while phone tracking and verification was costing about US\$110 per month (Clean Cooking Alliance & MECS, 2022). These are substantial amounts for small local companies and most women-owned companies.

- In addition to onerous tracking and reporting, companies often have to wait for verification, which often takes a long time. This can be discouraging for women-led companies and small businesses who often have little or no financial cushion.

Lessons and good practices

Intentionally design a GESI-responsive RBF

An RBF approach that encourages actions to deliberately address gender gaps and contribute to gender equality and women's empowerment will require a project to undertake the following four activities (ESMAP, 2020):

- Conduct a gender analysis to identify the specific gender gap that the RBF will seek to address.
- Establish gender-targeted project goals and then actions to meet them.
- Identify project-specific gender indicators and monitoring parameters to measure change or the extent to which the gender gap is being addressed.
- Monitor project performance against an established baseline.

Including a gender expert in the design of RBF schemes to review the potential impacts of the RBF design on women and excluded groups, and to advise on ensuring a GESI-responsive RBF design, is beneficial.

Points to keep in mind when designing an RBF programme aimed at achieving gender-related results:

Women's businesses may find it difficult to access RBF. To increase women's participation:

- Examine whether the application process is easily accessible to all, including women and small manufacturers. What is the reach in remote locations?
- There may be a need to specifically reach out to women owners and conduct information campaigns through informal channels, women's networks and associations.
- Given that women's businesses are typically small, ensure that the minimum RBF funding they can apply for is appropriate.
- Check whether women-owned businesses are likely to meet the documentation requirements to be eligible and, if not, adjust the design as required.
- Women applicants may need additional assistance in making applications.

Depending on the findings of the gender analysis, women's businesses may need additional targeted business development support.

Typically, this is in areas of:

- Accounting and bookkeeping; financial literacy; communication skills; negotiations; leadership and agency, mentoring.
- Mentoring and additional technical training on aspects of quality and process improvements.
- Gender-sensitive awareness/information campaigns for products: understanding the technology and its efficient use.

An incentive structure should be designed, determined by the desired gender outcome.

Possible indicators can be in the following areas:

- Adoption and use of HTC devices:
 - # of products sold to female-headed households
 - # of female users who have gained access
 - Continued use of HTC solutions (X% in use after 12 months)

- Outcomes on use and gendered benefits derived from use:
 - Time saved (self-reported on fuelwood collection, cleaning, preparation)
 - This time used for (leisure/ increased income/ childcare/ education)
 - Improved health (reduced headaches, coughing and eye irritation)
- Improved business performance of women’s businesses:
 - # of female-led distributors/retailers that show productivity gains (X% increase in revenue from baseline)
 - # and volume of credit provided to female sellers/retailers

Collecting and reporting data on gender results can be onerous.

Data collectors will need additional training in gendered data collection. Some questions that need to be included are:

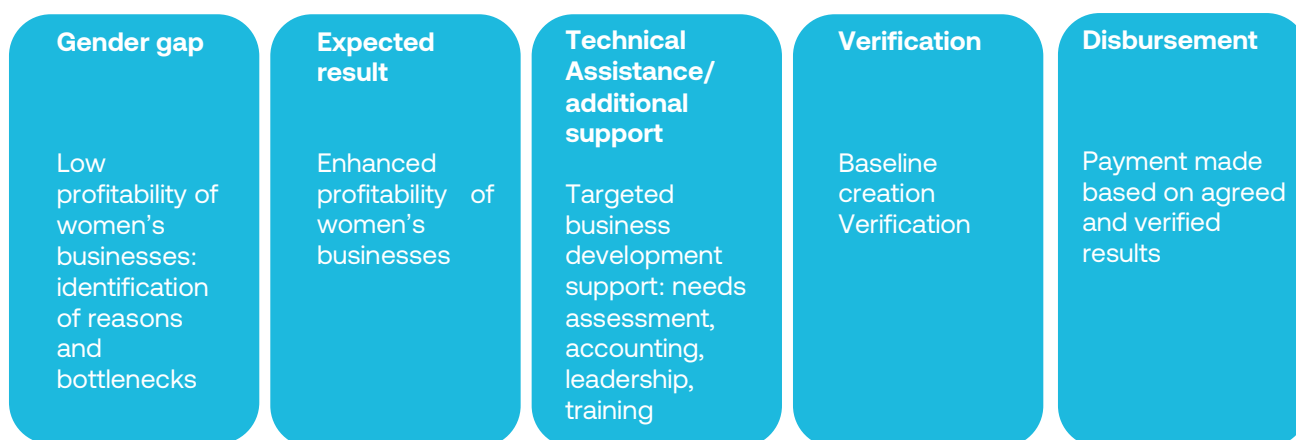
- What has been the impact of interventions on women’s workload, time use, access and control of income, and decision making?
- Is the service impacting the dynamics between men/boys and women/girls in the household?
- Will it continue to have the same impact six months and one year from now?

In addition, capturing many of the outcomes will likely involve subjective and qualitative data. Other factors to be conscious of is the possible hesitance of women to respond and limited responses by female interviewees (possibly because of lower phone ownership and a reluctance to be interviewed among women respondents).

Use RBF to incentivise changes to the GESI landscape in the clean cooking market

RBF can bring about improvements in operational efficiency and enterprise performance. From a GESI perspective, RBF can include requirements to employ women throughout biodigester and HTC value chains, with specific targets for technical or leadership roles where women are currently hardly present. Disbursement of RBF funds can then be based on companies meeting their quota for women within pre-agreed job posts/levels and for supporting women with training, business development and marketing support to gain the skills required to perform such roles. Alternatively, RBF can be specifically designed to improve the performance of women-owned or women-led businesses.

An example of the RBF principle for improving the performance of women’s businesses:



Reduce the administrative burdens of RBF

Tracking, reporting and verifying agreed metrics can be burdensome for enterprises and especially for women-owned and small businesses. Companies such as ATEC Global (biogas and electric cooking), Koko Networks (ethanol), BURN Manufacturing (higher tier biomass

cookstoves) and African Clean Energy (electric cookstoves) have digitalised cooking products, thereby automating tracking and easing the administration burden. However, few global-South companies and women-led companies have these technologies and therefore tend to miss out on RBF. RBF programmes could develop and provide dataloggers and apps to enable digital tracking or formulate simpler mechanisms for digital tracking. Under ABC Kenya, entrepreneurs are asked to install a widely available app, Taroworks, on their smartphones. They then input data on installed biodigesters which is then checked and sent on to the independent verifier for verification (see figure below).



Additionally, programme staff responsible for the RBF regularly encourage enterprises to report issues with reporting, and make themselves available to support entrepreneurs in overcoming any challenges they encounter with reporting including with software use.

5 Conclusions

Despite women being primary players in the building up of higher tier cooking (HTC) and bio-slurry markets, programmes that aim to build and expand these markets often exclude them. Enterprises and programmes do not always consider women when seeking to build markets and, even when they do, they see them as beneficiaries and not necessarily as customers that are critical to market growth and maturity. On the supply side, women are largely seen as micro sales agents and, as such, they are underrepresented and miss out on the benefits of owning, leading and working in clean cooking markets. Furthermore, including women and other excluded groups is more than just a development imperative. There is a business case for including women when building clean cooking markets because they are key in household purchasing decisions, are attractive to investors and can leverage their networks, especially in hard-to-reach markets. However, this is not straightforward as HTC programmes and entrepreneurs also face challenges in including women due to the many challenges that women face due to their gender.

This report has addressed some of the challenges faced by women and excluded groups that limit their participation in markets as consumers and as part of supply chains. It has highlighted some lessons on how to foster gender equality and social inclusion (GESI) issues when developing and building HTC and bio-slurry markets that have been identified by programmes and entrepreneurs in Africa and Asia. Gender and social norms, and gender disparities which influence how women and men participate in markets, and whether and how they access resources, should be at the core of building clean cooking and bio-slurry markets. Gender analyses are the first step to understanding and responding to such gender differences. The lessons and cases highlighted in this report show not only what is possible but also clearly the benefits of GESI responsiveness for markets and for entrepreneurs. The diversity of cases and approaches shows the importance of context but also suggests that many of the lessons learned are applicable in a range of settings. However, since contexts differ, it is important to tailor responses to contexts. Although a knowledge gap remains with respect to results-based funding and how best to incentivise the closing of gender gaps using this approach, experiences are emerging. Practitioners need to document and share emerging lessons in this area in order to improve outcomes.

Bibliography

- ABC Kenya. (2022). *Gender and Social Inclusion Analysis in ABC Kenya*. SNV.
- Barnes, D. F., Kumar, P., & Openshaw, K. (2012). *Cleaner Hearths, Better Homes: New Stoves for India and the Developing World*.
<https://api.semanticscholar.org/CorpusID:142884647>
- Catalán-Vázquez, M., Fernández-Plata, R., Martínez-Briseño, D., Pelcastre-Villafuerte, B., Riojas-Rodríguez, H., Suárez-González, L., Pérez-Padilla, R., & Schilman, A. (2018). Factors that enable or limit the sustained use of improved firewood cookstoves: Qualitative findings eight years after an intervention in rural Mexico. *PloS One*, *13*(2), e0193238.
- Clean Cooking Alliance, Berkeley Air Monitoring Group, Climate and Clean Air Coalition, EPA, & SEI. (2022). *Clean Cooking for Climate Action Roadmap for National Clean Cooking Programs to Achieve Emission Reduction Targets* (p. 24). Clean Cooking Alliance.
https://cleancooking.org/wp-content/uploads/2022/11/Clean-Cooking-for-Climate-Action_Roadmap.pdf
- Clean Cooking Alliance & MECs. (2022). *Clean Cooking RBFs: Key Design Principles*.
- ENERGIA. (2021). *Gender-Responsive Electric Cooking in Nepal*. ENERGIA International Network on Gender and Energy.
- ESMAP. (2020). *Quantifying and Measuring Climate, Health and Gender Co-Benefits from Clean Cooking Interventions: Methodologies Review* (Technical Report 150374). World Bank Group.
<https://documents1.worldbank.org/curated/en/436301593546281643/pdf/Quantifying-and-Measuring-Climate-Health-and-Gender-Co-Benefits-from-Clean-Cooking-Interventions-Methodologies-Review.pdf>
- ESMAP. (2021). *Implementation Completion and Results Report (ESMAP Grant No. Tf A2295-UG) On a Small Grant in the Amount of US\$2.20 Million to the Republic of Uganda for the Uganda Clean Cooking Supply Chain Expansion Project (P153679)*. World Bank Group.
- Global Entrepreneurship Monitor. (2017). *GEM 2016/2017 Women's Entrepreneurship Report*. Global Entrepreneurship Monitor.
- Grist, N., Winkels, A., & Reynolds, J. (2018). *Baseline Study: Dunga Beach Biogas Community and Household Pilot*. University of Cambridge Institute for Sustainability Leadership (CISL).
- IEA, IRENA, UNSD, World Bank, & WHO. (2023). *Tracking SDG 7: The Energy Progress Report*. World Bank Group. https://cdn.who.int/media/docs/default-source/air-pollution-documents/air-quality-and-health/sdg7-report2023-full-report_web.pdf?sfvrsn=669e8626_3&download=true
- Japhta, R., Vizcarra, V., Bui, T., Yogi, N., & Mel, S. (2019). *Exploring the Opportunities for Women-owned SMEs in Cambodia*.
<https://api.semanticscholar.org/CorpusID:213912221>
- MECS, & Energy 4 Impact. (2022). *Clean Cooking: Modern Energy Cooking: Review of the Funding Landscape* (5; Financing Clean Cooking). Loughborough University, UKAID, ESMAP.
- Mercy Corps. (2015). *Gender and Market Development—A framework for strengthening gender integration in market systems development*.
https://www.mercycorps.org/sites/default/files/2020-01/Gender%20and%20Market%20Development_Mercy%20Corps.pdf
- Shah, N. S., & Chu, V. A. (2022). *Cooking Up Solutions for Cambodia's Women Entrepreneurs*.
<https://www.ifc.org/en/stories/2022/cooking-up-solutions-for-cambodias-women-entrepreneurs>

- Shankar, A. V., Onyura, M., & Alderman, J. (2015). Agency-Based Empowerment Training Enhances Sales Capacity of Female Energy Entrepreneurs in Kenya. *Journal of Health Communication, 20*(sup1), 67–75. <https://doi.org/10.1080/10810730.2014.1002959>
- UNCDF. (2018). Examining Customer Journeys at Financial Institutions in Cambodia: Using Big Data to Advance Women's Financial Inclusion. *The United Nations Capital Development Fund (UNCDF)*.
- World Bank. (2018). *Incentivizing a Sustainable Clean Cooking Market: Lessons from a Results-Based Financing Pilot in Indonesia*. World Bank Group. <https://openknowledge.worldbank.org/bitstream/handle/10986/30181/128162-WP-P14>