Scaling Adoption of Clean Cooking Solutions through Women's Empowerment

GLOBAL ALLIANCE FOR CLEAN COOKSTOVES

A RESOURCE GUIDE

The **Global Alliance for Clean Cookstoves** is an innovative public-private partnership comprised of more than 800 partners working together to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean cooking solutions. The Alliance's partners include national governments, the private sector, United Nations agencies, foundations, non-governmental organizations, women's groups, investors, and academic institutions. With the ambitious goal of enabling 100 million households to adopt clean cooking solutions by 2020, the Alliance is working to identify and implement solutions to overcome the market barriers that currently impede the production, deployment, and sustained use of clean cookstoves and fuels at scale.

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FOREWORD

Every day millions of women around the world are breathing in harmful smoke while cooking their families' meals and walking far distances to secure fuel in order to cook those meals. Exposure to household air pollution caused by polluting, inefficient, and dangerous cooking practices kills nearly 4 million people every year, and millions more suffer from cancer, pneumonia, heart and lung disease, blindness, and burns.

Women can spend up to four hours per day—or 60 days every year—collecting firewood. Not only is fuel collection extremely time consuming and laborious, in conflict settings, women face an increased vulnerability to physical and sexual violence when leaving the safety of their communities or refugee camps to find fuel to cook. In some countries, if families are purchasing fuel, an improved cookstove or fuel that is 30 percent more efficient than a traditional stove can save enough money to send two children to school. The time spent collecting fuel and preparing and cooking food can take hours, a reduction of which can allow women to complete other responsibilities and pursue income-generating opportunities, education, and rest—as they choose.

While women face the brunt of this problem, they are very much at the heart of the solution and can be change agents in their communities. Women, as primary users of cookstoves, must be involved in the design and distribution of products in order for their needs to be fully met and for cookstoves to be sustainably and exclusively adopted. Furthermore, women can catalyze cookstove and fuel markets by engaging in income-generating opportunities along the value chain. The knowledge, passion, innovation, and entrepreneurial spirits of women must be tapped in order to effectively scale a thriving global market for clean cooking solutions.

The Global Alliance for Clean Cookstoves recognizes that women have critical roles to play across the entire clean cooking value chain, and has explicitly prioritized women in their mission to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean cookstoves and fuels. This *Report Guide* outlines common challenges and best practices for engaging and empowering women in each segment of the clean cooking value chain by examining highly successful case studies in which women play lead roles. By using this *Report Guide* practitioners will be equipped with both an understanding of why women have a critical role to play, how to involve them, and the myriad of benefits that come when unleashing women's potential. Enterprises will experience the bottom line impacts of leveraging women's talents, and households and communities will directly benefit from the social and environmental benefits from sustained adoption of these life-saving solutions.

Kathy Calvin
CEO, UN Foundation and Chair, Advisory Council, Global Alliance for Clean Cookstoves

PREFACE

Often spending many hours per day searching for fuel and cooking over open flames emitting harmful smoke, women are disproportionately impacted by dirty and inefficient cooking practices and reliance on biomass for fuel. **Yet women are not just victims.** They play a crucial role in the widespread adoption and use of clean cooking solutions because of their central responsibility for cooking and managing household energy. **As consumers and users, women are a critical component of the sector's effort to reach scale**. Women must be fully integrated into the process of designing products and solutions because without their opinions and input, products will not meet their needs and will not be used. Women drive demand and are ultimately the ones in control of whether or not products are fully adopted.

Women can catalyze the market as clean cooking entrepreneurs. Their involvement in the sector can spur wide-scale distribution and delivery of quality after-sales services that will contribute to the creation of a thriving global market. Women can leverage their existing networks to stimulate adoption of these new technologies and use their firsthand experiences in promoting solutions. Women have a true understanding of what is required to develop appropriate and sustainable solutions that they want to use.

Women entrepreneurs are an untapped resource and leveraging women's strengths is a huge opportunity for the sector. Women are the fastest growing cohort of entrepreneurs and business owners in many developing countries.[1] Today women in developing countries are more likely than those in developed countries to start or maintain businesses. Women's networks can open doors for new cooking product businesses and provide access to consumers in hard-to-reach markets. In areas where there are high levels of gender inequality, female sales agents can directly reach women who cannot readily access cities or markets.[2] Various businesses are tapping into this trend and opportunity.*

When women enter the marketplace as entrepreneurs, they have immense potential to spur economic growth. However they often lack sufficient support or knowledge to enter the marketplace and become successful entrepreneurs. Corporate Citizenship estimates that there are approximately 860 million women worldwide who are deemed "not prepared" (lacking sufficient secondary education) and/ or "not enabled" (lacking sufficient support from families and communities) to take part in the world economy. This number is expected to rise to 1 billion in the next decade.[3]

When engaged and supported appropriately, women's involvement in value chains can increase access to female markets and increase sales.[4] This is particularly noteworthy, as, by the year 2028, it is expected that women will control close to 75 percent of discretionary spending worldwide.[1]

Furthermore, when a woman is given an opportunity to earn an income, it has positive impacts on many other areas of her life outside of the clean cooking sector. Studies show that women reinvest 90 percent of their income into their families and communities, while men reinvest 30 to 40 percent; the implications for economically empowering women can reach far beyond the individual.[5]

In a recent survey, 72 percent of companies that involve women in their supply chains stated that their investments in women were already increasing profits or they are expected them to do so soon.

The Global Alliance for Clean Cookstoves recognizes the central role women play in meeting its sector-wide target of 100 million households adopting clean and efficient cookstoves and fuels by 2020; achieving this goal is dependent on the full inclusion of women throughout the entire value chain. The Alliance has created this *Resource Guide* to fill a critical gap in the sector. Our partners understand the fundamental role women play in reaching universal adoption, but there is a dearth of practical guidance compiled in an easy-to-use way on *how* to ensure women are included.

The *Resource Guide* is meant to fill that gap and build the capacity of stakeholders to design solutions that include and empower women. It is a practical tool that can be directly and immediately applied to work in-country. We feature case studies that illustrate the successful application of particularly effective best practices found in our research. Instead of producing a theoretical report based on hypotheses, we have created a *Resource Guide* including an actionable set of lessons and practices that will increase effectiveness in the sector and stimulate replication of mechanisms that can lead to the strongest outcomes.

Our objective in creating this *Resource Guide* is to directly increase the number of women involved in cooking projects—as designers, producers, distributors, promoters, investors, and servicers. We also seek to tell the stories of women around the world who are creating and implementing solutions that impact themselves, their families and their communities. The *Resource Guide* and all of its featured tools are housed on the Alliance's online gender and empowerment knowledge hub. It is the first step in an ongoing effort to provide concrete resources that our partners can easily access to build their capacity to address gender issues and increase empowerment opportunities throughout their work. With this hub, the Alliance is developing a dynamic community of practice for the sector that is built on expertise, research, and hands-on experiences.

It is time for the clean cooking sector to fully unleash the contributions women stand ready to make.

Radha Muthiah
Executive Director
Global Alliance for Clean Cookstoves

* **Resource: Women Entrepreneurs in Business Initiatives,** accessable at www.cleancookstoves.org/gender

EXECUTIVE SUMMARY

What is the *Resource Guide* and why was it developed?

Women have a role to play in every segment of the clean cooking value chain**.** Women's involvement can increase project effectiveness and help scale adoption of products and services, while also impacting their livelihoods. There is a huge pay off when practitioners take the time and effort to integrate women and understand gender dynamics—it can increase their bottom line, while providing health, environmental, and social impacts.

The Alliance and its partners recognize the contributions that women can make to achieving the sector's health, environment, women's empowerment, and livelihood goals. The Alliance *Resource Guide* is a tool for a wide variety of sector stakeholders—including practitioners (private sector players, NGOs, CBOs, etc.), donors, policymakers, multinational corporations, investors, and academic institutions—to increase their understanding of *why* women are critical, *how* to ensure they are included in every value chain segment, and to *tell the story* of women's empowerment in the clean cooking sector.

The *Resource Guide* is one component of the Alliance's overall gender and empowerment strategy to better leverage women's ability to impact adoption rates. This overarching strategy is built around three major pillars, which feed into and support one another.

How was the *Resource Guide* developed?

This *Resource Guide* builds off of existing resources while compiling and analyzing a wide-variety of case studies, tools, and stories that outline practical, actionable methods and best practices for scaling adoption of clean cooking solutions through women's empowerment. While several reports exist that analyze and investigate the importance of effectively integrating women into energy initiatives through gender mainstreaming practices, there has not yet been a practical guide on how to specifically integrate women throughout the clean cooking sector.*

Research for the *Resource Guide* consisted of a careful examination of other sectors' success in including women throughout their value chains to increase their bottom lines and impacts. Within this, the economic benefits of empowering women, and the related benefits for their families, communities, and national economies were also evaluated. Over 50 reports on gender, gender mainstreaming, women's empowerment, and energy were collated, summarized, and analyzed. Additionally, training manuals, handbooks, and guides on relevant topics were extensively reviewed and compared to extract critical strategies, lessons, practices, and themes that can be applied in the clean cooking sector.*

* **Database of Resources Gender and Energy Resources,** accessible at www.cleancookstoves.org/gender

* **Gender and Energy Resources Outline,** accessible at www.cleancookstoves.org/gender

PRODUCT DESIGN

WHY? Women's input in design is critical. Women must like and want to adopt the clean cooking products for businesses in this area to be successful in the long term. Women control how the products are used and if they are used exclusively over a long period of time. Engaging women can help generate demand, create appropriate products, and increase adoption.

HOW? Designers should work with women to adjust and develop products to best meet user needs. They should use household surveys, focus group discussions (FGDs), fuel trials, and cooking observations to garner candid feedback on their clean cooking experiences. Women must feel comfortable providing honest opinions and be able to participate in design and testing activities.

PRODUCTION

WHY? Women can be economically empowered in the production of clean cookstoves. Production of cookstoves and fuels can take advantage of women's traditional skills in ceramics and other fields, and women have proven to be reliable and effective entrepreneurs. As producers, women become experts in the products they use regularly and are likely to further help generate awareness and demand among a wider cadre of consumers. They can also leverage their networks to scale distribution, particularly among female markets.

HOW? Provide business and technical training to build women's capacity to engage in production businesses and to understand and implement quality control measures. Women can produce cookstove components locally or can assemble products if components are being imported as kits. Organizing women producers into cooperatives provides opportunities for support in overcoming challenges, sharing of best practices, and increasing access to finance.

CONSUMER FINANCE

WHY? Consumer finance options enable women to purchase clean cooking solutions. When diverse finance options are available to purchase expensive products, consumers have more purchasing power and are able to consider higher-priced, but better-quality options.

HOW? Enterprises should explore innovative consumer finance mechanisms, such as micro-consignment, revolving loan funds, and flexible repayment plans and should consider offering these mechanisms directly. If working with financial institutions, enterprises should ensure that they are educated on specific needs of women borrowers. They can also work through women's saving and loan groups to tap into existing community structures that allow women to collectively pool resources. Women consumers should also be trained in basic financial and savings skills.

Many key informant interviews were conducted and numerous projects were examined. From these interviews and background research, the 20 case studies featured in the *Resource Guide* were developed. Practitioners provided critical insight into the details of their project design and business model and highlighted successes and challenges as they worked to include and empower women. They also identified individual women whose stories are highlighted to demonstrate tangible impacts. Additional case studies, as well as more detailed versions of the spotlight case studies featured here, can be found on the Alliance website.

What are the key findings in each segment of the clean cooking value chain?

This *Resource Guide* breaks down *how* and *why* women should be integrated into every segment of the clean cooking value chain. Each section lists distinct empowerment opportunities, challenges to overcome, and benefits of including women and addressing gender issues. Below is a summary of the key findings from each section of the value chain analysis within this *Resource Guide*. In each value chain section, there are actionable and clear best practices that can be applied to work within that segment.

Three Pillars of the Alliance's Gender and Empowerment Strategy

1. **Building the evidence to make the case for including women:** the Alliance has commissioned several research studies that examine the impact clean cookstove and fuel adoption can have on women and their families by reducing the costs of traditional cooking practices, as well as the impact on adoption rates when women are integrated into the clean cooking value chain.
2. **Sharing, testing, and analyzing best practices through strategic pilots and case studies:** the Alliance is documenting and analyzing what is currently being done in the sector to empower women through examining case studies and understanding best practices for integrating women into cookstove and fuel value chains. Additionally, the Alliance is testing new, innovative ideas through pilot projects that involve women in distribution, marketing, consumer finance, and after-sales service.
3. **Spurring effective implementation through the creation of practical tools and trainings for practitioners:** the Alliance is providing practical, realistic tools and guidance to practitioners to address gender issues and increase the participation of women in the value chain.

To see the Alliance's entire gender and empowerment strategy, visit www.cleancookstoves.org/gender.

SUPPLIER FINANCE

WHY? Women-led businesses have a unique role to play in the cooking sector. They have direct access to consumers and can expand access to a variety of clean cooking products. Women-led businesses are often unable to obtain loans or connect directly with investors, and need training in managing finances to support their business and its growth.

HOW? Women entrepreneurs should be trained in accounting, financial management, and overall business skills to ensure they are well-equipped to repay loans. Projects can also provide mentorship and refresher courses as a way to enable women to lead their own successful businesses. As SME finance mechanisms are developed in the sector, actors should ensure that women are able to access these mechanisms by lowering barriers such as collateral requirements and high interest rates.

DISTRIBUTION

WHY? Women can be the key to scaling distribution. Women are often organized in networks that can reach vast new customer segments. They have access to hard-to-reach households, can utilize woman-to-woman marketing techniques, and are trusted promoters of household products among their peers. They are already successfully distributing a range of consumer products to the Base of the Pyramid (BoP).

HOW? Work with women distributors to examine distribution chains and create market maps to get an accurate understanding of the current state of the sector. Help entrepreneurs make linkages with other market actors who can help expand their reach and provide incentives, improve access to communications such as through mobile phones, and support culturally-appropriate modes of transportation. Projects can create central product distribution hubs that can also serve as a space for women to share experiences and attend trainings on topics such as gender-informed marketing techniques and business skills.

AFTER-SALES SERVICE

WHY? Women are well-positioned to ensure proper maintenance and care of improved cooking solutions. Users are not always aware of how to properly use and maintain their clean cooking technologies and fuels, leading to shortened product lifespans. Woman-to-woman knowledge transfer in maintenance is often more effective than man-to-woman knowledge transfer, particularly in conservative communities. Women can implement trial periods and warranties more easily because they have direct access to users.

HOW? Provide education and training on customer service, product repairs, and warranties so that women can provide after-sales services. If women are equipped with mobile phones, customers can easily reach them with service requests, and central product hubs can serve as service centers. Women can also be organized into cooperatives to easily share information and access parts and replacement products.

What are the common constraints that women face?

As women seek to engage in and take advantage of new opportunities in the clean cooking sector, there are several common constraints that can slow their progress. These constraints are not dissimilar from general constraints women face in other sectors, but they are clearly evident in the clean cooking sector. Practitioners need to be aware of these constraints and have a strategy to help women overcome them.

Common Constraints for Women as Consumers and Market Actors:

- Women are excluded because of gender discrimination
- Women have little education and/or technical and business knowledge
- Women's labor is undervalued and undercompensated
- Women lack control over assets and resources
- Women have little free time because of their triple role in society (reproductive, productive, and community responsibilities)
- Women have low representation in policy and decision-making

Implementers must understand the gender dynamics in the communities they work in in order to successfully engage and empower women. The gendered reality of women's lives must be considered when introducing new products and/or opportunities to avoid unintended negative consequences, such as adding more work onto already oppressed and impoverished women.[6] If opportunities are only offered to women, there can be negative consequences for women at the household and community level as income generating opportunities can extend women's options, but can also increase their workload and responsibilities. It is critical to conduct a gender analysis and have a strategy to work with both women and men in order to understand cultural and social values and all impacts of the project.

In addition to the general barriers women face, women entrepreneurs face an extra set of challenges that can be exacerbated by the size and nature of their business, the socio-demographic background of women entrepreneurs, and their geographical location.* [7] Developing a more inclusive value chain requires an analysis of how to increase market linkages to overcome constraints and increase effectiveness. Increased market linkages can connect individual women to other individuals, such as intermediaries within the supply chain as well as to institutions like clean energy centers, which will provide access to markets, enterprises, and goods. In all projects, the different players involved, gender roles of those players, and relevant policies, as well as the social and cultural contexts need to be analyzed and understood in order to ensure effective implementation.

Common Constraints for Women as Entrepreneurs:

- Women entrepreneurs often cannot access affordable financing
- Women entrepreneurs lack access to formal education and business training
- Women entrepreneurs lack access to a variety of market actors and intermediaries, as well as valuable market data
- Women entrepreneurs can lack mobility
- Women entrepreneurs face discriminatory cultural and gender norms that can limit opportunities to grow their businesses

* Macro-level barriers to expansion of women-owned businesses include unfavorable legal environments and inadequate education. Additional macro-level barriers for women to grow their business include formal economic rights in law, cultural practices constraining types of opportunities they pursue, weak governance, and poor infrastructure services. With legal equality comes a higher proportion of women's ownership in formal enterprises.

What are the universal best practices that all businesses and projects should apply?

In order to increase the number of women engaged in market activities and to address gender issues which prevent the adoption of clean cooking solutions, there are several best practices that should be applied in every aspect of the value chain. Each section in the breaks down specific best practices to apply when working within that part of the value chain, along with tools to assist in implementation; however there are ubiquitous best practices that are applicable throughout the clean cooking sector and should be integrated into programs. A detailed summary of these best practices and tools can be found on page 78.

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

HOW TO USE THIS *RESOURCE GUIDE*

The *Resource Guide* is broken up into six sections, one for each part of the clean cooking value chain: (1) product design, (2) production, (3) consumer finance, (4) supplier finance, (5) distribution, and (6) after-sales service. Each section includes:

1. An overview of the value chain segment, including the role women can specifically play.
2. A list of best practices to apply when working within that segment of the consumer market.
3. One to two case studies that demonstrate examples of how best practices were applied successfully.
4. One to two stories of individual women who have had an impact on the sector.
5. Best practice spotlights that showcase one particularly impressive or innovative best practice. The full case studies for each spotlight can be found online.
6. A chart of best practices, including a description of the best practice, challenges it can address, and tools and resources that can be used to better understand and implement the best practice. All of the tools can be accessed on the Alliance's website at www.cleancookstoves.org/gender.

There are several common best practices that can be applied to almost all work with women in the clean cooking value chain. You can find a detailed summary of these universal best practices on page 78.

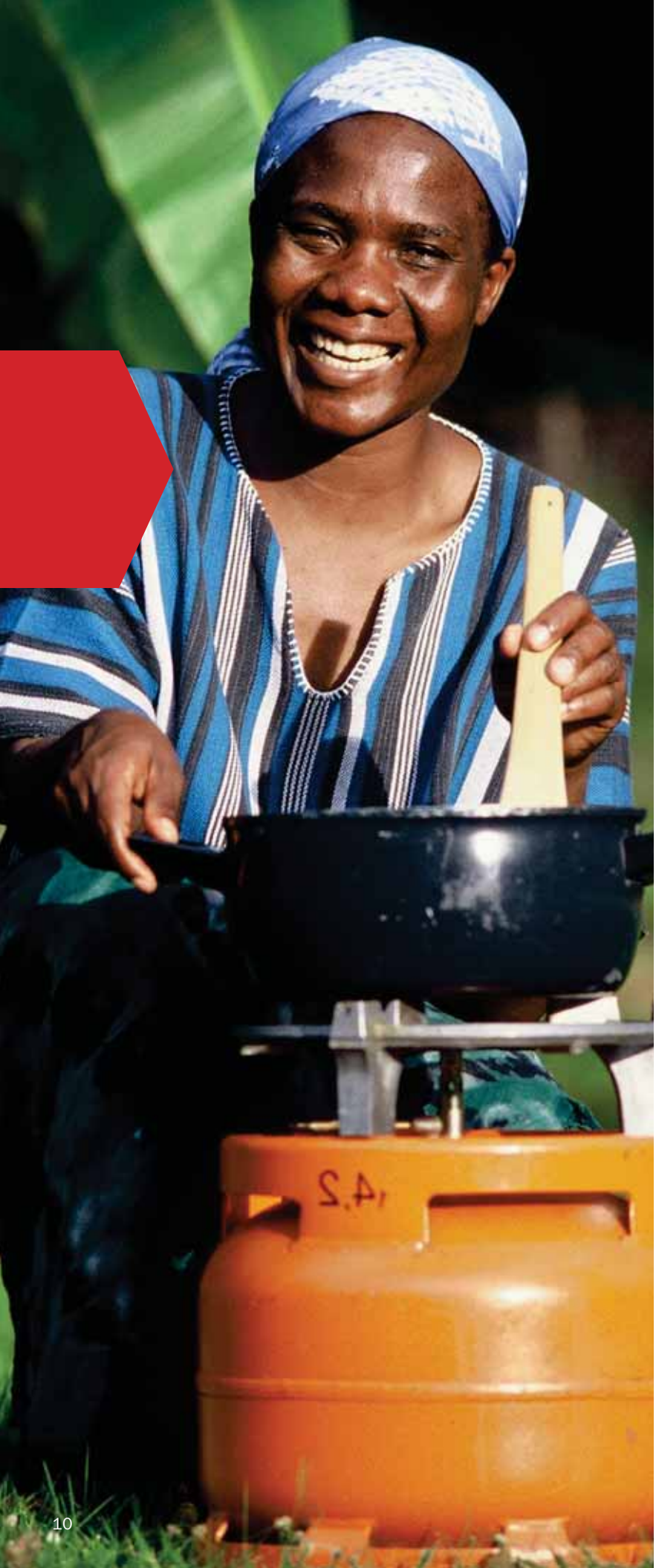

Photo: World LPG Association

Product Design

For decades designers and engineers have been working to design clean cooking technologies that reduce fuel and lower emissions in order to address the serious health and environmental impacts of traditional cooking practices. The primary engineering challenge is to meet multiple goals, including high levels of performance on emissions and efficiency in order to address environmental and health goals, while complying with consumer acceptability, affordability, usability, safety, and durability. As cooking is a unique cultural practice, it can be difficult to encourage and convince people to change the way they cook. Clean cookstoves must fully meet consumer needs in order to be adopted over a sustained period of time. However, targeted efforts to ensure women users are included in the design of cookstoves have yet to be fully integrated into every program in the sector.

WOMEN'S INPUT IN DESIGN IS CRITICAL. Household energy products that have been designed in collaboration with the end user are more likely to be accepted and used by women. If a clean cookstove is difficult to use, does not match traditional cooking practices or pot types, takes longer to cook food, limits the ability to provide necessary heating or lighting, and/or changes the taste of food, it is unlikely that a woman will use it exclusively over a long period of time. While it may seem like common sense to include women in the design of the product, women are often overlooked by manufacturers and designers throughout the product development process. It can also be challenging for practitioners to fully engage women in the design process due to low attendance rates among women in FGDs, difficulty in getting candid feedback from the women users, and men feeling left out of the process causing them to be uncomfortable or unsupportive of women's participation in the design discussions and program activities. Designers also struggle to be completely receptive to user feedback when it goes against scientific principles that can affect performance. The process required to create many iterations of a prototype can be long and expensive, but is critical to ensure the product is what the user wants and will use.

There are a number of specific best practices that can be applied when working to include women and increase empowerment opportunities in the design of clean cooking products. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **design best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in Product Design:

- CONDUCT HOUSEHOLD QUESTIONNAIRES AND SURVEYS, AS WELL AS ONE-ON-ONE DISCUSSIONS
- CONDUCT EXPERT INTERVIEWS
- CONDUCT FOCUS GROUP DISCUSSIONS (FGDS)
- CONDUCT COOKSTOVE PERFORMANCE TESTS WITH USERS IN THE FIELD TO ENSURE PERFORMANCE
- OBSERVE WOMEN COOKING ON BOTH THEIR TRADITIONAL COOKSTOVE AND WITH THE IMPROVED MODELS
- CONDUCT COOKSTOVE FIELD TRIALS (AKA IN-HOME TRIALS) AND GATHER FEEDBACK
- INCLUDE WOMEN IN THE DESIGN OF AESTHETICS

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: EcoZoom

IMPACT BY THE NUMBERS

- Over 90,000 stoves sold in 18 developing countries in 2.5 years
- High priority countries include: Mexico, Kenya, Rwanda, and Nigeria

ECONOMIC AND LIVELIHOOD

- Kenya: average 54% fuel savings
- Mexico: average 55% fuel savings
- Rwanda: average 62.2% fuel savings
- Nigeria: average 50 – 55% fuel savings

EcoZoom is a social enterprise and certified B Corp[8] working to make improved cookstoves accessible and affordable in developing countries. EcoZoom has the exclusive rights to internationally distribute cookstoves engineered by the Aprovecho Research Center, a leader in the design, engineering and testing of improved cookstoves.

The EcoZoom cookstove is based on the 'rocket' concept and has an internal chimney that directs air through the burning fuel and mixes gases and flames above it. In most cases, the cookstove is manufactured in a Chinese factory and then transported to the identified market as a finished product. They are also piloting approaches with local assembly in order to reduce import tariffs and create local jobs. EcoZoom combines laboratory research with field testing to create market-appropriate cookstove models that meet consumer needs. The base product can be modified to fit women users' preferences in design and use, which increases acceptance and uptake. EcoZoom consults local women to customize the cookstove to their needs and preferences.

Product Design Process

EcoZoom uses a five-step approach to product design to ensure its cookstoves are market relevant.

- **Step 1: Market Need.** Assess the current cooking situation including examining fuel used, food cooked, pots used, money and time spent on fuel, health impacts, currently available cooking options, etc.
- **Step 2: Lab Design & Test.** Create a fully functional prototype that is fuel efficient and reduces emissions.
- **Step 3: Field Test.** Take the cookstove into the field and see how women react, examining what works well and what does not. Compare field and lab results.
- **Step 4: Modify.** Work with cooks to modify the product to fit their needs, making sure not to compromise fuel efficiency or emissions reductions.
- **Step 5: Manufacture.** Create the engineering drawings; for iterations that meet specific consumer needs, add an updated drawing with a part specific change request form. Obtain any additional tooling or machines necessary.

Within this approach, women play central roles in product design and modification. Some of the methods that EcoZoom employs to engage women include:

- **FOCUS GROUP DISCUSSIONS (FGDS)** led by EcoZoom's partners to explore market needs and design concepts both with women-only and mixed gender groups.
- **CONTROLLED COOKING TESTS (CCTS)** for field testing functionality and efficiency.
- **IN-HOME COOKSTOVE TRIALS** held for field testing functionality and efficiency with five to ten women cooks who use the cookstove prototype in their home for one to two months. They make frequent visits to the homes to monitor use and check in with the women cooks.
- *Small-scale pilots* implemented for field testing and making modifications generally include 100 to 500 cookstoves given to women cooks to use in their homes over an identified period of time. The small-scale pilots are similar to the in-home cookstove trials, but there is less attention paid to each individual household. The pilots are used to gather data from a large base of cooks and reveal any trends to inform future modifications.
- **ONE-ON-ONE DISCUSSIONS** held with the women cooks to modify and create improvements to the cookstove. To ensure accurate information is obtained, EcoZoom utilizes the following techniques:
  - Explain that both positive and negative feedback is encouraged and that there is no right or wrong answer.
  - Ask the same questions to different groups of women; look for consistent answers across groups.
  - Establish trust up front by continually listening and not dominating the conversation so that women feel comfortable giving an honest opinion.
  - Phrase questions carefully and ask the same questions in different ways.
  - Engage with a trusted third party in the community to ask the questions and lead discussions.

This process was used to create EcoZoom's newest cookstove—the Zoom *Plancha* and the Zoom Jet.

The Zoom *Plancha*

The Zoom *Plancha* was first introduced in Mexico through a pilot project of 10,000 cookstoves conducted with the Mexican government. The Zoom *Plancha* prototype was created by combining EcoZoom's efficiency and health requirements with those from the Mexican government, including safety, efficiency, and the ability to cook two dishes and tortillas at the same time. Guided by the involvement of women participating in the in-home trials over a two-month period, the Zoom *Plancha* underwent several iterations to become the *La Mera Mera* cookstove.

Improvements made based off of women's feedback included adding a tool to easily remove the top from the *plancha* to provide direct access to the flame and renaming it, *La Mera Mera*, which has a significant cultural meaning in the market. *La Mera Mera* means "the all-knowing woman" or "the matriarch of the house". The reported uptake of *La Mera Mera* has varied between 65 and 97 percent. The project has increased from an initial 10,000 cookstove pilot to 22,134 cookstoves mostly due to the demand created by the cooks themselves.

The Zoom Jet

EcoZoom piloted the Zoom Jet cookstove in Kenya, Senegal, Nigeria, Zambia, Rwanda, and Haiti with eight local partners. Over a 12-month period, EcoZoom gathered feedback from partners and worked with cooks to redesign the prototype. The process involved 22 FGDs, 14 CCTs, 2 in-home trials and over 230 women participants. Through the pilot, EcoZoom received both positive and negative feedback on the cookstove design.

Photos: EcoZoom

Example Positive Feedback:

- Like the attractive, modern appearance of the cookstove.
- Looks like it is high-quality and made of expensive materials.
- Cooks fast and uses a small amount of charcoal.
- Strong enough to support large cooking pots.

Example Negative Feedback:

- Handles are too weak to support the weight of the cookstove.
- Weakness and shape of the handles does not enable shaking of the cookstove while cooking.
- It is difficult to remove ashes while cooking.

After analyzing all the feedback from cooks and other market data, EcoZoom decided to make Kenya the lead market for this product, working with cooks in Nairobi who participated in the pilot to make modifications to improve the prototype. This process involved visiting cooks in their homes, observing them cook using the prototype, gathering their immediate feedback, drawing improvements on the spot, and creating samples to test.

EcoZoom made some critical improvements based on the women's feedback, such as the inclusion of solid slate handles with silicon grips that enable easy shaking while cooking and ensuring handles remain cool to the touch. They also added a removable ashtray that is inserted after the cookstove is lit. The ashtray allows for safe removal of ashes while cooking without have to take the pot off the cookstove.

Other Example Design Modifications

- In Nigeria, EcoZoom privately labeled its Zoom Dura wood cookstoves for the distributor. The distribution partner thought his brand would be more recognizable and trusted. The Nigerian cookstove was named the *Fast Fire*, as consumers were attracted to the cooking speed.
- Also in Nigeria, EcoZoom imported the cookstoves partially assembled in order to access lower import duties, as well as to create local livelihoods.
- In Rwanda, EcoZoom modified its Zoom Dura to have a larger cooktop to accommodate the bigger pots used in the country's rural areas.

Engaging Men

As EcoZoom works in different countries and regions, they work to understand the different gender roles before working with the community. Cultural and societal norms often require men's participation and buy-in in order for women to be able to participate in the product design process outlined above. EcoZoom always approaches the male village leaders before speaking or working with the community. EcoZoom often engages men in one-on-one discussions and encourages their participation at field testing activities. EcoZoom also ensures both men and women in the household are comfortable if participating in in-home trials or small-scale pilots.

One Woman's Story

Meet Peninah Nabwire – Design Connoisseur

Kenya is home to roughly 40 million people, a majority of whom live in rural areas.[9] In these rural areas, over 95 percent of the population uses solid fuels for cooking, with more than 21 million people suffering from health issues caused by household air pollution (HAP), the second leading cause of premature death in the country.[10] [11]

Women are responsible for collecting firewood in increasingly deforested rural areas and cook in smoke-filled homes over traditional three stone fires.

Peninah Nabwire is a 48-year-old mother of eight. She received a Zoom Jet prototype cookstove from the Paradigm Project, EcoZoom's Kenyan partner, as part of a 12-month pilot project. After the trial period concluded, Peninah was allowed to keep the cookstove in exchange for her participation in the pilot.

Later that year, EcoZoom visited Kenya again to gather suggestions from the cooks for improvements to the prototype. Peninah agreed to continue her involvement and allowed EcoZoom and its industrial designer to visit her on several occasions for one-on-one discussions. Being a respected woman in her community, and with the active support of her husband, Peninah hosted an FGD at her home so that EcoZoom could gather user input.

Peninah was open, honest, and patient as EcoZoom worked through various scenarios of product modifications for enhanced usability. By holding the FGD in her home with ten of her friends, trust was immediately established among the participants and with the EcoZoom team. When EcoZoom last visited Peninah in June of 2013, she was still using her cookstove and even loaning it to friends so they too could save money on charcoal. Her active involvement and thoughtful contributions were central to the process of taking a laboratory prototype and turning into a truly user-approved product.

Peninah not only gave EcoZoom valuable input, but she has also become a local brand advocate, as one of the thousands of women using the Zoom Jet. With 54 percent greater efficiency than her traditional cookstove and a seven percent savings in cooking time, Peninah, like many other mothers and wives in her community, now has time for completing additional household chores, participating in other income-generation activities, and spending time with her family and friends.

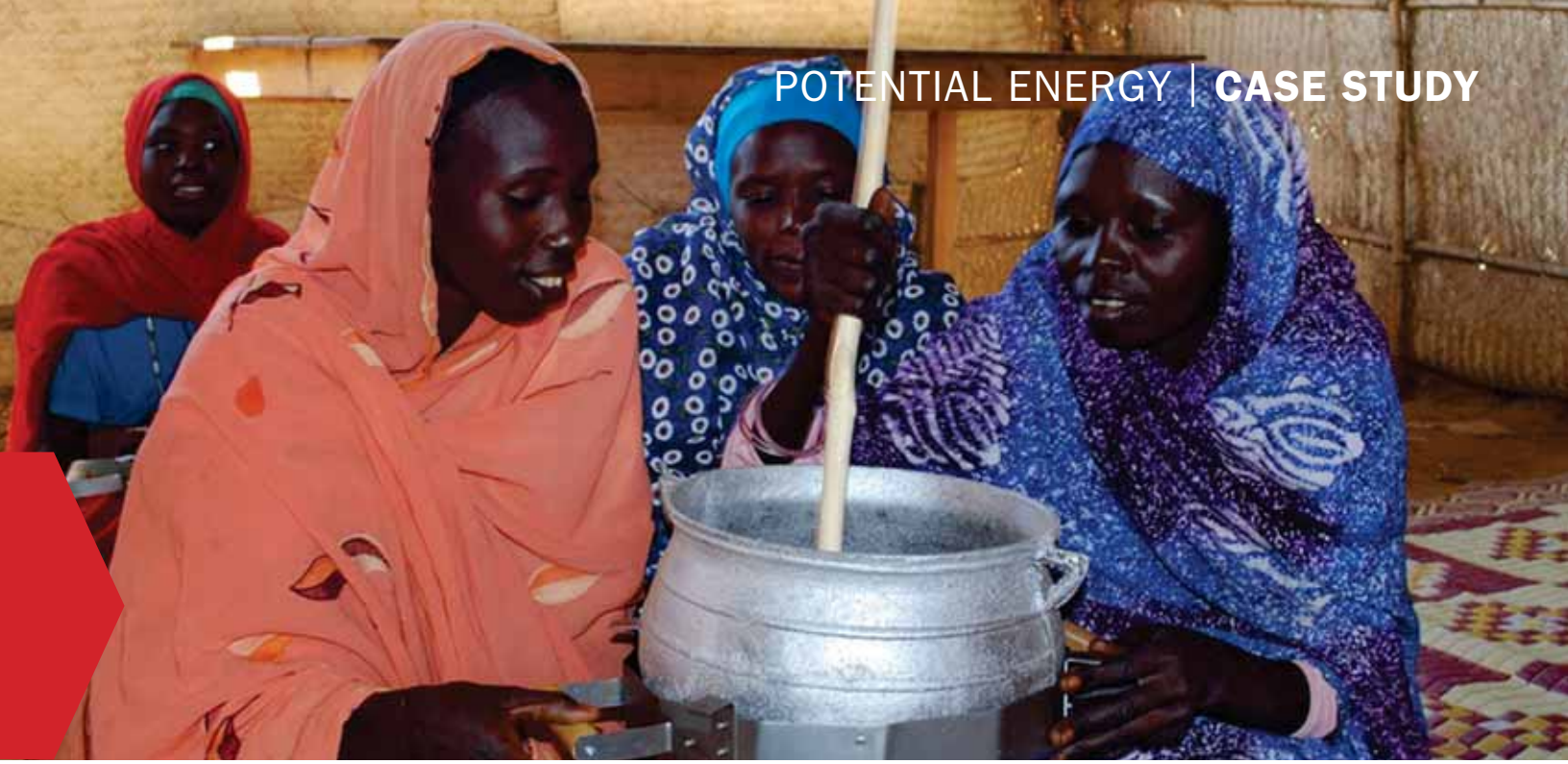

Photo: Lawrence Berkeley National Laboratory (LBNL)

potential energy

IMPACT BY THE NUMBERS

- Over 32,000 cookstoves have been distributed in Darfur, impacting over 150,000 people
- Surveys reveal 100% of households are using their improved cookstove with 44% of households using it exclusively. The remaining use the improved cookstove with another cookstove[2]
- 80% of cookstove users now purchase firewood from vendors instead of collecting it in dangerous areas
- Carbon monoxide reduced by half that of traditional fires
- Each cookstove saves 1.5 metric tons of CO2/ year

ECONOMIC AND LIVELIHOOD

- Families save $0.95 per day on firewood expenses, and over the 5 year lifetime of the cookstove, the cookstoves will save families ~ $1,700
- Collective savings to date: ~ $38 million
- 12 local workers employed in Darfur cookstove assembly shop

Potential Energy, formerly the Berkeley Darfur Cookstoves Project, is a non-governmental organization (NGO) in the process of becoming a social enterprise dedicated to bringing fuel efficient cookstoves to the most vulnerable populations. Potential Energy is a cookstove manufacturer and distributor, and serves as a bridge between laboratory research and field experiences.

The conflict in Darfur has claimed over 400,000 lives and over 2,500,000 people have been forced from their homes.[12] Many of these internally displaced people (IDP) live in camps throughout the country where they receive food aid, but are forced to gather firewood for fuel, which is increasingly scarce. Often a woman's responsibility, collecting firewood can take up to seven hours per day and is considered extremely dangerous.[13]

In 2005, Potential Energy and scientists from the US-based Lawrence Berkeley National Laboratory implemented a user-centered process to design a cookstove specifically for the Darfuri people. By working in close collaboration with the women and analyzing the local environmental conditions, the original prototype has gone through more than 14 iterations over several years. Over 32,000 cookstoves have been distributed in Darfur with programs now extending into Ethiopia.[14]

Women Energize Design

In 2005, a team of researchers went to Darfur to review and analyze a variety of existing prototypes as a starting point for the Berkeley-Darfur Stove. Three metal designs and two mud designs were tested in the Darfur IDP camps for their suitability to substantially reduce the fuel needs of IDPs. The team conducted a comparison of the improved cookstoves and gathered data on the cooking methods, food, fuel use, fuel collection, local material availability, and relevant aspects of the culture, through several steps:

1. **CONDUCTED COOKING DEMONSTRATIONS** in women's centers, comparing different designs to the traditional cookstove, the *ladaya*.
2. **EXPERT INTERVIEWS** were held with NGOs, multilateral agencies, and consultants who were working in the camps to get their perceptions of the impacts from fuel shortages, as well as ideas for solutions.
3. In South Darfur, **INFORMAL SURVEYS** of 50 IDP households were conducted. The informal surveys included 30 questions about family size, types and quantities of meals and tea prepared per day, fuel usage and type of fuel, fuel gathering activities, quantity of family resources dedicated to buying or bartering for fuel, income generation activities, and current cookstove and pot usage.
4. **COOKSTOVE FUEL EFFICIENCY** tests were conducted on the different designs.

The team found that the most suitable model for Darfuri conditions was the *Tara* metal cookstove developed in India. The *Tara* cookstove could save 50 percent of fuel when used correctly and would cost less than $10 to produce in Darfur. While it was the model that came the closest to meeting the needs of the users, the team found that it still needed to be modified for the food, cooking style, pot shapes, and environment in Darfur, particularly the high winds and sandy conditions.

Researchers traveled back and forth to Darfur over three years to test the modified prototypes and continue to take design assessments. Alterations were made after each field visit assessment and were tested in the lab for efficiency. Some of the techniques to assess and further develop the prototype included:

- **COOKSTOVE TECHNICAL FIELD TRIALS:** The women were trained in efficient fire-tending techniques and used the cookstoves for their daily cooking for several weeks. The families were visited by staff and asked about the ease of use, ability to cook food, amount of wood saved, and overall satisfaction.

SOME OF THE DESIGN MODIFICATIONS INCLUDED:

- A tapered wind collar that increases fuel efficiency in the windy Darfur environment and allows for multiple pot sizes.
- Wooden handles for easy handling.
- Metal tabs to accommodate flat plates for baking bread.
- Feet for stability with optional stakes for additional steadiness to withstand vigorous stirring.
- Small firebox opening to prevent fuel waste.

- **HOUSEHOLD SURVEYS** and **COOKING OBSERVATION:** Household surveys gathered basic information on traditional cooking and the cooking observations helped the team understand how the cooks were interacting with the cookstove.
- **EXPERT INTERVIEWS** continued.

Engaging men

It is imperative that men are engaged throughout the cookstove development process so that they do not feel threatened or left out. In the IDP camps in particular it was not possible for the Potential Energy team to walk from home to home to visit the women who have cookstoves unless there was a man accompanying them.

In all settings in Sudan where they work it is important to talk to the women alone or in women-only groups, as Potential Energy found that men may try to answer questions for the women, which impedes their ability to receive accurate information. Potential Energy addresses these gender dynamics by using teams of two (one male and one female) to conduct surveys with and cooking observations of local women. The male team member consults with the men outside of the home while the female team member consults with the women inside the home. For larger group discussions, the staff will often begin the meetings with both women and men and then separate into single-sex groups to continue the dialogue.

Men often control the purchase decisions and therefore must understand and value the benefits of using the improved cookstove. In the group meetings, different benefits are emphasized with each gender. For example, the money savings from fuel efficiency is strongly emphasized in the men's group discussions because they have indicated that economic savings are a huge driver for adoption.

One Woman's Story

Meet Wudeh – Lighting Up Design Ideas

Over 95 percent of the population in Ethiopia cooks using solid fuels.[11] HAP contributes to widespread health problems including respiratory illness, which causes 12.7 percent of all premature deaths in Ethiopia.[15] Wudeh lives in rural Meki, a town about three hours driving distance from Addis Ababa, Ethiopia, where her family earns a small income as farmers. She lives with her husband, two children, and another relative in a thatched-roof house made of mud and straw. Wudeh has long spent many hours every day collecting fuel and cooking over a simple, wood-burning cookstove inside her home where there is no ventilation. While she recognized that the smoke emitted from her homemade clay cookstove caused health issues, she was not sure how to resolve the problem. Her young daughter often needed medication to treat eye infections and chronic coughing from the daily exposure to the clouds of smoke.

Potential Energy is currently modifying their improved cookstove prototype in Ethiopia and is implementing a design approach similar to their work in Darfur. Wudeh was selected to cook during one of Potential Energy's community cookstove demonstrations. She used a version of the Berkeley-Ethiopia Stove to cook the traditional Ethiopian dish, *shiro wot* (ground lentil and chickpea stew) while her friend used Wudeh's traditional cookstove. The participants in the cookstove demonstration were excited about the reduction in smoke when cooking on the improved cookstove and discussed how they too suffered from health issues related to having smoke wafting in their homes.

During the demonstrations, Wudeh shared her concern that if she created an opening in her home to improve ventilation hyenas might be able to enter her house at night and attack her children and animals. During informal interviews with the Potential Energy staff, she discussed how her traditional clay cookstove cracks and needs to be patched often. She also provided feedback that she really liked how the improved cookstove could accommodate many different pot sizes so that it could be used on a daily basis, as well as for bigger holiday meals.

Potential Energy had been considering clay as a less expensive material to replace some of the metal cookstove parts, but after hearing Wudeh and her peers voice concerns about the durability of clay, they decided not to use it. Her participation in the cookstove demonstrations and specific feedback, combined with many other women users' opinions, guided Potential Energy's approach to balancing the cost of the cookstove with the real concerns from the users on durability, ease of use, reduction of smoke, and fuel efficiency.[16]

Photo: Potential Energy

Expert Interview

Women are Central to Cookstove Design in Refugee and IDP Camps

Interview with Vahid Jahangiri, Deputy Director, International Lifeline Fund

International Lifeline Fund (ILF) is a U.S.-based NGO founded in 2003 whose mission is to reduce human suffering through programs and activities that generate the greatest possible impact at the lowest possible cost. Since 2006, ILF has been implementing improved cookstove programs in IDP/refugees camps and distressed villages in Uganda, Darfur, Kenya, Tanzania, and Haiti. Vahid Jahangiri led ILF's original cookstove program in Darfur and has worked in refugee and IDP settings for over ten years. He has managed improved cookstove programs in Northern Uganda, Haiti, Kenya, and South Sudan. Jahangiri regularly designs and implements projects for the United Nations High Commissioner for Refugees and the World Food Programme.

How do you engage refugee women in cookstove design and what are some specific practices you utilize?

Women are crucial in design. The most important thing is to establish trust with the women's groups and the women in the households. People can get tired of NGOs asking them questions. They say yes to everything because if they disagree or provide criticism, they think they may not receive something.

Photo: International Lifeline Fund

In Darfur, I first met with the women's groups and their leaders. They are the ones the women look up to so you need to go through the women's group leaders, either formally or informally. With women's groups we do **FGDS** to discuss cooking practices and challenges; then **CCTS**, where we test different designs of cookstoves with them. We find out what they like, what they do not like, and what can change or be added.

Do you have a strategy to engage men to ensure women are able to participate in design or production processes?

It all has to do with culture, community, and context. In Darfur, all of the local leaders are men. You have to go through them. Make sure the men do not feel threatened and that they are comfortable working with your team.

How do women help you overcome design and adoption challenges?

We utilize art to make the cookstoves more appealing and to establish trust. In Darfur, we gave the women paint to do tribal paintings on the cookstoves, which made them more likely to use them in their kitchens. Now they do not see it as another mud stove, but rather something nice for their home. This helps a lot in a refugee setting; it makes people open up.

The most important thing for us is that when we think of these women, we cannot just think of them women as being able to merely exist; we need them to live their lives fully. It is very important to design your program in such a way that it facilitates a much better living environment.

Photo: International Lifeline Fund

Product Design Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Conduct household questionnaires and surveys, as well as one-on-one discussions	■ Household questionnaires/ surveys will establish a baseline understanding of the needs of the community-at-large, specifically honing into the women users' preferences. Surveys should always be conducted in line with gender-sensitive techniques to ensure that respondents feel comfortable answering honestly and openly. ■ One-on-one discussions can help to learn more about a woman and her needs. Having women share stories can help them to open up.
Conduct expert interviews	■ Experts can provide in-depth information about the history of a particular community or topic; how the introduction of products might affect a community, ideas for implementation of solutions, and information about technologies already in existence. ■ Experts can include staff of NGOs, CBOs, and government agencies, local leaders, and improved cooking practitioners. Key stakeholders will add to baseline understanding, share historical and institutional information, and can become advocates for products in later stages of promotion and marketing.
Conduct focus group discussions (FGDs)	■ FGDs are facilitated, structured group discussions on cooking/ health with local people and stakeholders that are critical for gathering information and feedback. ■ Hold at least one pre-intervention and one post-intervention.
Conduct cookstove performance tests with users in the field to ensure performance	Conducting cooking performance tests that involve women using the cookstove in realistic or partially controlled settings can help practitioners compare cookstoves and gather valuable data on whether the prototype is performing in the field as expected. Common tests include: ■ Kitchen Performance Test (KPT) ■ Controlled Cooking Test (CCT) ■ Water Boiling Test (WBT) ■ Biomass Stove Safety Protocol (BSSP)
Observe women cooking on both their traditional cookstove and with the improved models	■ Observing women users cooking can enhance understanding of design requirements, as well as allow women to provide feedback both nonverbally and verbally through interacting with prototypes. ■ This can be conducted at the same time as cookstove performance tests.
Conduct cookstove field trials (aka in-home trials) and gather feedback	■ Have women use the prototype in their homes for their daily cooking needs for an identified short period of time. ■ Return periodically and talk with the cook as well as the rest of the family; speak with the men and women separately if possible. ■ Women may have more detailed and concrete feedback when given extended opportunities to use the cookstoves. ■ This can be conducted at the same time as a KPT.
Include women in the design of aesthetics	Women will be more inclined to use the product if it is attractive and they have an opportunity to design the appearance.

CHALLENGES ADDRESSED	TOOLS AND RESOURCES
■ Little is known about the community's perceptions of cooking and fuel issues and it is not clear what types of technologies and solutions they are most likely to adopt.	Household Questionnaire (Practical Action) *Methods/ tips:* Human-Centered Design Toolkit (IDEO) – Interview techniques (page 65) – Share stories (page 92) – Tips: Conversation (page 161) – Tips: Documentation (page 164)
■ Little is known about the community's perceptions of cooking and fuel issues and it is not clear what types of technologies and solutions they are most likely to adopt.	Interview Checklist with Key Stakeholders (Practical Action) NGO Questionnaire (Potential Energy)
■ Little is known about the community's perceptions of cooking and fuel issues and it is not clear what types of technologies and solutions they are most likely to adopt.	Focus Group Discussion (FGD) Questionnaire (Practical Action)
■ User feedback and preferences can be at odds with optimal performance for reduced emissions and increased efficiency and engineers are not sure if new or modified models with promising laboratory testing results still meet the minimum performance requirements.	Testing Protocols (Global Alliance for Clean Cookstoves)
■ Women are struggling to give concrete feedback on how the cookstove does not meet their needs.	Cooking Observation Checklist (Potential Energy) *Methods/ tips:* Human-Centered Design (IDEO) – Mindset: Observe vs. Interpret (pg 68) – Tips: Observation (pg 160)
■ Women are struggling to give concrete feedback on how the cookstove does not meet their needs.	*Questions to adapt and help guide discussion with cooks*: Household Questionnaire—Part C (Practical Action) – *Methods/ tips:* Human-Centered Design Toolkit (IDEO) – Gather Feedback (pg 108) – Tips: Conversation (pg 161)
■ Women do not find the cookstove attractive and do not want it in their kitchens.	*See International Lifeline Fund, Interview Spotlight: Creative Art*

Photo: Global Alliance for Clean Cookstoves

Production

There has been significant progress in the production of clean cookstoves over the past several decades. Manufacturing processes have shifted from primarily artisanal production of simple clay cookstoves to a wide variety of technology types. Local artisanal production is still commonly used, but now includes better quality control measures, including the integration of simple mechanized processes. The industry is also building sophisticated, mass manufacturing capabilities by using large production facilities in China, India, and Kenya. At the same time, creation of local livelihoods, and at the very least minimizing job displacement, should be an important consideration in any project. Innovative hybrid approaches, such as building local factories and importing flat packs that can be assembled locally, are now being applied to produce clean cookstoves. Production of cleaner fuels, like biomass briquettes and green charcoal, provide livelihood opportunities that are particularly well-suited for women, who often have large networks in the community and provide a steady stream of income from sales.

WOMEN CAN BE ECONOMICALLY EMPOWERED IN THE PRODUCTION OF CLEAN COOKSTOVES. Due to gender norms in some countries, mass manufacturing processes often have fewer opportunities to engage women. However, there are multiple income-generation opportunities for women in local production, assembly, and installation. In many societies, women are traditionally involved in ceramics and pottery, and their skills can be utilized to produce clay cookstoves, cookstove liners, or combustion chambers to be inserted inside metal cookstoves. Women are also able to earn income in cookstove installation in homes. Women may face more obstacles in assembling complex cookstoves, as they sometimes lack more advanced technical understanding. In some countries, women are not historically employed in construction and metals work; therefore it may be more challenging to incorporate women directly into these production processes.

Women are continually adopting nontraditional work roles in the energy sector as access to education, training, and technology increases. The clean cooking sector should take advantage of these cultural shifts. It is important that men are involved to ensure their inputs are understood and that they are supportive of including women within production activities and livelihoods.

There are a number of best practices that can be applied when working to include women and increase empowerment opportunities in the production of clean cooking products. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **production best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in Production:

- **INTEGRATE LIVELIHOOD OPPORTUNITIES FOR WOMEN IN PRODUCTION PROCESSES THAT INVOLVE PRODUCING COMPONENTS LOCALLY, SUCH AS COMBUSTION CHAMBERS AND LINERS**
- **WORK WITH WOMEN'S GROUPS OR CREATE GROUPS OF WOMEN TO SCALE EFFORTS, BUILD CAPACITY, AND PROVIDE A SUPPORT SYSTEM**
- **PROVIDE TRAINING ON QUALITY CONTROL ASSURANCE AND QUALITY CONTROL; PROVIDE PRODUCTION MANUALS**

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: Global Alliance for Clean Cookstoves

Photo: ICSEE

MAASAI
STOVES & SOLAR
The International Collaborative

IMPACT BY THE NUMBERS

- 680 stoves installed in 7 villages
- Efficiency of the cookstove is 24%
- Reduction in emissions of 3.6 metric tons of carbon dioxide per stove per year
- Indoor average carbon monoxide reduced from 145 ppm to 18 ppm, ~ 88% reduction
- Indoor average particulate matter reduced from 2600 to 250 micrograms per meter cubed ~ 90% reduction

ECONOMIC AND LIVELIHOOD

- 75 women generating income as stove installers
- 4 male employees earning full time salaries in production facilities
- 120 pounds of firewood/ week saved from each stove, equating to 10–12 hours freed for women in reduced firewood collection

The International Collaborative for Science, Education and Environment (ICSEE) aims to provide a better, healthier life for rural populations and a cleaner environment for all, by creating and enhancing clean cooking solutions. Implementing a women-centered approach has helped ICSEE to achieve high adoption rates of the improved cookstoves developed and sold by its Maasai Stoves & Solar Project, launched in 2009. One of their top priorities is the involvement of community members, especially women, in the design and manufacturing processes in order to ensure that the cookstoves meet consumer preferences. This approach is stimulating the local economy, empowering women, and enhancing livelihoods. Random sample surveys of the Maasai Stoves & Solar Project showed that all households were still using the cookstoves after more than two years.

Photo: ICSEE

Women Design Cookstoves that Meet their Needs

Women are the most critical piece in the cookstove design puzzle. After initial discussions and design feedback from twelve men and women in the 50 household Monduli Juu village, a prototype was created and tested for emissions and efficiency. ICSEE staff conducted KPTs to measure efficiency and the amount of firewood reduced through cookstove use. The prototype was then installed in several homes and the women continued to provide feedback to ICSEE staff until reaching a final design in 2011.

KEY PRIORITIES IDENTIFIED BY THE WOMEN USERS INCLUDED:

- Ability to use pots of various sizes and ability to stir food vigorously.
  - *Design feature*: Holes for the pots are made to snugly fit different shapes and sizes and the stove top has a steel rim to allow the cooks to brace pots with wood or stone wedges so the pot remains stable during vigorous stirring.
- Protect children from burns when near the cookstove.
  - *Design feature:* The sides of the cookstove are insulated to prevent burns.
- Comfort while cooking in a typical cooking position.
  - *Design feature*: The cookstove is low to the floor so women can sit on their stools in the preferred cooking position.

All manufacturing of the cookstove components is done locally—the bricks are made by a local business and the steel sheeting for the fireboxes is bought from local merchants before being cut and welded in ICSEE's local factory. ICSEE employs around 20 local staff at any given time working in the factory and oversees the installers in each village.

Women Employees Lead and Manage Installation of Cooking Solutions

Traditional Maasai homes are windowless with only one small opening at the entrance, making chimneys critical devices for removing smoke from the home. While at first ICSEE saw installation as a potentially difficult logistical challenge, they soon realized it was a great opportunity to **ENGAGE WOMEN AS INSTALLERS** and to provide an income-generation opportunity.

Today there are approximately 75 women distributors and installers working in seven villages. The women are diverse in age and education level and most are married. The **WOMEN INSTALLERS WORK IN GROUPS** of 5 to 10, the members of which are self-selected during a meeting of all the women in the village. Within these groups, the women elect their own leaders and manage the installations.

WOMEN ARE TRAINED over ten days by other Maasai women to install the cookstoves. The women who travel to new villages to conduct the trainings earn $13 per day and have their expenses covered by ICSEE, while the trainees receive $7 per day for attending. The women assemble the cookstoves in homes of customers in the village by laying bricks for the chimney, cutting a hole through the roof, and mounting the firebox. The team of installers earns $13 to be divided among the three to five members participating in the installation that day. The seven current teams install about 25 cookstoves per week, making approximately $325 per week. Each team leader works with local ICSEE staff who arrange for the materials to be delivered to the customer's home and pay the women once installation is completed. If sales are low in a particular village, a meeting will be arranged to discuss the challenges and develop solutions.

Engaging Men

In the patriarchal Maasai society, it is necessary to engage men throughout the project. By bringing them into the process and soliciting their advice and opinions, men were more supportive of their wives and daughters' participation. Although men were initially involved in the design process, many did not participate throughout. However they were supportive of the women, most of whom remained engaged. Men also helped with the transportation of materials and products because Maasai women are not permitted to drive.

Raising men's awareness of the benefits of improved cookstoves has been critical as they are often in control of income and large purchase decisions. Men from families that have purchased an improved cookstove are asked to talk to the men who have not yet purchased a cookstove about the many benefits of adopting the technology. Female teams may also encourage men to buy improved cookstoves.

One Woman's Story

Photo: Olivia Winokur

Meet Martha Lobulu – A Maasai Woman Leading Change in her Community

Martha Lobulu is a 39-year-old Maasai woman living in remote and rural Tanzania, far off the electrical grid, in an area facing long-term drought and increasing deforestation. The pastoral Maasai live in small, mud homes with no ventilation causing their exposure to HAP from traditional fires to be more than 35 times the World Health Organization standard. Carbon monoxide poisoning in the community is very high, causing symptoms of severe anemia in mothers and their children.[17] Martha's four children have long suffered from coughing and severe bronchial ailments associated with the smoke that often filled the family's home.

Completing primary school before she was married at age 15, Martha is now a recognized leader in her village of Esilalei. She is the leader of a cookstove installation team, as well as the chairperson of the Esilalei Women's Association of the CCM, a national political party that holds the majority in the Parliament, making her one of the few women serving on the village's governing committee.

As a team leader, Martha not only directs and organizes the women installers in her community, but also travels to other communities in the Monduli district to train teams. Martha is an active problem solver and is effective at leading various teams in overcoming challenges. As Martha is well-respected in her own community and beyond, she was one of three women elected by colleagues to travel to Western Uganda to participate in a cookstoves demonstration for the Batwa People.

Martha serves as an inspiration to other Maasai women, as she has taken control of her own future while leading her family, community, and surrounding villages towards cleaner homes and healthier lives. Furthermore, her income allows her to support herself and her family. A man of great understanding, Martha's husband has been important in her development as a leader by encouraging and supporting his wife's role in the community.

Now cooking in a home with visibly less smoke, Martha has reduced her own wood use by half, saving considerable time on fuel collection. By contributing directly to the production and installation of improved cookstoves, Martha and her fellow female installers have increased confidence and understanding of the health issues related to HAP.[18]

Photo: Global Alliance for Clean Cookstoves

IMPACT BY THE NUMBERS

- Over 450,000 Neang Kongrey Stove (NKS) sold
- Approximately 8,000 NKS are disseminated each month
- Each NKS stove can reduce .3 to .5 tons of CO2 per year

ECONOMIC AND LIVELIHOOD

- The NKS consumes 22% less fuelwood than traditional cookstoves
- 18 days of fuelwood collection saved per year by each family
- 30 women potters make a monthly income of ~ $70, a 61% increase in average daily income

Group Energies Renouvelables, Environnement et Solidarité (GERES) is a French NGO dedicated to implementing energy solutions to improve people's living conditions in Southeast Asia. In 1997 GERES began the Cambodian Fuelwood Saving Project in urban areas of Cambodia and developed and distributed the New Lao Stove (NLS). Despite adoption in urban areas, high prices and the lack of a wide distribution network kept rural adoption low. GERES recognized the need to develop an improved cookstove for rural users and worked with women potters to develop the Neang Kongrey Stove (NKS) in 2003. The production of the two cookstoves differs widely. Although both emphasize women's involvement, the NLS is mass-produced in a factory, while the NKS is produced by women potters in their homes. The rural NKS program has effectively utilized women's traditional skills in pottery while training the local women in quality control and enterprise development to produce and disseminate over 450,000 improved cookstoves.

Two Models Meet the Different Needs of Rural and Urban Users

The NLS was introduced by GERES in the late 1990s. It is made by potters and has metal cladding and insulation to increase durability. It lasts up to three years and costs $3.50 to $5.00. The NLS is manufactured in 40 production facilities in Cambodia's main provinces, half of which are owned by women. Women are also the main retailers. Over 2 million of these cookstoves were sold between May 2003 and December 2012.

The NKS prototype was validated in 2004 and was originally **PRODUCED BY WOMEN CLAY POTTERS** who were trained by GERES. The production process utilizes the same skills that traditional potters already have. It is made from a fine, coarse clay, a material already used for production of traditional cookstoves. It lasts between 1–2 years and costs approximately $1.50.

Rural Production Process

GERES held an open call for interested producers to participate in a **TRAINING PROGRAM** to learn how to make the NKS. It generated high levels of interest and ten women were selected to join. The women were paid a daily allowance so that they could earn income while away from their regular income-generating activities. The training covered these topics:

- **PRODUCTION:** The women learned how to mold the cookstove body, how to use a pallet to dry the cookstove, and how to arrange the cookstove for drying and carving. While the potters were familiar with these techniques already, they did not have sufficient knowledge to manage the production process to optimize time and effort.
- **BOOKKEEPING AND FINANCIAL MANAGEMENT:** The women rotated duties, with each woman playing the part of production "administrator" for seven days. In this role, the women collected money from cookstove buyers, oversaw costs and payment for production materials, and paid other women potters.
- **SAVINGS:** Women were paid depending on the number of cookstoves they made and received a small additional sum per cookstove to put in a savings account. Part of the training program involved the women opening bank accounts and being taught about the fundamentals of saving. They could only withdraw money from the savings account that had been deposited for over a year.
- **STOCK MANAGEMENT:** The women were taught about the correct clay mixture, supplies required to produce a cookstove, and how to place orders for any needed supplies. It was an additional task of the weekly administrator to contact and inform distributors about the available improved cookstove stock. On the assigned date for selling the cookstoves to distributors, the administrators were responsible for recording the quantity sold.

The production of the NKS was divided into steps (e.g. mixing the clay and sand, molding the cookstove body, punching the holes on the grate, etc.) and the women were paid a certain amount per step completed—the value based on the time, skills utilized, and labor intensity—allowing women to earn a daily income.

In order to distribute cookstoves throughout four Cambodian provinces, GERES partnered with five local NGOs. The NGOs identified the villages, oversaw payment schemes (which differed by village), and selected retailers. The retailers were wives of village officials, female leaders or members of community-based organizations (CBOs), female vendors of village grocery shops, and entrepreneurs.

Village grocery stores were the main outlet for sales and offered visibility, as grocery stores are the nucleus of village activity and women are regular visitors. Demonstration stations were also set up at various grocery stores. Female heads of Village Development Committees (VDCs) played an important role in awareness raising by holding cooking demonstrations and discussions. Deferred payment plans were instituted by VDCs across various villages.

Addressing Quality and Consistency in the NKS Pilot

One challenge in the pilot was the limited availability and inconsistent quality of the NKS, which was likely due to production capacity limitations of the producers. In response to this issue, GERES created a **MODEL PRODUCTION FACILITY** in an area with many potters and traditional cookstove small and medium enterprises (SMEs) interested in NKS production. The facility developed and tested technologies and production techniques, developed **QUALITY CONTROLS FOR PRODUCTION**, trained producers in management and marketing, evaluated manufacturing processes, and prepared for scaling up. In order to further improve quality and uniformity, they are now introducing new technology for quality control, including a mechanical mixer, internal mold, and modern kilns.

At the facility, women are now trained in production techniques, proper documentation, production management, bookkeeping, finance, understanding technical drawings, national monitoring standards, and how to use templates and molds. Approximately 30 additional women have been trained since 2008 and more continue to be trained. It now has local employees who oversee the materials and cookstove sales and help female producers in the nearby area with any challenges.

Allowing Flexibility:

Once they complete the training, the women can produce the cookstoves at their homes. This creates a **FLEXIBLE WORK SCHEDULE** so they can complete their household responsibilities while also producing cookstoves. Additionally, because they are also using the NKS in their own homes, the time saved in firewood collection allows additional time for other pursuits, including cookstove production. To produce the cookstoves at home, the women need a well-ventilated lit area with a molding platform and drying area and space to keep temporary stock. As many families in the province are potters, this is usually easy to arrange.

Today the women sell the finished cookstoves to retailers connected with GERES through the production facility or with those that they have identified on their own. The trained producers become part of a **COLLABORATIVE ENTERPRISE** called the Association of Producers and Distributors of Improved Cookstoves in Cambodia (ICOPRODAC) made up of approximately 250 members. ICOPRODAC's quarterly meetings allow for more collaboration and communication between the cookstove producers and include facilitated discussions on challenges, distribution methods and ideas, and access to markets and retail connections, as well as brainstorming sessions. The women can also return to the facility for **REFRESHER TRAININGS** and receive assistance with production and distribution.

Photo: Global Alliance for Clean Cookstoves

Engaging Men

Because men are perceived as the official head of the family, married women need to be endorsed by their husbands in order to get involved in the program. GERES communicates with the husbands before accepting women into the training to ensure they have the support of their husbands to participate in the program.

One Woman's Story

Meet Hing Soeun—Traditional Potter Turned Cookstove Entrepreneur

Cambodia is one of the world's poorest countries, with over 30 percent of the mostly rural population living on less than $0.50 per day and approximately 95 percent of the population using solid fuels for cooking. [19] [11] Smoke-filled homes result in substantial health issues where respiratory illness remains the leading cause of premature death in the country.[20]

Coming from a family with a long history as potters, it was natural that 54-year-old mother of two, Hing Soeun, would start her own pottery business. Like many other families in the Kampong Chhnang province, Hing produces pots and traditional cookstoves out of clay. Hing has long been involved in this sector and enthusiastically attended an early GERES training on the improved NKS in 2004.

At the trainings, GERES provided Hing with quality control measurements for the improved cookstoves, as well as contacts for distributors. Afterwards, Hing enthusiastically devoted herself to improved cookstove production and received a small loan from GERES to purchase production materials, helping her business to quickly grow. Every month she produces and sells up to 700 cookstoves. She markets the cookstove by emphasizing the fuel savings, cooking speed, ease of use, and low price. Hing's business became so successful that she hired and trained local women as her employees. Hing was then able to sell cookstoves both to distributors and to the GERES' Modern Production Facility.

As an active member of ICOPRODAC, Hing participates in quarterly meetings with other producers, which is a great opportunity for her to be involved in problem-solving discussions and decision-making processes. Through this group, Hing is able to express concerns while also sharing her challenges and successes. She continues to expand her business, serving as a role model for other women producers and her own community. [21]

Photo: GERES

*Best Practice Spotlight**

Initial Training for Women Producers with Focus on Quality Control

Technology Information Design Endeavor (TIDE), established in 1993, is an NGO devoted to promoting sustainable development through technological interventions in India. TIDE has several product manufacturing and distribution models for improved cookstoves. In order to reach rural and hard-to-reach markets, TIDE engages semi-literate rural women as Village Level Entrepreneurs (VLEs). The VLEs have constructed over 7,500 cookstoves using local materials. The VLEs, selected through women's self-help groups (SHGs), are provided with a five-day training conducted by women who are proven leaders. The training includes two days of classroom sessions consisting of lectures, slide shows, a short film, and a demonstration for the trainees on the technical characteristics of cookstoves. The final three days are devoted to practice sessions on cookstove production and troubleshooting, in which each trainee must construct five cookstoves under the supervision of the trainers. After the successful completion of the training, each participant receives a production manual and mold.

Today, the government orders approximately 100 to 200 cookstoves from the women over a two to three month period. Approximately 70 women have been trained as cookstove installers and 20 women are currently doing the installation work as a business.

*The full case studies of the best practice spotlights can be accessed online at www.cleancookstoves.org/gender

Production Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Integrate livelihood opportunities for women in manufacturing processes that involve producing components locally, such as combustion chambers and liners	■ Identify and explore manufacturing processes that create local livelihoods, such as through assembly, production of parts or installation. Leverage women's traditional skills to engage them in these opportunities, such as through expertise in ceramics. ■ Utilize gender analysis to determine best areas to target recruitment of women to work with. ■ Allow women to work from home or close to home and enable flexible working schedules.
Work with women's groups or create groups of women to scale efforts, build capacity, and provide a support system	■ Groups allow for women to divvy up the tasks if appropriate and create a production line so that some are producing cladding, others are assembling, etc. ■ Within groups women can build connections to intermediaries who can source local materials, distribute/transport goods, access new retail outlets, etc.
Provide training on quality assurance and quality control; Provide production manuals	■ Women will need training on quality assurance and quality control techniques. Production manuals with pictures and drawings can help guide women through trainings on cookstove construction and production and serve as a tool for future reference.

CHALLENGES ADDRESSED	TOOLS/ RESOURCES
■ Women prefer working close to home as they face mobility issues as well as time constraints from household responsibilities they need to prioritize.	Guidelines on Renewable Energy Technologies for Women in Rural and Informal Urban Areas (IUCN and ENERGIA): Module 6 Technology Factsheet: Improved Cookstove Production (GVEP)
■ Women do not have enough time to conduct all activities required to produce a complete product due to competing demands on their time. ■ Women have difficulties accessing supplies or selling goods due to mobility constraints. **See more on groups in Universal Best Practice: Partnerships*	Monitoring Form for Measuring Sustainability of Women's Groups or Associations (Swiss Agency for Development and Cooperation)
■ Women are not producing cookstoves of the same quality or dimensions. ■ Women lack technical skills necessary to implement quality assurance.	Example of production training guides: – How to create an Upesi (Practical Action) – Portable Clay Stove Construction (HEDON)

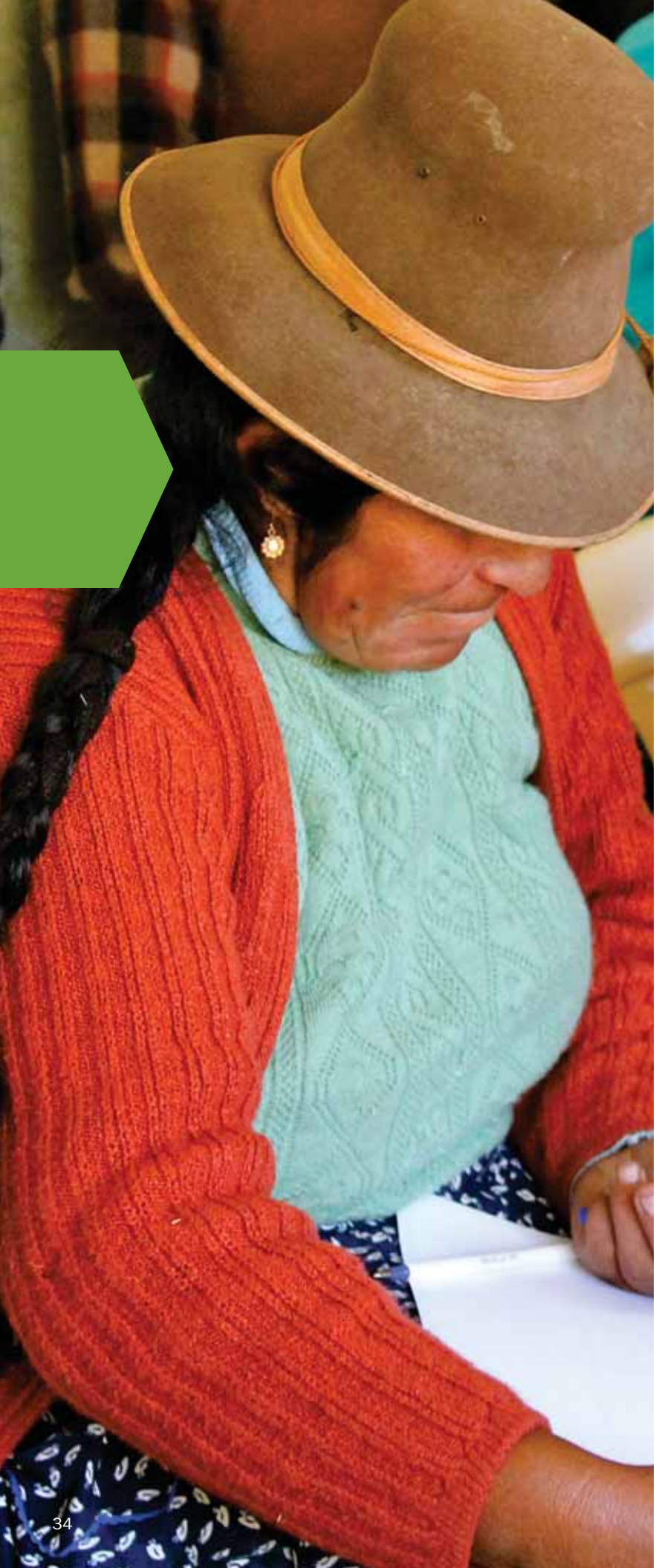

Photo: Genevieve Smith

Consumer Finance

When trying to encourage adoption of cleaner cooking solutions, affordability is often a major barrier. Not only is it difficult for consumers to afford the upfront cost of a clean cookstove or fuel, but consumers often do not see the value of making the purchase itself. Microfinance Institutions (MFIs) often are not able to provide financing for consumer goods due to the relatively low loan amounts and high costs of such transactions. Essentially, clean cooking solutions are often too expensive for outright payment and not expensive enough to be attractive to financial institutions. Clean cooking enterprises are now turning to Savings and Credit Cooperatives (SACCos), NGOs or to managing consumer finance programs in-house. Although a recent report from Hystra on Marketing to the BoP indicates that in-house consumer finance programs can be a viable solution, most cooking sector SMEs currently do not have the working capital or capacity to provide this option to their customers, thus limiting the consumer segments that can afford their products. Therefore, SME finance is intrinsically linked to consumer finance; in order for SMEs to offer installment payment plans, consignment models, or rent-to-own schemes, they need adequate working capital to cover the initial cost of the product, as well as the human resource capacity to assess consumer risk, collect payments, and handle defaults.

CONSUMER FINANCE OPTIONS ENABLE WOMEN TO PURCHASE CLEAN COOKING SOLUTIONS. The cost of clean cookstoves and fuels are often out of reach for female consumers. Also, women can be hesitant to take out loans and may have limited financial knowledge, so extra effort may be required to support them in taking advantage of available options. Women have difficulty accessing finance because of high interest rates, lack of collateral, and weak credit histories.[8] Furthermore, women's lack of access to a safe place for saving money can impact their ability to reinvest earnings, especially if women do not have access to or control over money earned in their household. [22] Women therefore may be challenged to pay back consumer finance loans, even if the product they purchased saves on fuel expenditures, as they may lack both saving mechanisms and control of the saved income.

Despite these challenges, women typically have excellent repayment records, particularly through group loans with joint liability.[8] Innovative consumer finance mechanisms focused on women's needs can help overcome these challenges and SMEs can leverage women's strong track record of repayment.

There are a number of best practices that can be applied when working to include women and increase empowerment opportunities through consumer financing options for clean cooking products. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **consumer finance best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in Consumer Finance:

- **EDUCATE WOMEN'S GROUPS ON HOW TO ACCESS CONSUMER FINANCE AS A GROUP**
- **EMPHASIZE MONEY MANAGEMENT AND SAVINGS IN TRAININGS**
- **CONSIDER FLEXIBLE REPAYMENT PLANS, MICRO-CONSIGNMENT, AND/OR RENT-TO-OWN SCHEMES**
- **CONSIDER PROVIDING CONSUMER FINANCE DIRECTLY THROUGH THE PROJECT OR DEVELOP PARTNERSHIPS TO PROVIDE DIRECT ACCESS TO CREDIT FOR PRODUCT PURCHASES**
- **IF WORKING WITH FINANCIAL INSTITUTIONS, PROVIDE SUPPORT TO MAKE THEM CONFORTABLE LENDING TO WOMEN, AS WELL AS EDUCATION ON WHY LENDING TO WOMEN IS IMPORTANT AND HOW TO BEST WORK WITH WOMEN CLIENTS**

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: Genevieve Smith

Jagriti

IMPACT BY THE NUMBERS

- 2002 to 2009: 376 installations
- 2011: up to 820 installations, an 11-fold increase

ECONOMIC AND LIVELIHOOD

- Studies show an average savings of $1.50 per day for households that purchase LPG
- LPG and improved cookstoves free up to 6 hours a day for the women
- Of the 53 initial women who bought cookstoves, 41 are now engaged in income earning activities

Jagriti is an Indian CBO in the Himachal Pradesh state working to empower women through livelihood development and promotion of energy efficient and drudgery-reducing technologies. Jagriti began in 2001 by organizing women in the Lag Valley of Kullu District of Himachal Pradesh into women's savings and credit groups (WSCGs) in order to improve their economic and social status while also allowing them to better express their collective voice in community and political matters. Women had little time to attend the group meetings or engage in income-generating activities due to their daily household responsibilities, which could be as much as 16 hours. To reduce this work and time burden, the Jagriti Energy Programme was created in 2003 to introduce clean fuels and improved cooking technologies.

Jagriti has and continues to employ a consumer finance approach working through the WSCGs to help poor women bring clean liquefied petroleum gas (LPG) and improved cooking technology[23] to their families and communities in Himachal Pradesh. Jagriti works with over 130 WSCGs in various villages of the Kullu district to help 1,400 women members afford LPG fuel and improved cooking technology.

Making Cleaner Cooking Affordable

Jagriti ensures customer affordability by negotiating directly with fuel and cookstove providers to buy in bulk and reduce costs while arranging product transportation to communities. Initially, to ensure WSCG members could afford the fuel and cookstoves, members were given subsidies of 20 percent of the total cost. This was gradually reduced as some women adopted the cleaner cooking methods and demand for fuel and cookstoves grew within and among women's groups.

Jagriti leveraged the trusted reputations of **COMMUNITY-BASED WSCGS** in order to scale distribution of the improved cookstoves and LPG fuel. In order for a WSCG to become involved in the program, they needed to have been in existence for more than six months and have a minimum of nine members. Jagriti conducted consumer education and demonstration activities in the homes of WSCG leaders in order to gain support for and interest in the products. The WSCG leaders, called Group Organizers, were recruited by Jagriti to play pivotal roles in helping to motivate their members to purchase LPG and cookstoves, as well as to lead the consumer finance process. Once a group has a minimum order of 20 items, Jagriti handles the purchase on behalf of the WSCG by arranging the order paperwork and delivery to further reduce transaction costs for the women.

Locally-Appropriate and Flexible Consumer Financing

Women purchase products through one or a combination of the following:

- Using their own personal savings.
- Using money from their husbands.
- Using **FLEXIBLE PAYMENT PLANS** in which the women pay their Group Organizer in small monthly installments over six months.

If the women are using the installment plan, they are **TRAINED ON SAVING TECHNIQUES** and how to contribute monthly payments toward a deposit. The WSCGs also support their members to be able to make the payments by allowing them to access **INTRA-GROUP LOANS AND GROUP COLLATERAL**.

Working within groups extends and strengthens women's support networks while decreasing the vulnerability of individual women and reducing their aversion to risk. Members, both within and between different groups, are able to help each other through loans and shared collateral in order to bring improved cooking solutions to their homes.

Training for Group Organizers

In order to effectively oversee the financial process, the Group Organizer of each WSCG is given training on leadership, book-keeping, conflict management, product development, record keeping, group management, and participatory decision-making processes.

Direct Impacts for the Women Users

The use of LPG and improved cooking devices frees up to six hours per day for the local women who no longer have to make daily trips to collect fuelwood and save one to one-and-a-half hours of cooking time per day. Instead of the daily trips to the forest to gather firewood, women now only take between one and four trips per week.[24] However, it should be noted that while the women were saving time, they ended up working more on average and leisure time decreased. Of the 53 women who initially bought LPG and improved cooking devices, 41 engaged in additional income-generating activities.

WSCG members have increased their participation by 60 to 70 percent in the *Gram Sabhas*, community planning meetings. Women also reported higher self-esteem and practiced greater mobility, for example by making trips to the bank and Jagriti's office. Men became more supportive of women's participation in activities outside the home, and some began to participate in household cooking because of the easier process cooking with the LPG. Men preparing food while women were away was a practice formerly unheard of in this area. These trends have been gathered through individual interviews and during group meetings with the participating WSCGs.[25]

Engaging Men

Male and female household members in the program receive gender training. The goal of this is to engage men in supporting women to purchase improved cooking fuels and products, while also encouraging women's participation in the program. Jagriti found it important to work with the husbands and have them understand the opportunities and impacts of clean cooking. Women are encouraged to create joint savings accounts with their spouses. To date, 109 accounts have been opened between women and their husbands.

One Woman's Story

Meet Rupi Thakur—Exhibiting Selfless Commitment to Improve the Lives of Others

Photo: Jagriti

Although India has undergone rapid economic growth in recent years, more than 88 percent of the country's rural population still relies on solid fuels for cooking and heating, compared to only 24.6 percent of urban populations.[11] People living in rural areas make up nearly 70 percent of the country's population, and therefore suffer the most from illnesses associated with HAP. This impacts nearly 914 million people, while rural women have to walk miles every day just to collect fuel wood.[12] Despite this, it remains difficult for the rural poor to access clean, safe, energy efficient cookstoves.

An entrepreneur and dairy manager with three children, Rupi Thakur, 37, joined Jagriti in 2004 as a group facilitator. Due to her initial effectiveness as a group leader and her dedication, Jagriti assigned Rupi the responsibility of facilitating six WSCGs. Today Rupi manages 45 of these WSCGs.

Rupi, who has been involved in the Jagriti Energy Programme since its inception, has been instrumental in raising awareness among women about the improved cookstoves and LPG fuel. Some of her responsibilities include collecting member's contributions towards the cookstoves and fuel, keeping record of their installment payments, and monitoring whether members need additional LPG. Rupi achieved her goal of distributing 250 water-heating devices and 75 LPG connections in a six-month period. She continues to oversee the collection of payment for improved cookstove products from the WSCG members, as well as ongoing payments for additional fuel.

Rupi has selfless commitment to mobilization of women in her community, overcoming many challenges, such as a deep-rooted caste system, difficult terrain, and scattered village settlements. Despite such adverse circumstances, she not only improved her own life, but also those of more than 500 women members. Her active encouragement for the participation of women members in both purchasing clean cooking products and in pursuing income-generating activities has resulted in an increase in their household incomes and quality of life.

The Self-Employed Women's Association of India (SEWA) is a member-based organization founded in 1972 to organize and unionize women workers. Today, SEWA has 1.73 million women members across 12 states of India, largely in rural areas.

In India, more than 90 percent of the female labor force works in the unorganized sector without regular salaried employment and welfare benefits. These women are unprotected in the workforce and their efforts remain largely invisible and uncounted. Women who earn a living through their own labor or small businesses are eligible to become SEWA members, paying a small annual membership fee of $0.09 cents. SEWA provides a combination of microfinance, entrepreneurial, and leadership training, as well as support to women to enhance their opportunities to succeed as self-reliant, employed women in India. SEWA members are often weavers, potters, construction workers, domestic workers, garment workers, and vendors.

SEWA has undertaken numerous initiatives involving improved cookstoves since 1986, recognizing the immense health, social, and economic impacts that traditional cooking practices have on its members. Recently, SEWA partnered with the International Finance Corporation (IFC), which is guaranteeing a $4 million loan for SEWA members to purchase improved cookstoves and solar lanterns. The project called *Hariyali*—meaning green livelihoods—will provide loans to more than 200,000 SEWA members by 2016 to purchase products through installment plans.

Leveraging SEWA's Network to Increase Cookstove Adoption

SEWA has been involved in various improved cookstove initiatives, focusing on bringing appropriate cooking technologies to its members. They have worked with different types of technology, including mud, brick, portable rocket, and forced-draft cookstoves. SEWA has worked to enhance both supply and demand by improving technology through regular field testing, recording user feedback and providing it to manufacturers, and working with both manufacturers and users to modify the products in order to meet user needs. Since 2010, SEWA's efforts have led approximately 6,000 households to adopt improved cookstoves.

One of the key drivers for wide-scale distribution is the existence of SEWA's rural network of women, and their district level cooperatives called District Associations. District Associations are instrumental in creating awareness among their women members, building demand, delivering improved cookstoves, facilitating after-sale services, and collecting payments. These activities are conducted for a very low, marginal cost that increases affordability by reducing the otherwise high cost of marketing and distribution in remote villages. The District Associations have also been instrumental in field testing and providing feedback to manufacturers on users' needs, tastes, food, fuel, and habits.

In May of 2012, SEWA partnered with IFC to provide accessible loans to their members to purchase clean energy products. IFC is providing a partial credit guarantee[26] for the $4 million loan provided by India's ICICI Bank to SEWA's Grassroots Trading Network for Women. It is backed by risk-sharing agreements with a number of bilateral donors and international financing agencies. As the guarantee is essentially an irrevocable promise from the IFC for debt repayment, the IFC guarantee serves to ease the traditional banker's perceived risk of lending to female borrowers who likely lack formal credit histories and collateral.

The women can purchase both an improved cookstove and a solar lantern through equal installment payments of $4.50 per month for a total price of $73, which includes interest. A single cookstove costs approximately $45, repayable in 15 equal installments of $3, including interest. Most of SEWA's members live below the poverty line with an average monthly income of approximately $31, therefore this loan and installment plan is critical for them to afford clean energy technologies. IFC is also helping SEWA's Grassroots Trading Network set up information systems and processes to manage the loans, as well as training staff to better serve the rural women.

This consumer finance mechanism is enabling SEWA members to exert some control over household purchase decisions. Generally in India, men make these decisions and women have limited power to purchase products. Additionally, women are not recorded in the credit bureaus, making them legally nonexistent and with no opportunity to build credit histories. Furthermore, the microfinance market in India has high lending fees, especially to poor men and women, as they pose a financial risk for microfinance institutions.

There is a surging energy demand in India, particularly in rural areas for lighting and cooking. Due to market inefficiencies, products may not reach rural markets and if they do, prices are likely to be high due to multiple steps in distribution. The program allows for both clean energy companies and rural consumers to overcome market inefficiencies by providing products at low prices with direct distribution channels.

Phase two of the project will begin in 2016 and will continue to scale access to clean energy technologies for SEWA members with the goal of providing over 1 million members with loans to purchase the clean energy technologies. Approximately 6,000 improved cookstoves have been purchased with cash and credit to-date and some are being paid for in installments by the women members. With this, women are beginning to build credit and create a loan history, giving them more financial credibility in the future.[26]

*Best Practice Spotlight**

potential energy

Flexible Repayment Plans Organized through Women's Groups

Potential Energy has launched a Revolving Loan Fund (RLF) as part of its Darfur project with funding from the Global Alliance for Clean Cookstoves' Pilot Innovation Fund. It is an innovative financing scheme accessible to a network of Women Development Associations (WDAs) who serve as the retail partners selling cookstoves to their women members. Women have the option to fully pay for their cookstove upfront for 50 SDG (US $11.35) or to pay in four installments for a total of 60 SDG ($13.62). The wholesale price of one cookstove is 40 SDG ($9), plus transportation expenses of 5 SDG ($1.13). Accessing the RLF requires several steps:

- The WDA borrows 45 SDG ($10.20) per cookstove from the RLF to pay Potential Energy's local partner, the Sustainable Action Group.
- As the consumer saves money from purchasing less fuel by using the improved cookstove, they are able to pay installments of 15 SDG ($3.40) to the WDA over four installments.
- The WDA pays 55 SDG ($12.48) back into the RLF, keeping 5 SDG ($1.13) as profit. The 55 SDG ($12.48) repayment to the RLF includes 10 SDG ($2.26) to maintain the fund and offset losses from inflation or loan defaults.

In order for a woman to access the RLF, she needs to join a group of between five and twenty other interested members. The group of women is trained on operations (such as holding meetings, electing leaders, allocating tasks, and keeping basic records), as well as on the benefits of the improved cookstove, installment payments, and proper cookstove use. WDA leaders are trained in management and savings, as well as data collection. If someone has a problem making a payment, the group assists her. They save together and pay their installments together. When a subgroup of women members has paid for their cookstoves in full, a second subgroup of women can receive their cookstoves and start paying in installments.

Potential Energy has identified several challenges as they implement this program. Payment collection can be an issue, particularly when the local partners and loan managers do not have financial experience. As is common with small enterprises, the partners often mix personal and business finances. Potential Energy now requires that partners keep the loan capital separate from their personal and business finances in order to participate in the program. Additionally, inflation can be an issue and they are now keeping currency in US dollars as much as possible and charging larger installment fees.[17]

Photo: LBNL

Photo: Nigel Bruce

Consumer Finance Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Educate women's groups on how to access consumer finance as a group	■ In a group, women support each other when struggling to repay loans or deciding to purchase products. They can pool resources within the group and create revolving loan funds, or utilize group collateral in accessing outside loans. ■ Financial oversight and leadership may need to be provided for the group, if it is not available within.
Emphasize money management and savings in trainings	■ Women may have limited financial knowledge and understanding, which is critical in understanding loans, savings, and other financial issues and opportunities. ■ By encouraging the use of and providing support for savings accounts, women can pay back loans and purchase products, as well as save for other critical things, such as education, emergencies, etc.
Consider flexible repayment plans, micro-consignment, or rent-to-own schemes	■ Adjusting payment schedules to align with customers' cash flow can make it considerably easier to pay. It can also help to provide flexibility in payment schedules. ■ Repayment plans allow women to repay loans over time establishing a financial discipline. ■ Allow opportunities for women to take out additional loans/ credit as amounts have been paid for more product, if desired.
Consider providing consumer finance directly through the project or develop partnerships to provide direct access to credit for product purchases	■ Credit through the program itself, the energy provider or another entity, may be best suited to meet needs of women borrowers because they know their customers. Partnerships with saving and loan groups can be particularly effective.
If working with financial institutions, provide support to make them comfortable lending to women, as well as education on why lending to women is important and how to best work with women clients	■ Financial instituions may need support in feeling comfortable to giving loans to women who lack credit histories and/or collateral. ■ Provide education on why lending to women is important, including best ways of working with them. ■ Financial institutions may need guidance in loaning to women for cookstove purchases due to the small size of loans and unfamiliarity with household energy products.

CHALLENGES ADDRESSED	TOOLS/ RESOURCES
■ Women are hesitant to take out loans as they are risk adverse. ■ Women need support in managing and repaying loans. ■ Women do not have enough collateral to take out loans individually. *See more on groups in Universal Best Practice: Partnerships	*See Additional Readings on Value Chains and Gender in the appendix*
■ Women find cost structures and payment plans difficult to understand. ■ Women do not have money to pay back loans or understand how to pay back loans in installments.	Training Manual for Micro, Small and Medium Entrepreneurs in Energy Business Financing (GVEP)
■ Women can only pay back loans slowly in installments. ■ Women do not have enough money to purchase products upfront.	*Read more:* – Gender and Rural Microfinance: Reaching and Empowering Women (IFAD) – How can innovative financing schemes expand women's access to energy? (*From*: Gender and Energy for Sustainable Development: A Toolkit and Resource Guide)
■ Women need support in being able to access finance—lacking collateral, credit histories, etc. ■ Financial institutions are unwilling or hesitant to provide loans to women.	*See Potential Energy Case Study Example: Revolving Loan Fund* *Read more:* – End-User Finance: A Guide for Sustainable Energy Enterprises and NGOs (GVEP) – Marketing Innovative Devices for the Base of the Pyramid (Hystra)
■ Women lack credit histories and collateral to access loans. ■ Financial institutions are unwilling or hesitant to provide loans to women for household energy products.	*See SEWA Case Study: Partial Credit Guarantee*

Photo: Global Alliance for Clean Cookstoves

Supplier Finance

Supplier finance is a critical requirement for scaling up the clean cooking sector. A key challenge for SMEs working along the value chain is access to working capital to maintain operations and growth capital to scale their businesses. Most clean cooking enterprises are at an early stage of development and need patient capital as well as business development assistance. Few impact investors are prepared to provide money and technical assistance to early stage companies. In addition, many traditional sources of capital, such as loans or lines of credit from large domestic and international banks, are out of reach for early stage or smaller entrepreneurs who lack sufficient collateral or financial history for a loan. Even if these enterprises are able to secure a commercial loan, interest rates are prohibitively high and therefore restrictive to the organization's growth. There are now many efforts in the sector to increase access to innovative types of finance, including microfinance for smaller businesses and impact investing for medium-sized enterprises.

WOMEN-LED BUSINESSES HAVE A UNIQUE ROLE TO PLAY IN THE COOKING SECTOR as they may have direct and unique access to purchasers and users of the cooking solutions. As the sector works toward increasing its financing options, there must be a focus on ensuring that women entrepreneurs are given equal access to these opportunities. While their businesses need the same types of financing mechanisms as male-owned enterprises, they face specific challenges when accessing this capital. Women may have lower financial literacy and can be risk adverse, making them hesitant to take out loans. Women are also disadvantaged in financial markets as they often have fewer years of work experience, lower intra-household bargaining positions, and less control over their earnings, impeding their ability to save money and build assets.

Additionally, discriminatory property rights laws limit women's ability to use collateral to obtain credit, and lack of sufficient collateral is a leading reason for loan application rejections.[8] Despite these challenges, women are often better investors and planners than men, and are thought to be ideal candidates to be energy entrepreneurs.[27] Increasing women's education, skills, and experience would positively impact their ability to access finance, as well as their capacity to manage those opportunities. Providing women with support networks, training, and mentorship can result in women gaining confidence to take out and manage loans. As the sector scales, it is crucial that women have opportunities to fully participate in order to truly impact as many households as possible.

There are a number of best practices that can be applied when working to include women and increase empowerment opportunities through supplier finance options for clean cooking businesses. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **supplier finance best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in Supplier Finance:

- **TRAIN WOMEN BORROWERS ON FINANCIAL MANAGEMENT AND PROVIDE MENTORSHIP**
- **ENSURE WOMEN HAVE EQUAL ACCESS TO INNOVATIVE FINANCE MECHANISMS**
- **WHEN WORKING WITH FINANCIAL INSTITUTIONS, PROVIDE FINANCIAL SUPPORT TO REDUCE THEIR RISK LENDING TO COOKING SECTOR BUSINESSES; CONDUCT EDUCATION AND ADVOCACY TO INCREASE THEIR ABILITY AND WILLINGNESS TO LEND TO WOMEN ENERGY ENTREPRENEURS**
- **ORGANIZE WOMEN BORROWERS INTO GROUPS OR NETWORKS IN ORDER TO ACCESS AND/OR REPAY LOANS MORE EFFICIENTLY**
- **CREATE FLEXIBLE TERMS SUCH AS LOW INTEREST RATES AND SMALL REPAYMENT AMOUNTS**

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: Global Alliance for Clean Cookstoves

Photo: GVEP International

GVEP International

IMPACT BY THE NUMBERS

- An estimated 4 million beneficiaries.
- 58 women taking out loans.
- Over 230 women entrepreneurs in cookstoves

ECONOMIC AND LIVELIHOOD

- Over 2800 jobs created and men and women in various businesses supported to grow and develop (since program duration through February 2013).
- The women in cookstove businesses earn an average of US $268 per month.
- The cookstove business groups earn an average of US $577 per month.
- The men in comparison earn an average of $415 per month in cookstove businesses.

GVEP International (Global Village Energy Partnership) is an NGO working to increase access to modern energy and reduce poverty in developing countries by building the capacity of local businesses to deliver energy services. Energy businesses need access to resources such as technology, skills, working capital, and distribution networks in order to effectively increase energy access among the base of the pyramid. GVEP provides entrepreneurs with technical and business capacity building and links them with financial institutions to access the capital they need to scale their businesses.

In 2008, GVEP began the Developing Energy Enterprises Project (DEEP) in East Africa in order to create a sustainable and widespread network of energy entrepreneurs involved in the manufacture and/or supply of clean cookstoves, solar PV products and services, clean fuel briquettes, and biogas systems. This program set out to deliver energy access to 1.8 million people in Kenya, Tanzania, and Uganda. Working with women and men in over 900 energy-related micro, small and medium enterprises (MSMEs), the program has far exceeded its goals with over 4 million beneficiaries as of February 2013.

Increasing Access to Finance

DEEP was designed to assist MSMEs in overcoming general constraints, particularly regarding business and technical capacity issues and inadequate access to finance. The three main components of the program are business development, marketing, and access to finance. The program had a gender equity goal of reaching equal numbers of women-led and men-led businesses. Achievement of this goal varied by country and business type:

- Kenya: 77 improved cookstove businesses are women-led and 40 are men-led.
- Uganda: 44 improved cookstove businesses are women-led and 52 are men-led.
- Tanzania: 41 improved cookstove businesses are women-led and 93 are men-led.

GVEP recruited participants for the program by working with local partners. They recruited women's groups, most of which were already involved in cookstove businesses, and conducted door-to-door recruitment. Most participants already had existing businesses at some level.

Training and Mentorship

A needs assessment was conducted for all participants in order to tailor the trainings to their needs and knowledge levels. The initial **TRAININGS** included technology topics such as quality assurance and standardization and basic business management skills. Additionally, technology and business mentors conducted formal training in the field on a one-on-one basis and **REFRESHER COURSES** were held throughout the program's duration.

The **TRAINING SCHEDULES WERE DESIGNED TO ACCOMMODATE WOMEN'S HOUSEHOLD RESPONSIBILITIES**, and often finished early in the day to allow women to return home. Trainings were held locally to reduce any mobility or transportation issues. Women were also able to bring a relative or friend who could take care of a child on site during the training.

There were four **MENTORS** in each country, with each mentor supporting a particular region with approximately 60 entrepreneurs. Mentors created business plans with the owners, visited the entrepreneurs to identify needs and make action plans with specific timelines, and helped teach entrepreneurs how to keep basic records for their businesses including expenditures, sales, and profits. Technology mentors were provided by GVEP's partner, IT Power. Additional business mentorship for women was needed to help encourage and guide the women to take out and manage loans.

Market development sessions allowed participants to explore how markets operate and gave them opportunities to network within their target markets. In order to scale up businesses, GVEP used local knowledge to advise entrepreneurs about potential suppliers, distributors, consumer bases, and technology and product offerings.

Financial Support and Linkages

Women face specific challenges when trying to access credit, and often have to access loans through informal channels. Common challenges women face include:

- Lack of awareness of existing credit schemes;
- High interest rates;
- Lack of credit histories; and
- Lack of collateral—as men are often owners of collateral.

To increase access to finance, DEEP created a **LOAN GUARANTEE FUND** in 2009, which resulted in loans for a range of energy businesses that may otherwise not have been able to obtain financing. The fund provided **PARTIAL CREDIT GUARANTEES** to financial institutions lending to GVEP-supported businesses. Participating financial institutions ranged from local credit cooperatives to larger banks.

As many financial institutions were not aware of energy businesses and lacked expertise in evaluating these loans, GVEP offered **TRAINING TO THE INSTITUTIONS** as they recruited them to join the Loan Guarantee Fund.

Through the fund a total of $102,027 was given in loans. Of the 129 entrepreneurs in East Africa linked to financial institutions, 54 percent were male, 45 percent were female, and one percent was mixed groups of both males and females. By negotiating

with the financial institutions to ask for smaller amounts of collateral, more women could participate in the program and borrow. However, fewer women sought loans and their average loan sizes were smaller. The average loan size for men was $849 and the average size for women was $682. This disparity may be explained by the types of businesses women are commonly engaged in, which require less up-front capital than typical male-owned businesses. For example, most women were involved in cookstove liner production and distribution, which requires less capital compared with cladding and assembly of full cookstoves. Additionally, as compared to men, women were observably more cautious regarding money and taking out loans.

Women have been very responsive and diligent in paying back their loans. In general the loan default rate has been low, and where delinquency has occurred, it has been less with the women entrepreneurs than the men; 27 percent of defaulters were women and 73 percent were male. Women have also demonstrated a strong commitment to using the loan for the intended purposes, with more instances of loans being diverted with male entrepreneurs.

Women's strength in loan repayment may be due to their experience with local savings schemes that are very common amongst women in East Africa. From this, women are used to a culture of borrowing small amounts and supporting each other to make repayments. They also tend to see the longer-term benefits of repaying the loan (i.e. further loan applications) and are cautious of losing any security put against the loan.

Photos: GVEP International

The Next Phase

GVEP developed a new program that began in September 2013 called the Capital Access for Renewable Energy Enterprises (CARE2) Program. It consists of a combination of interventions designed to increase financing options for energy businesses. Program gender targets include at least 40 percent MSMEs owned by women and 50 percent of new jobs created held by women. GVEP is recruiting female-managed or female-led businesses for this program and will focus on developing their skills. GVEP, with support from ENERGIA, has constructed gender action plans in each country where the program will take place. Training and financial programmatic activities will be similar to DEEP, but adjusted to better address gender-specific needs. Entrepreneurs in the program will receive specialized training, there will be a stronger focus on scaling enterprises and addressing issues of quality, and there will be fewer entrepreneurs in the program in order to focus on one-on-one guidance.

One Woman's Story

Photos: GVEP International

Meet Fausta Ntara—Applying Entrepreneurial Skills to Invest in her Community

In Tanzania, HAP affects over 35 million people as 95 percent of the population continues to use solid fuels for cooking. The reliance on solid fuel not only causes negative health impacts, but also exacerbates deforestation.[12] [11] With an intensifying fuelwood deficit in the country, women have to walk further distances over longer periods of time to collect the wood necessary for cooking.

Fausta Ntara is from Mwanza, a town in northern Tanzania at the base of Lake Victoria. She is 60 years old, married, and has three children. In addition to her household responsibilities, Fausta is a long-time entrepreneur, working to support her family. She started manufacturing and selling improved cookstoves in 2003 after attending a business seminar. It was here that Fausta first learned about improved charcoal cookstoves and the health impacts of smoke from traditional cooking on her family. Through the seminar, Fausta was taught the technical skills necessary to develop and manage her own business. Inspired, she began visiting business exhibitions in Uganda and Kenya to learn about other types of improved cookstoves. Before long, Fausta was running a business of her own, producing and selling improved cookstoves.

In 2010, Fausta was recruited into DEEP so that she could expand her business. There she received training and gained vital business skills including management, record keeping, and financial planning, as well as access to GVEP's Loan Guarantee Fund. The financial management training not only helped Fausta improve her business, but also convinced her to open her first bank account. She knows how much she is spending and how much she earns which enables her to better determine how much to spend on raw materials and, importantly, how much she can save. Fausta has kept reliable records and can now map her business's progress, while her enhanced marketing skills have allowed her to expand her reach, as she uses local meetings, flyers and brochures to advertise her products.

As a result of GVEP's mentorship, Fausta completed her business plan and used it to secure a loan from a local financial institution participating in the Loan Guarantee Fund. Through loans totaling $2,472, Fausta purchased raw materials in bulk, a welding machine, and a metal grinder, and now rents a workshop for her business. "Initially, I could not qualify for a loan from financial institutions, but GVEP supported me and put my business back on track." Fausta says.

As a result of GVEP's mentorship, Fausta completed her business plan and used it to secure a loan from a local financial institution participating in the Loan Guarantee Fund. Through loans totaling $2,472, Fausta purchased raw materials in bulk, a welding machine, and a metal grinder, and now rents a workshop for her business.

Having scaled up her business to meet growing demand, Fausta currently has several employees - an accountant and two technicians to produce different types of cookstoves using raw and recycled materials. She makes charcoal cookstoves, ovens, and other improved cookstoves giving consumers a range of products to choose from. After expenditures, Fausta earns a monthly net profit of $250, a 50 percent increase over revenues prior to her involvement with GVEP.

These extra savings have had a positive impact on both her business and family life. She can now afford the $618 annual cost to send her daughter to school.[28]

Photo: Eco-Fuel Africa

ECO-FUEL AFRICA
Sustainable Charcoal Saves Forests

IMPACT BY THE NUMBERS

- 2,500 farmers producing char, ~ 1,000 of which are women
- 12 local jobs in green charcoal briquette making at the factories
- 260 women micro-entrepreneurs selling the briquettes
- 5,000 marginalized households and 1,000 small-scale businesses impacted through access to and use of green charcoal

ECONOMIC AND LIVELIHOOD

- Farmers earn up to US $30 per month selling the char, increasing their income 20–40%
- The women micro-entrepreneurs earn $152 per month and an annual income of about $1,825
- Women sell to the end user for an average cost that is 20% cheaper than the market price of traditional charcoal
- Average household savings of $200 per year using the briquettes; equates to 40% of their average annual income

Eco-Fuel Africa is a Ugandan-owned, for-profit social enterprise founded in June 2010 to produce and sell green charcoal. Green charcoal is a renewable, carbon-neutral cooking fuel that is smoke-free and more efficient. It is made from pressed char—a product made by carbonizing biomass. Eco-Fuel Africa is creating local livelihood opportunities for farmers who produce char, factory workers who turn it into green charcoal briquettes, and marginalized women micro-entrepreneurs who sell the briquettes to households.

Eco-Fuel Africa ensures that the women entrepreneurs are able to start and maintain their retail businesses by providing them with basic business and financial training, as well as access to the green charcoal product on credit. Once the green charcoal has been sold, the women pay the balance back to Eco-Fuel Africa, earn a commission on each sale, and then buy more green charcoal on credit. To date, over 5,000 households have been impacted by the project through access to and daily use of clean fuels, while 260 marginalized women micro-entrepreneurs are earning an income and growing their businesses.

The Business Model

Eco-Fuel Africa's business model revolves around a three-step cycle:

1. Farmers, 40 percent of whom are women, are trained over three to five days to turn agricultural waste into char by burning it in low-cost kilns made of recycled oil drums. The kilns are originally purchased by Eco-Fuel Africa for approximately $75 and are paid off by the farmers in **INSTALLMENTS** as the char is made and sold over three to twelve months. The farmers are easily able to pay the monthly, agreed-upon payment installments due to their ability to make money simultaneously. With the kiln, a farmer can produce at least 50 kilograms (kg) of char weekly receiving approximately ten cents per kg that is then sold back to the company. Approximately 2,500 farmers are able to make an income of up to $30 per month from selling the char, increasing their incomes by 20 to 40 percent. Furthermore, farmers keep approximately 20 percent of the char produced for use as an organic fertilizer (biochar), which can increase agricultural harvests by over 50 percent helping to reduce malnutrition.
2. Eco-Fuel Africa converts the char into green charcoal briquettes using a press at their two production sites, as well as at four smaller micro-franchise sites.
3. The Eco-Fuel briquettes are then sold at small kiosks in towns and villages, 99 percent of which are run by women. They focus almost exclusively on recruiting women distributors, as men were found to be less reliable in paying back the credit for the green charcoal.

Recruiting and Supporting Marginalized Female Entrepreneurs

In recruiting women entrepreneurs, Eco-Fuel Africa identifies marginalized women, prioritizing those with daughters. Throughout the recruitment process, they work with local groups, such as NGOs and CBOs or village leaders who help identify women in the communities. Some women also approach them directly. Selection criteria include:

- Women should earn less than $2 per day (if the woman has more than three children this can be higher).
- Mothers are preferred, especially those without husbands as they tend to need more support and their husbands will not interfere with the job.
- Women with at least one daughter are prioritized and women commit part of the income from the sales towards financing of their daughter(s) education.

Eco-Fuel Africa trains the women for three days and then makes an initial $150 investment by constructing a kiosk for each woman, which she immediately owns and can use as a retail store. The women sell the green charcoal and any other products of their choosing from the kiosk.

The initial **TRAINING INCLUDES COURSES ON BUSINESS AND FINANCIAL TOPICS**, such as customer service and bookkeeping. In order to improve the training and make it more consistent, they have a full-time education team working on curriculum development. Ongoing capacity building is done through **LECTURES** and **MENTORSHIP**.

Credit Scheme to Enable Women's Businesses

Since the focus is on recruiting marginalized women to become micro-entrepreneurs, these women face particular challenges when accessing credit or loans. Without a credit history and collateral, these borrowers are seen as risky and will likely not be able to access finance. Not only is access to finance difficult for rural and marginalized populations in Uganda, but even with financial opportunities, these individuals need enterprise creation and development training to effectively utilize the credit.[29] Eco-Fuel Africa addresses both of these critical challenges by training the women micro-entrepreneurs in business growth techniques and financial literacy, while also increasing their access to financial products through basic credit schemes. The credit scheme process follows these steps:

1. Women purchase the desired amount of green charcoal briquettes through **CREDIT FACILITIES**.
2. A distribution team delivers the ordered green charcoal to the women's kiosks.
3. The women sell the green charcoal and can then reorder (reorders are typically placed every two to three days).

4. When the new green charcoal is delivered, women pay back the credit for the recently sold briquettes.
5. The women are encouraged to use mobile phone-based payment methods to repay the credit as well as request additional green charcoal.

Currently 260 women micro-entrepreneurs sell briquettes as official retailers and nearly all of the women have paid back the credit. These women serve as the main retailers selling clean fuel to over 5,000 households in both urban and rural areas, churning a profit for Eco-Fuel Africa. Due to the reduced need for firewood collection and the commitment women made to use some of their earnings for girls' education, Eco-Fuel Africa estimates that about 1,000 girls now have increased educational opportunities as a result of their mother's clean fuel businesses.[30]

Engaging Men

In some communities, established gender roles could lead men to feel threatened by women earning money and taking on different responsibilities outside of traditional gender roles. Additionally, men can potentially take advantage of the women and their earnings. Eco-Fuel Africa is now beginning to work with women and their husbands by incorporating an educational component for men in the trainings, whereby women in the program invite their husbands to participate. The training for men will focus on sensitizing men on why it is important to support their wives and how to do so. The training topics include: why it is important for their wives to run businesses and earn incomes, how men can support their wives and help them to grow their retail businesses, and why it is important that the woman's earned income is used for children's education and to improve the quality of life of the household instead of for the men's personal use.

Photo: Eco-Fuel Africa

One Woman's Story

Meet Naguja Justine—Supplier Finance Fosters an Eco-Entrepreneur

In Uganda, 95 percent of the population relies on solid fuels for cooking and rapid deforestation rates mean that women and girls must travel increasingly long distances in search of fuelwood.[11] This makes it much more difficult for girls to attend school and leaves their mothers with even less time to engage in productive livelihood activities. In rural Uganda, women regularly cook inside poorly ventilated homes, contributing to immense health issues for women and especially for their children. Respiratory illness is one of the top three causes of premature death in the country.[31]

Naguja Justine never had the opportunity to go to school and, like many other women in her position, became an entrepreneur out of necessity. Abandoned by her husband, Naguja could barely feed her three children; sometimes she couldn't feed them at all.

Naguja says it was a blessing when Eco-Fuel Africa arrived in her village of Lugazi. By recruiting the women to open up kiosks as authorized distributors of green charcoal, Eco-Fuel Africa opened a door to a better life. Naguja was quickly selected to become an Eco-Fuel Africa distributor and agreed with the company that part of her profits would go towards sending her daughters to school.

Following a technology and business skills training course, Naguja was provided with a fully-constructed kiosk as an authorized Eco-Fuel Africa retailer. Within several short weeks her new business was flourishing. She even expanded her kiosk to include sales of fruit, food, and other basic amenities, and regularly reorders green charcoal supplies using her new mobile phone. Twice a week the distribution team brings Naguja a new order of green charcoal. She repays them for the previous delivery, building up a solid financial history. Today, Naguja earns at least $152 per month; with her new income she sends all three of her children to school and has been able to afford new clothing and food for herself and her family.

Naguja's business opportunities have benefited herself and her family, and allowed her to make a positive change in her community. Her children, the children of her neighbors, and other women in the community no longer have to walk long distances to gather fuelwood because they now have access to affordable and clean cooking fuel.

Excited and grateful to be an Eco-Fuel Africa distributor, Naguja says that, "Eco-Fuel Africa creates opportunities for people the world has forgotten. Who else would have invested in a poor woman like me? … Thank you so much for changing my life, for improving living conditions in my village and for enabling me to be a good mother."[32]

Supplier Finance Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Train women borrowers on financial management and provide mentorship	■ It is crucial that entrepreneurs understand financial concepts, such as savings and interest rates in order to effectively manage their financial commitments. Women may need training on saving for financial management in the household. Women entrepreneurs may need additional training to understand how to effectively access and manage capital. Women are risk adverse and thus may need support in pursuing financial opportunities.
Ensure women have equal access to innovative finance mechanisms	■ One or a combination of the following can be appropriate depending on the context: ■ Loans through working with financial institutions to provide to women. Offer smaller loans so that women can invest in income-generating opportunities quickly to start yielding returns as soon as possible ■ Credit through the program itself, the product supplier or another entity. ■ Micro-Consignment (supplying goods to the entrepreneur who pay only for what is sold and may return what is unsold) through the program or product supplier.
When working with financial institutions, provide financial support to reduce their risk lending to cooking sector businesses; Conduct education and advocacy to increase their ability and willingness to lend to women energy entrepreneurs	■ Financial institutions need to be supported in providing loans to cookstove businesses, which have low margins and may be considered a risky business. They need understanding of how to evaluate and manage these loans. As financial institutions may be hesitant to loan to women who have little or no collateral and limited credit history, it is important to work with financial institutions and educate them to feel comfortable in giving loans to women.
Organize women borrowers into groups or networks in order to access and/or repay loans more efficiently	■ Within groups women can support each other in taking out and repaying loans.
Create flexible terms such as low interest rates and small repayment amounts	■ Adjusting the payment schedule to customers' cash flow can make it considerably easier to pay. It can also help to provide flexibility in payment schedules and allow for delays. ■ Repayment plans allow women to repay loans over time and establish a financial discipline ■ Allow opportunities for women to take out additional loans/ credit/product as amounts have been paid.

CHALLENGES ADDRESSED	TOOL
■ Women are hesitant to take out loans as they are risk adverse. ■ Women have low understanding of financial management. They find loan terms, application processes, and repayment plans difficult to understand.	Training Manual for Micro, Small and Medium Entrepreneurs in Energy Business Financing (GVEP)
■ Women need more support in being able to access finance because they lack collateral, credit histories, etc. ■ Women are time poor and have limited experience in large-scale income generation.	*Read more:* – Gender and Rural Microfinance: Reaching and Empowering Women (IFAD) – Strengthening Access to Finance (IFC) – Marketing Innovative Devices for the Base of the Pyramid (Hystra) – The MicroConsignment Model http://microconsignment.com/ – Loan Guarantee Fund Lessons Learned from Uganda and Best Practices (GVEP)
■ Financial institutions are not aware of energy businesses; lack expertise in evaluating these loans. ■ Financial institutions are unwilling or hesitant to provide loans to women.	*See GVEP model:* Loan Guarantee Fund Lessons Learned from Uganda and Best Practices (GVEP)
■ Women are hesitant to take out loans as they are risk adverse. ■ Women need support in managing loans. ■ Individually women do not have the necessary collateral or start-up capital for the initial loan. *See more in Universal Best Practices: Partnerships	*Read more on women's savings and credit groups*: – Gender and Rural Microfinance: Reaching and Empowering Women (IFAD): Box 12 (page 43)
■ Women can only pay back loans slowly, as they earn a profit.	*Read more:* – Gender and Rural Microfinance: Reaching and Empowering Women (IFAD)

Photo: The Paradigm Project

Distribution

Wide-scale distribution of clean cookstoves and fuels has always been one of the major challenges for the sector as a whole, particularly as implementers try to reach the most remote and rural consumers. There are many diverse types of intermediaries that need to be engaged in order to develop strong, wide-reaching distribution chains, such as retail outlets, marketers, transporters, micro-entrepreneurs, and producers. Not only can the logistics of distribution be difficult, such as the bulkiness and fragility of cookstoves, but also low awareness among consumers (both the purchaser and end user) leads to lower demand for the products. Distributors of both clean cookstoves and fuels face the major challenge of ensuring their customers are aware of the many benefits of their products, which requires intensive and innovative marketing efforts. This challenge is compounded by the sometimes relatively high price of the technologies, which results in distributors needing to provide consumer finance solutions.

WOMEN CAN BE THE KEY TO SCALING DISTRIBUTION. There are now several examples of innovative distribution models that leverage existing networks and integrate clean cooking solutions within them. Oftentimes, these existing networks are women's cooperatives or women entrepreneurs who are conducting door-to-door sales or running small retail outlets. Women have access to hard-to-reach households, can utilize woman-to-woman marketing techniques, and are trusted promoters of household products among their peers. Furthermore, in countries where gender disparity is high, female sales agents can access untapped markets because women can buy directly from other women in the community and do not need to venture to cities or marketplaces.[2] Engaging women in distribution of clean cookstoves and fuels can have significant impacts on sales and long-term adoption, but several challenges may have to be addressed. It may be difficult to retain women as employees or entrepreneurs as they have many competing demands on their time. Mobility, safety, and financial and business capacity issues can limit a woman's ability to fully engage in this livelihood opportunity and specific efforts should be made to lower these barriers.

There are a number of best practices that can be applied when working to include women and increase empowerment opportunities in the distribution of clean cooking products. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **distribution best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in Distribution:

- CREATE SELECTION CRITERIA PROVEN TO HELP IDENTIFY AND RECRUIT SUCCESSFUL ENTREPRENEURS
- OFFER TRIAL PERIODS FOR WOMEN DISTRIBUTORS
- CREATE MARKET MAPS AND EMPHASIZE CUSTOMER SERVICE WITHIN TRAININGS
- IF APPROPRIATE, PROVIDE AN ENTREPRENEUR STARTER PACKAGE ("BUSINESS-IN-A-BAG")
- USE GENDER-INFORMED MARKETING MESSAGES AND METHODS; UTILIZE WOMEN AND GIRL-FOCUSED COMMUNITY GROUPS FOR AWARENESS RAISING
- CREATE A TIERED SYSTEM OF ACCOUNTABILITY
- PROVIDE INCENTIVES
- PROVIDE OPPORTUNITIES FOR SUCCESSFUL WOMEN TO SHARE THEIR EXPERIENCES, IDENTIFY OR RECRUIT NEW WOMEN, AND TAKE ON LEADERSHIP ROLES
- ENGAGE INTERMEDIARIES FOR TRANSPORTATION SERVICES; WORK WITH MEN TO PROVIDE TRANSPORTATION SUPPORT OR PROVIDE WOMEN WITH BICYCLES/ OTHER FORMS OF SOCIALLY ACCEPTABLE TRANSPORTATION
- CREATE CENTRAL PRODUCT HUBS

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: Global Alliance for Clean Cookstoves

Photo: Practical Action

PRACTICAL ACTION
Technology challenging poverty

IMPACT BY THE NUMBERS

- Approximate annual stove dissemination of 10,000 stoves in West Kenya

ECONOMIC AND LIVELIHOOD

- Women stove producer groups, working 2–3 days per week on average, sold 510 stove liners/ year (per person working)
- Income of $175 annually per woman in producer group
- Stove promoters earn an average of $200 annually
- Cookstove saves users up to $82 with fuelwood savings of up to 43%
- Time savings of about 10 hours/ month
- Smoke reduction of 60%
- Reduction of acute respiratory infections in children by 60%, in mothers by 65%

Practical Action is an international development NGO working to provide realistic and sustainable solutions to alleviate poverty. In 1990, Practical Action—previously known as the Intermediate Technology Development Group (ITDG)—began the Rural West Stoves Kenya (RSWK) project to bring improved cookstoves to rural Kenya. The Kenya Ceramic *Jiko* cookstove introduced in the early 1980s in Kenya and designed largely by urban women achieved widespread adoption in urban areas. However, in rural areas the uptake was slower because it was too expensive and did not meet all of the consumers' cooking needs. The RSWK project worked with rural women to adapt the Jiko to better fit their preferences. Women's groups, with varying levels of skills and knowledge, were trained to produce and disseminate the adapted cookstove model, called the *Upesi* Stove or the *Maendeleo* One-Pot Stove. While the program had initially focused on technology development and production, focus later shifted to marketing and distribution. The goal was to scale distribution and adoption of the *Upesi* Stove by creating long-term demand and an established market by working primarily with women's groups. Today the project sells approximately 10,000 cookstoves annually.

Engaging Women's Groups for Production and Distribution

In 1990, Practical Action conducted a market assessment in the project area and identified key stakeholders—including local organizations, NGOs, and existing stove producers—to support the development, production, and initial distribution of the Upesi Stove. Pottery is traditionally a woman's job in the region, so the team worked with women potters to produce and disseminate the Upesi cookstoves. The project recruited, trained, and worked with eight women's groups, all of which had previously been engaged in some type of income generation activity and were located in areas that traditionally produced pottery.

The initial trainings were participatory, often with role-playing, and were structured to meet the specific needs of each group. The women identified their own needs and developed the training program together with the project implementers. The **WOMEN ALSO DECIDED THE TIME AND LOCATION FOR THE TRAININGS**. During these initial trainings, the group members decided on roles and responsibilities for the different steps in production and distribution. The roles included cookstove production, installation, promotion, and distribution. Regardless of a woman's roles, each woman received technical training on cookstove production and installation, as well as basic business skills.

In 1995, market penetration was still low despite quality production and sustained use of the Upesi Stove by consumers who adopted the cookstove. Women's groups were isolated focal points in disperse rural areas, consequently there was a clear need for a marketing and distribution strategy. Most of the potential users were far from the producers and poor road networks and lack of transport made distribution very difficult. In order to access those living in the last mile, it became crucial to create a strong marketing and commercialization approach.

In 1995, the RSWK project ended and a new program phase began that focused on cookstove commercialization. The primary project goals, to be completed in two stages, were to strengthen the marketing and distribution capacity of women producer groups, to develop concrete commercialization strategies, and to establish a network of key actors in the cookstove supply chain.

The first stage included activities such as collecting baseline data on the market, identifying potential collaborators in the region to expand distribution networks, developing a marketing strategy, and training the women's groups. The training for women's groups included various marketing, business, and team building topics. Basic business techniques included understanding group dynamics, costing and pricing, record keeping, and responding to consumer demand. Marketing training involved developing marketing messages, conducting demonstrations, establishing linkages with communities, and identifying new potential markets. Women were taught how to **"MAP THE MARKET"**, which helped them to examine value chain actors and create linkages in order to identify new areas to sell products and scale distribution. The goal of a market map is to help gain a broader understanding of the market system including relationships with other stakeholders, the needs and interests of those stakeholders, and benefits from increased communication and collaboration. Practical Action has experience conducting more complex "Participatory Market Mapping" in which various private and public stakeholders are brought together to collectively map the market of a particular market system. See best practice on Market Mapping and the tool for more information on how to conduct one.

Within the first phase, women groups developed their own market maps and distribution networks to connect with local retailers and artisans as well as **INTERMEDIARIES**. Women's groups continued to sell cookstoves directly through local markets, but were able to expand their distribution channels by utilizing intermediaries who could transport the products to new retailers beyond their geographical reach.

The second phase included various activities such as branding, distributing marketing materials, training new value chain actors, testing marketing approaches, and conducting promotional activities, such as demonstrations, billboard advertisements, and creating relationships between intermediaries and producers. Local advertising materials distributed to the women and other project players included skit scripts, song lyrics, posters, banners, and flyers. In this phase, the women visited households, churches, markets, grain milling centers, schools, and other public places. Market intermediaries were identified and worked with women's groups to bring products to potential new customer segments, and help retailers scale cookstove dissemination. By the end of the Upesi project in 2001 approximately 16,000 cookstoves had been sold to rural households. It is important to note that although still high, annual sales have decreased since the project ended and the marketing support and trainings from Practical Action ceased.

Incentives and Sustainability

Several **INCENTIVES** encouraged the continued and active involvement of the different market players. These included labels for producers, promotional signs for distributors, a bicycle loan, an award for promoters selling over 100 stoves per month, and other prizes such as tee shirts and trophies. The women kept track of their activities and sales, reporting back at group meetings. Due to low literacy levels, the women memorized their production figures and shared those figures at quarterly team monitoring visits. While the bicycles incentivized the women to reach the quota required to receive the loan, many of the bicycles were subsequently taken and used by their husbands. It is important to note that through participation in the program women's workloads increased, since the traditional division of labor within the family remained almost unchanged throughout the process.

As a result of this project, the market for improved cookstoves has been firmly established in rural West Kenya and is controlled largely by women's groups. Adoption rates for the Upesi Stove were at 97 percent in West Kenya when the program ended in 2001, with 87 percent of the women's groups continuing production and distribution. Thirteen women's groups have been trained in total and several continue to produce and distribute the cookstoves, with an annual dissemination rate of approximately 10,000 cookstoves. However, ongoing involvement of additional women and women's groups could lead to saturation of the market.

One Woman's Story

Meet Lucia Alai—Bringing Improved Cookstoves to Her Community and Beyond

Lucia Alai, 70, is one of more than 200 women trained in the Rural Stoves West Kenya project (RSWK), and is one of its earliest members. She contributed in the early product design process of several improved cookstoves including the Uhai Jiko, the Upesi Lira, and the rocket stove liners, and was a founding member of the Keyo Women Pottery Group, which is now the most successful women's pottery groups making cookstoves in Western Kenya.

Lucia has held various roles within her women's group, including as a quality control specialist, an artisan, and a trainer and resource person for groups both in the region and outside of it, notably in Malawi and Tanzania. When Lucia first started her improved cookstoves business with the cooperative in 1986, she was a peasant farmer with no formal education who became an entrepreneur out of necessity to support her family and unemployed husband. Today, she has a superior technical grasp of the cookstove production process and has employees working for her producing cookstove liners.

Serving as a strong leader on her team, Lucia manages logistics and technical trainings. When her group received its first loan, she counseled the group on purchasing appropriate improved cookstove production parts, while also leading the marketing of their products. After attending trainings on kiln construction and guided by sketches in the kiln manual, she now provides step-by-step training on kiln construction and techniques to build more efficient bonfire kilns. While some community associations occasionally lose direction due to challenges with group dynamics, Lucia has demonstrated impressive management skills helping the Keyo Women Pottery Group to improve group organization and leadership skills, while also developing stability and performance in improved cookstove production.

Lucia has traveled far beyond her own community to share her story of how to create a successful business with other women leaders, contributing to widespread production and distribution efforts. She is passionate about engaging women in bringing a vibrant improved cookstove market to scale for the health of all rural women and their families.

Because of her exceptional work, Lucia is now earning higher than average rural wages. Thanks to Lucia and other dedicated women such as her, Upesi is a recognized brand name in her community and beyond.[33]

Photo: Solar Sister

IMPACT BY THE NUMBERS

- Over 400 SSEs in total, 62 of which, are distributing cookstoves
- Estimated 2,000 cookstoves distributed
- 54,000 people benefitting from SS products

ECONOMIC AND LIVELIHOOD

- 30% reduction in household expenses
- Average monthly wage of an SSE: $48

Solar Sister is tapping into the skills, knowledge, and wide networks of women to distribute solar energy products and improved cookstoves in order to reduce energy poverty while providing women with new economic opportunities. Solar Sister works with over 400 female sales agents called Solar Sister Entrepreneurs (SSEs) in Uganda, Rwanda, Sudan, Nigeria, and Tanzania. They create employment and income opportunities for women using an Avon-style distribution system[34] by building and extending a supply chain for household clean energy products. Through leveraging women's ability to reach remote consumers, Solar Sister is able to increase access to energy and empower women at the same time. Solar Sister has recently incorporated improved cookstoves into their model and their women entrepreneurs have sold approximately 2,000 cookstoves thus far.

Building Supply Chain:

The first key step for Solar Sister is to **PARTNER WITH LOCAL WOMEN'S GROUPS**. The local women's groups provide critical initial insight on potential entrepreneurs and women leaders in the community who may be well positioned to become an SSE. An "anchor woman" is initially identified in a new region and she links Solar Sister to other well-connected women who can potentially become SSEs. Solar Sister has found that because women's groups have vast and established networks of other women who they have histories of working with, they are well-positioned to expand household energy supply chains.

Solar Sister explains to potential SSEs that being involved in this program is a business opportunity and not a giveaway program. Solar Sister gives each potential SSE a **ONE-MONTH TRIAL PERIOD** in which the women are given the opportunity to sell a basket of products (on consignment) to demonstrate their abilities. It is critical to recruit the right women who are not only motivated by the financial returns, but who have an entrepreneurial spirit and are motivated to run a business. Women must be problem solvers and design creative solutions to scale their businesses. Each potential SSE is required to buy the products for their own use so they understand and know how to use them.

Supporting SSEs in their Personal and Business Growth

Solar Sister sources, distributes, and helps market the clean energy products, which are manufactured by international companies, while the SSEs serve as the primary marketers and sales agents. Each SSE is given a $500 micro-investment seed capital loan in the form of an **ENTREPRENEUR STARTER KIT** (called a "business in a bag") that includes:

- Business training and product inventory.
- Marketing support: materials such as Solar Sister branded flyers, stickers, posters, tee shirt, sales record ledgers, a Solar Sister branded bag to carry products, and support for community launch events to showcase the products at high visibility locations.

SSEs are often first-time entrepreneurs who need support and training to succeed. SSEs are single mothers, teachers, healthcare workers, college graduates, and others who are often seeking cash or supplemental income. The **INITIAL GROUP TRAINING** builds their understanding of clean energy products and also focuses on business and marketing skills. The benefits of clean energy, health, welfare, and the environment are also covered. After the initial training, entrepreneurs split into **SMALL, LOCAL TEAMS THAT MEET MONTHLY** to share best practices, discuss challenges, and receive additional training on specific themes such as business and customer service. Empowerment trainings are also conducted on topics ranging from effective communication, problem solving, story sharing, and leadership.

Within these team meetings, **SUCCESSFUL WOMEN MAY COME TO SHARE THEIR STORIES** and past challenges. Solar Sister **BUILDS INCENTIVE STRUCTURES** that reward and encourage high performers who can benefit from increased earnings.

The size of the deposit for the products in the business-in-a-bag during the trial period and subsequent purchases varies by program, but can range from ten percent to 100 percent, as in the case of Tanzania.[35] SSEs pay the balance when the products are sold and can then resupply at the original deposit percentage. SSEs make a small commission on each product sold. On average, an SSE in Uganda makes approximately $48 per month, which is half the normal amount a Ugandan woman typically earns; however SSEs choose how many hours they work and the SSE income is often supplementary.

For every $1 that Solar Sister invests in the initial business-in-a-bag, an SSE generates $46 in economic benefits in the first year. This amount is achieved through her continual purchase of product upon deposit that she then sells to make a small profit. This amount also accounts for the immediate cash savings from customers who do not have to buy kerosene.

Tiered Accountability

Each region has a **SUPPORT SYSTEM ORGANIZED IN SEVERAL TIERS**. The first tier is the Team Leader, who is the lead SSE of a team and one of the first entrepreneurs in an area. The next tier is made up of Solar Sister staff called Regional Coordinators who oversee approximately ten Team Leaders. The Regional Coordinators conduct the large initial recruitment training and monthly group trainings and also help recruit and support entrepreneurs on an individual level. These Regional Coordinators are local women who understand local challenges and speak the language. Finally, Project Coordinators, also Solar Sister staff, oversee four Regional Coordinators and monitor their project management and assist in addressing regional issues or challenges.

Incorporating Cookstoves into the Program Model

In their pilot program to test the feasibility of including cookstoves into the product portfolio, funded by the Global Alliance for Clean Cookstoves, Solar Sister created a simpler account-

ability structure to oversee the initial entrepreneurs. A Program Coordinator serves as the team lead in Nigeria and has three State Coordinators who serve as local trainers, managers, and mentors for the SSEs.

Solar Sister is currently distributing cookstoves in three northern Nigerian states working with its local partner, Sosai Renewable Energies Company, to support and oversee the entrepreneurs. While the pilot program began with 48 women, there are now 62 women distributing cookstoves. SSEs are given an inventory comprised of six Envirofit rocket cookstoves with each inventory worth a total of $124. The women make a down payment of ten percent of the total and pay the balance once the cookstoves have been sold and payments received from the customers. The SSEs call the State Coordinator to order additional inventory and again purchase the product at ten percent of the total, to pay the balance when the product has been sold at which point earning a small commission.

Cookstoves have posed unique distribution challenges. Long distances and undeveloped transportation linkages in Nigeria make transportation difficult for both customers who would like product, as well as distributors who wish to sell the cookstoves. Furthermore, the weight and bulkiness make it hard for distributors to take more than one or two from the warehouse located in Kaduna. In order to tackle these transportation and distribution challenges, Solar Sister has set up a **CENTRAL HUB WITH THREE STOCK INVENTORY LOCATIONS**. SSEs can access cookstove product from these hubs. SSEs are also finding new methods to overcome distribution challenges such as collectively renting a truck to pick up and deliver products.

Creative Cookstove Consumer Finance

In Nigeria, it has been challenging for SSEs to make the case to consumers that cookstoves are worth the upfront cost. Many people are paid at the end of the month, and therefore often have monthly debts that they then need to repay when they receive their monthly wage. Potential customers are reluctant to buy lights and cookstoves until the end of the month, and even then will only buy the products if they have money left over. State Coordinators emphasized the need for installment payment plans to enable purchases. As women have ties in the communities they work in, they are able to plan their own credit and pay-back schemes. Several SSEs have been creative in overcoming payment challenges by becoming official vendors at schools and arranging payroll deductions as payment for the products.

Integrating Mobile Technology: SolConnect

Solar Sister is implementing a new **MOBILE PHONE APPLICATION**, Solar Sister Connect (SolConnect), to help manage the SSE network, enhance business manageability, and increase oversight through inventory tracking, mobile payments, sales status, customer service queries, and daily business tips. The mobile application will allow SSEs to receive payments through mobile money and communicate with Solar Sister management. The SSEs will also receive market feedback, sales tips, special product promotions and other information from Solar Sister. Using SolConnect, Solar Sister management will be able to track and oversee individual sellers and households.

Engaging Men

Solar Sister has not yet needed a specific engagement strategy with men in order to recruit and work with SSEs. However men have begun to approach Solar Sister wanting to become SSEs and there are several Solar Sister Brothers. Solar Sister is collecting sex-disaggregated data from male SSEs on who their customers are and how much they are selling, as well as whether they are recruiting additional sales people, in order to evaluate the gender influence in sales and recruitment. Despite opening its doors to men, Solar Sister remains dedicated to creating and encouraging an environment where women feel free to participate and take risks.[33]

*Best Practice Spotlights**

Identifying Strong Female Entrepreneurs

CARE's wPOWER program[36] works through CARE's 10,000 existing Village Savings and Loans Associations (VLSA) which have over one million members, as well as their Village Agent (VA) trainers across Kenya, Rwanda, and Tanzania. The program uses training, access to quality products, and microfinance to empower female VAs to work in the clean energy sector and establish micro-enterprises. They work with private sector partners who use the VSLAs as a network to access both urban and rural markets. The goal of the program is to train over 3,000 VAs to become clean energy entrepreneurs, selling a bundle of clean energy products to VSLA members and beyond.

CARE has created a recruitment guide with a list of key competencies and skills, as well as general and country-specific qualifications, to increase the likelihood of their success as entrepreneurs. They are specifically working to recruit women, even though men may also fit the criteria. They recognize that it may require additional upfront effort to include women and meet their target of having at least 90 percent female VAs. Through the criteria and selection process, CARE is able to identify strong candidates who have higher likelihoods of succeeding and thriving as entrepreneurs. The selected VAs receive intensive training, access to clean energy products and finance, and assistance in developing business plans to create their micro-enterprise.

Empowerment Training to Increase Business Acumen

Ex-Spring Valley Kayole (ESVAK) is a Kenyan CBO working to create sustainable initiatives that empower community members. ESVAK is currently working with US-based Johns Hopkins University to implement a capacity-building program focused on empowerment training for marginalized Kenyan women to become cookstove entrepreneurs. Traditional international development empowerment programs focus on providing skills, education, opportunity, and promoting equitable governance. These are important endeavors, however, efforts are needed that foster women's sense of self, resulting in greater self-esteem, motivation, self-respect, and self-reliance. This serves as the foundation that enables the other efforts to succeed.

ESVAK is primary implementer of the IMAGINE initiative, a program that uses the "Empowerment Workshop". In the workshop, generally lasting four days (32 hours), individuals participate in an introspective examination of their lives, thoughts, and environmental context and they review issues of critical importance to them. Each IMAGINE workshop is adapted to the local context. The workshops help individuals become empowered through:

- Increasing their self-knowledge to discover what is important to them.
- Translating this knowledge into a workable vision.
- Identifying and transforming the limiting beliefs that arise when doing new things.
- Adopting an actionable growth strategy to achieve their goals.

ESVAK, Johns Hopkins University, and Envirofit are conducting systematic research examining the role of this empowerment workshop in improving the selling, distribution, and adoption of improved cookstoves in Kenya.

Utilizing Entrepreneur Starter Kits Help Women Build their own Micro-Franchise

Utilizing Entrepreneur Starter Kits Help Women Build their own Micro-Franchise

Living Goods is an NGO that utilizes Avon-style[35] distribution methods to engage local women as entrepreneurs by providing them with the necessary skills and products to build their own franchise. Living Goods helps remove supply chain inefficiencies for its women entrepreneurs to deliver cheaper products to consumers and have larger margins. In four years, Living Goods has built a network of over 1,000 sales agents earning $20 per month, distributed over 25,000 cookstoves, and served over 500,000 people living in poverty in Uganda. They are now expanding into Kenya.

The women entrepreneurs work as independent agents of Living Goods franchises. New entrepreneurs receive a below market inventory loan, a free "business-in-a-bag" including uniforms, signs, secure display cases, basic health and business tools, and two-weeks of training. Ongoing support is provided by field staff who offer refresher trainings, mentorship, and performance monitoring. Entrepreneurs have access to Living Goods financial, supply chain, and communication systems.[37] Living Goods utilizes key characteristics of successful franchises through methodically screened agents, expert training, strict quality monitoring, uniform branding and product mix, effective promotions, and low cost goods. The women entrepreneurs go door-to-door selling affordable and critical health and welfare products.

Mobile phones play a critical role in helping Living Goods manage and oversee the female sales agents and their micro-franchises. In Africa, there is a 67 percent penetration rate for mobile phone use and in Uganda mobile phone access has reached nearly 70 percent.[38] Living Goods utilizes mHealth applications[39] to impact business through direct marketing, rapid SMS promotions, and management of sales agents by Living Goods managers. The mobile devices also impact health through SMS treatment reminders, quality control of diagnoses, ensuring healthy pregnancies through registering pregnant women by SMS, and quick access to agents as needed by customers. Customers can also order additional products easily or access agents for repairs and maintenance. Living Goods will be expanding the mobile platform to integrate mobile payment and social networking in their programs.[33]

The Paradigm Project is a social venture company and certified B Corp[9] working to create sustainable and scalable business models that deliver social, economic, and environmental value within developing countries. The Paradigm Project is further tapping into the BoP market by utilizing the wide reach of women as a trained and branded clean energy sales force in East Africa. Paradigm aims to recruit a minimum of 50 percent female sales agents in Rwanda, Ethiopia, and Kenya over the next two years. The overall project goals are to deploy 5 million improved cookstoves over the next 10 years.

The Paradigm Project's goal is to create and support critical linkages in the supply chain for women as potential entrepreneurs, employees, community leaders, and consumers. EzyLife, the franchised brand[40] of the Paradigm Project, was launched to increase consumer demand and brand loyalty alongside robust supply chains to deliver a variety of products. EzyLife not only offers brand name goods from a wide-range of manufacturers, but also designs and produces its own line of products. Women will begin as EzyAgents receiving EzyLife products on consignment and will earn a commission upon sale. EzyAgents are then able to access more product. Through EzyLife, Paradigm plans to provide entrepreneur starter kits for EzyAgents that include EzyLife products and marketing materials. The entrepreneur starter kit also includes three months of training and mentoring, three months of a base salary, and a benefits package to help the women support themselves as they build their business.

Photo: The Paradigm Project

*The full case studies of the best practice spotlights can be accessed online at www.cleancookstoves.org/gender

Distribution Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Create selection criteria proven to help identify and recruit successful entrepreneurs	■ To attract and bring in successful entrepreneurs, create selection criteria based on of past experience that have resulted in women becoming successful entrepreneurs. By creating specific selection criteria, the initiative can also target certain types of women that will be effective, while at the same time meeting other project objectives, such as empowering marginalized women specifically. *See Selection Guide for traits examples.*
Create market maps and emphasize customer service within trainings	■ Female distributors should have strong customer service skills. ■ Market maps should be completed together with the entrepreneurs so that they understand the market, and be can tap into distribution channels, and connects with intermediaries. They should understand how to make the maps on their own to use as a tool in the future.
Offer trial periods for women distributors	■ Women may or may not be suited for the task of being distributors. By having a trial period, programs can weed out women who may not be effective and women can sample whether the work is a good fit for them.
Provide an entrepreneur starter package ("business-in-a-bag")	■ A starter kit can include product samples, marketing materials, and business supplies. This kit serves as initial investment in the woman entrepreneur to help her kick start her business. The starter kit can be provided on loan and paid for over time by the woman herself once she sells the initial product. ■ An entrepreneur starter kit serves to create micro-franchises.
Use gender-informed marketing messages and methods; Utilize women and girl-focused community groups for awareness raising	■ Use gender analysis to determine marketing messages that best resonate with female and male consumers. Identify marketing channels that reach different types of community members, both women and men, such as radio versus community skits. ■ Utilize women and girl-focused community structures such as church groups, school clubs, professional societies, etc. to conduct broad-based awareness raising.
Create a tiered system of accountability	■ Women distributors should have support networks and a system of accountability to oversee their growth in appropriate and effective manners.
Provide incentives	■ Incentive structures to reward and acknowledge high performers can increase motivation and spur healthy competition among entrepreneurs. Incentives should be locally appropriate.
Provide opportunities for successful women to share their experiences, identify or recruit new women, and take on leadership roles	■ Women who have been able to overcome challenges can share stories to help other women understand how to think creatively and overcome challenges. ■ High performers can inspire and recruit other women.
Engage intermediaries for transportation services; Work with men to provide transportation support or provide women with bicycles/other forms of socially acceptable transportation	■ Intermediaries can transport the cookstoves in cases where women face limited mobility. This will increase their access to products and supplies. ■ Utilize the initial gender analysis to determine which modes of transportation are most appropriate, if any. Engage men in the transport of products or supplies, as needed.
Create central product hubs	■ Set up hubs in easy-to access locations so that women can easily access products and other resources or trainings.

CHALLENGES ADDRESSED	TOOLS/ RESOURCES
■ Once recruited, it is difficult to retain women entrepreneurs or employees.	Selection Guide Example (CARE wPOWER)
■ There are gaps in the distribution chain among different actors, such as retail outlets, promoters, transporters, etc. There is little market data on improved cookstove distribution and reaching consumers. ■ Women lack knowledge of market information and data.	Mapping the Market (Practical Action) Business Linkages (*From*: Gender-Oriented Entrepreneurship Promotion: Strategies and Tools along the Project Cycle)
■ Women may not be successful as distributors or may disagree with the work that they have already committed to do.	*See Solar Sister Case Study Example: Trial Periods*
■ Women do not have the upfront capital to purchase products or cover other necessary business-related expenses as they lack access to resources and to credit.	What to Put in an Entrepreneur Starter Kit (Global Alliance for Clean Cookstoves)
■ Marketing is only reaching some community members. ■ Messages are not tailored to specific drivers to purchase for women and men.	Marketing Innovative Devices for the Base of the Pyramid (Hystra)
■ Women are not making sales and may need assistance or support. ■ Women are dropping out of the program.	*See Solar Sister Case Study Example: Tiered System of Accountability*
■ Women are dropping out of the program. ■ Women are deflated due to challenges and low sales.	*See Practical Action Case Study Example: Incentives*
■ It is difficult to recruit women to become distributors.	*See Solar Sister Case Study Example*
■ Women are having trouble in sales and participation because they lack mobility. ■ Cookstoves are heavy and hard for the women to carry, limiting them from having multiple at a time. *See more in Universal Best Practices: Engage Men	*See Additional Readings on Value Chains and Gender in the appendix*
■ Women are having trouble in sales and participation as they lack mobility. ■ Cookstoves are heavy and difficult to carry.	*See Grameen Shakti Case Study Example: Central Product Hubs*

After-Sales Service

In order to promote sustained adoption of well-functioning clean cooking solutions, maintenance and after-sales services are critical elements of any project. Clean cooking products need to be used properly in order to provide results in efficiency and emissions. Therefore, users need to have proper training in the use and maintenance of their cookstoves and fuels. Additionally, customers and sales agents must have knowledge of proper maintenance and repair of the cookstoves, as well as access to replacement parts. This can be particularly challenging when reaching remote consumers who lack access to producers or retail outlets.

Photo: Global Alliance for Clean Cookstoves

WOMEN ARE WELL-POSITIONED TO ENSURE PROPER MAINTENANCE AND CARE OF COOKING SOLUTIONS. As women are the primary users of clean cookstoves and fuels, it is logical that they are the ones who can become experts in their maintenance and encourage their long-term adoption. If networks of women entrepreneurs are able to sell products to all types of consumers, including those in the last mile, they can also serve as the after-sales service providers, specializing in troubleshooting technical problems, parts replacement and repair, customer service, and warranties. In many societies, women are not traditionally engaged in the technology repair or maintenance sector, as these are largely considered men's jobs. Women may also face mobility constraints and cultural and safety issues when visiting households to conduct after-sales services. However, woman-to-woman communication can be very effective, particularly in rural and conservative areas, and can help ensure that clean cooking solutions are being used regularly and correctly.

There are a number of best practices that can be applied when working to include women and increase empowerment opportunities in after-sales service for clean cooking solutions. Additionally there are universal best practices that are applicable throughout the clean cooking sector and should be integrated into all programs. At the end of this section, all of the specific **after-sales service best practices** are summarized, including the challenges they help to address and specific tools that can be used to implement them. A detailed summary of the **universal best practices** and tools can be found on page 78. Readers are able to better understand how some of these best practices have been implemented through concrete examples outlined in the case studies, best practice spotlights, and women's stories featured in this chapter.

Best Practices in After-Sales Service:

- **OFFER PRODUCT TRIAL PERIODS**
- **PROVIDE SUPPORT NETWORKS AND OVERSIGHT**
- **PROVIDE WARRANTIES WITH WOMEN SERVICING REPAIR AND/OR MAINTENANCE NEEDS**
- **EMPHASIZE TECHNOLOGY, REPAIR, AND AFTER-SALES AND CUSTOMER SERVICE WITHIN TRAININGS**
- **CREATE CENTRAL ENERGY HUBS WHERE MAINTENANCE AND SERVICE CAN TAKE PLACE**
- **ENCOURAGE THE USE OF OR PROVIDE MOBILE PHONES**

Universal Best Practices to Engage Women:

- Conduct analysis to understand community gender roles and dynamics
- Develop a strategy to engage men
- Schedule times and locations of meetings/activities around women's availability and remain flexible
- Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups
- Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship

Photo: Genevieve Smith

IMPACT BY THE NUMBERS

- A network of over 400 Sakhis have been trained by SURE, selling primarily cookstoves
- 25% of the women have thus far been trained in after-sales service
- The women have sold ~ 86,000 clean cookstoves to other women mostly, over the past 3–4 years

ECONOMIC AND LIVELIHOOD

- The women earn between $30–$60 monthly in the part time work
- The energy products sold reduce fuel and health expenditures by ~ 20%

Sakhi Unique Rural Enterprise (SURE), founded in India in 2009, engages rural women in the supply chain to bring clean energy products—such as improved cookstoves, water purifiers, and solar products—to last mile consumers. SURE helps to design culturally-appropriate products reflecting the needs and preferences of the users and directly connects public and private institutions to its rural women entrepreneurs, called Sakhis. In partnership with over 400 *Sakhis*, SURE has already sold over 86,000 improved cookstoves. SURE emphasizes customer service and works closely with the women entrepreneurs to provide quality after-sales service. SURE's parent organization, Swayam Shikshan Prayog (SSP) helps to mobilize women's SHGs to nominate village-level women entrepreneurs to become Sakhis, who will then have access to clean energy products through SURE.

Sakhis Build Long Term Adoption through After-Sales Service

SURE has been involved in the marketing of products and services in hard-to-reach rural markets for over eight years. SSP partnered with British Petroleum in 2005 to create the *Oorja* Stove, which is distributed today in a modified form that better meets rural women's needs.

SURE conducts interviews with each potential *Sakhi* and selects them based off of the following criteria:

- A *Sakhi* should be literate and able to keep accounts;
- A *Sakhi* should be from the village where she will be operating, so that she is trusted within the community, and should attend the weekly market; and
- Priority is given to single women and widows who need economic support.

The average age of a *Sakhi* is between 18 and 35 years old. Most *Sakhi*s work part time as they have to prioritize household responsibilities and agriculture work, however, if there are several women in the family, it may be possible for them to work full time. The *Sakhi*s are trained to distribute and service Oorja cookstoves and spread awareness on the benefits of clean cooking practices. *Sakhi*s conduct door-to-door sales and earn a commission-based income.

The *Sakhi* training is conducted in ten days over a three-month period by the Sakhi Social Enterprise Network. It begins with classes on motivating, communicating with, and marketing to the consumer. It then covers energy access, the environment, health, and how these technologies meet specific needs. It also includes technology demonstrations. SURE conducts community activities, such as energy needs assessments, which teach the communities about inefficiencies in cooking and fuelwood use. They use these opportunities to raise awareness about specific energy access needs in the community and potential solutions and products to overcome those issues. The energy needs assessment consists of a community mapping of renewable energy use and the environment. By sharing the results of the mapping, customers are able to see that the available products address a specific problem they are facing in their daily lives. **POTENTIAL CUSTOMERS ARE OFFERED AN EIGHT-DAY PRODUCT TRIAL PERIOD** which the *Sakhi*s arrange and oversee so customers can test if the product is a good fit for them.

Customer service and after-sales service is a critical component of the *Sakhis'* business model. Following the **TEN-DAY TRAINING COURSE**, the *Sakhi*s also complete a **REPAIR AND MAINTENANCE TRAINING PROGRAM** in which they learn about:

- Basic repairs;
- Warranties and offering replacement of products (*Sakhi*s do all minor repairs for free, while the major repairs are done by service engineers); and
- Customer service (encouraging confidence in consumers).

The Oorja cookstove has a **ONE-YEAR WARRANTY**, and customers receive a warranty card from the *Sakhi*s upon purchase. Customers can call SURE if they have an issue with their product and the local *Sakhi* will either repair the product have SURE replace it. In general, customers will call once or twice a year for minor repairs. *Sakhi*s conduct approximately two repairs per month.

Tiered Accountability and Vertical Supply Chain Linkages

WOMEN SUPERVISORS each oversee 25 *Sakhi*s supporting them in sales and confidence building. The women supervisors earn between $60 and $100 per month. Each month the supervisor and her group meet to share experiences and discuss particular challenges and practical solutions.

The *Sakhi*s can order additional products using their **MOBILE PHONES**, which each entrepreneur is required to have. SURE receives the order and buys the product directly from the manufacturer. SURE ships it to the *Sakhi*'s home. The more expensive products, such as the solar water heater, can be ordered through the *Sakhi* for which she receives a small commission, but are installed directly by the company. Currently, *Sakhi*s purchase the products upfront, but SURE is exploring partnerships with financial institutions to help provide necessary finance to the entrepreneurs.

Engaging Men

During the selection process to become a *Sakhi*, SURE requires a family endorsement in which the male head of household agrees that the woman can participate and that he will be supportive in her business endeavors.

Product Hubs for Awareness, Distribution, and After-Sales Service:

SSP's wPOWER program[36] will scale the SURE model through the establishment of **WOMEN-LED ENERGY HUBS**, in which *Sakhi*s will produce biomass pellets, as well as sell and service various cookstove models, including the Oorja. Each hub will have a SURE micro-pelletizer capable of producing 500 kilograms of biomass pellets per day to service up to 500 households. Micro-pelletizers reduce the cost of pellets from $0.27 per kilogram to $0.15 per kilogram, saving the average rural customer $3.65 per month. Products will be showcased at the hubs so that customers can learn about different types of technologies. Each hub will serve as a customer care center in which *Sakhi*s can conduct maintenance and repair. SURE aims to engage 1,000 women in energy hubs in Maharastra and Bihar in order to reach 200,000 households by 2015.

One Woman's Story

Meet Shanta Prabhakar Gawali—An Entrepreneur who Shares her Wealth of Experience

Shanta Prabhakar Gawali, 36, was born and educated in Pune City, just south of Mumbai. She lives in a diverse, cosmopolitan community with neighbors from various states, castes, and religions. While living in Pune with her husband and two children, Shanta realized that her husband's income alone would not be enough to support her family, so she considered starting a business.

After visiting a local SHG exhibition, Shanta decided that by the next exhibition she would be there showcasing and selling products herself. With support from her family, Shanta prepared several traditional foods and sold them at the stall of another SHG. When Shanta's husband was transferred from Pune to Washi Tahsil, she took advantage of the opportunity to quickly expand her business network, making new friends and forming a new SHG.

In 2009, one of SURE's operation managers, impressed with Shanta's business acumen, invited her to work with SURE's women's network in the Osmanabad district as a *Sakhi*. It was an opportunity for Shanta to sell products, such as the Oorja cookstove, Hindustan Unilever products, and d.light solar lanterns. Within a short time span she sold 150 Oorja cookstoves, among many other products, and employed two women to work for her.

She took advantage of professional development trainings where she learned how to conduct customer and after-sales services such as providing warranties and building consumer loyalty. She incorporated these skills into her own business and shared her newfound skills with others. In 2011, Shanta established the Sakhi Bahuddeshiya Samajik Organization to help other women build businesses.

Shanta is now living in Tuljapur with her family where she continues to sell SURE products and provide customer service with after-sales support, earning $90.50 each month. She is trusted and respected in her community by her many customers who know they can rely on her if anything happens to their products.

A great source of inspiration for other Sakhi SURE entrepreneurs, Shanta continues to take trainings from SURE and remains dedicated to both her ongoing growth as an entrepreneur and to providing continual support to her fellow businesswomen and ever-growing number of customers.[26]

Photo: SURE

*Best Practice Spotlight**

Grameen Shakti

Central Energy Hubs Train and Empower Female Service Agents

Grameen Shakti is an NGO founded in 1996 to promote affordable, clean, modern, and sustainable renewable energy technologies to rural Bangladeshi people. In Bangladesh, 89 percent of the population uses solid fuels for cooking, with HAP impacting approximately 134 million people. [11] [12] Grameen Shakti began their work with solar power products, and has since added biogas and improved cookstoves to their suite of products. Grameen Shakti has sold over 1 million solar home systems and 600,000 improved cookstoves through their network of 11,000 trained technicians and engineers.

Grameen Shakti also has a network of 3,500 women who work independently as renewable energy technicians earning approximately $150 per month. There are 46 Grameen Technology Centers that train and empower young women to become entrepreneurs. While the centers have largely focused on solar technologies, they are now expanding to include cookstoves. The technology centers, first set up in 2005, are managed by women from rural communities. The women train customers on how to maintain their systems and provide them with training manuals. Customers receive free monthly after-sales support on their products including basic repairs and maintenance for three years. Longer-term warranties are also offered for an additional fee. The female technicians make up the local production and repair network to bring services to rural people's homes. [41]

CEDESOL

Centro de Desarrollo en Energía Solar

Women become Master Trainers and Cookstove Experts in their Community

The Bolivian-based Centro de Desarrollo en Energía Solar (CEDESOL) is dedicated to equipping the Andean people with improved cooking technologies and education. Bolivia is one of the poorest countries in the world with 99 percent of the rural population using biomass for household energy use.[11] CEDESOL works in collaboration with local organizations and communities in order to disseminate and service the different cookstove models.

The Alliance has commissioned a research study to be conducted by CEDESOL to measure the impact of women entrepreneurs on adoption in the Andean region. CEDESOL will recruit and train 30 women to become "Innovative Leaders" in their communities to serve as the local cookstove knowledge and maintenance expert. CEDESOL will conduct the training in two to three day trainings every three months. Each training session will include a different curriculum that the Innovative Leaders will then teach during monthly community meetings. In exchange for a discount on the cookstove, customers agree to participate in the meetings held by their community's Innovative Leader. The various curricula cover topics such as technologies, maintenance and repair, and health. The Innovative Leaders will be empowered as community leaders and technical experts guiding their neighbors to live healthier lives.

*The full case studies of the best practice spotlights can be accessed online at www.cleancookstoves.org/gender

After-Sales Service Best Practices

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. A detailed summary of the universal best practices and tools can be found on page 78. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender

BEST PRACTICE	ABOUT
Offer product trial periods	■ Trial periods reduce customers' hesitation to purchase products and allow them to see if the product meets their needs. ■ The female sales agents can oversee the trial period, which helps with logistics and increases consumer confidence in the product and sales agent.
Provide support networks and oversight	■ Support networks can be made with a pyramid system of accountability and oversight to ensure they are providing good after-sales service. ■ Mentors can help after-sales agents to overcome gender-specific challenges. For example women may need another person in going door-to-door.
Provide warranties with women servicing repair and/or maintenance needs	■ Warranties help increase consumer confidence in the product/service agent. ■ Women servicers can ensure that customers are able to understand and use warranties.
Emphasize technology, repair, after-sales, and customer service within trainings	■ Women service agents need to understand how to repair and trouble shoot technical problems. ■ Basic business training and customer service helps women oversee sales and services.
Create central energy hubs where maintenance and service can take place	■ The hubs can be used for marketing, distribution, maintenance, and repair, as well as serve as spaces for women entrepreneurs to meet, train, and learn from each other.
Encourage the use of or provide mobile phones	■ Depending on the culture and the communities that women are working in, mobile phones can be appropriate and highly-effective for customers to access service or ask questions about products.

CHALLENGES ADDRESSED	TOOLS/ RESOURCES
■ Customers are hesitant to purchase the product.	*See SURE Case Study Example: Customer Trial Periods*
■ Women are not providing consistent service or repairs, need quality control oversight ■ Women need social support going to homes.	*See Additional Readings on Value Chains and Gender in the Appendix*
■ Customers are hesitant to purchase the product.	Warranty Examples (Global Alliance for Clean Cookstoves)
■ Women do not understand how the technology works or how to repair it (this can be impacted further by low education and literacy levels). ■ Women have limited knowledge and business skills.	*Example of technology training:* How to create an Upesi stove (Practical Action)
■ Customers/female after-sales agents are in hard-to-reach locations. Entrepreneurs do not have opportunities to meet with each other and exchange learnings.	*See Grameen Shakti Case Study Example: Central Product Hubs*
■ Customers/female after-sales agents are in hard-to-reach locations.	*See Living Goods Case Study Example: mobile phones*

Photo: Global Alliance for Clean Cookstoves

A CALL TO ACTION

The clean cooking sector has never been better-positioned to prioritize and put into action targeted efforts that focus on women's empowerment and inclusion in the solutions that so deeply impact their lives. There is substantial opportunity for a wide variety of stakeholders to strengthen women's involvement in the clean cooking sector—not only to increase women's empowerment opportunities, but to increase their own success rates and adoption impacts. All sector players can benefit from the best practices outlined in this *Resource Guide*. In order to truly leverage the influence that women can have on the sector, we must collectively apply these principles as a whole.

Private sector players, such as manufacturers and distributors, can evaluate their business models using this *Resource Guide* and determine where they can increase opportunities for engaging women. By harnessing women's power they can effectively scale adoption of their life-saving products. Donors, development agencies, and NGOs can use this guide to better understand how to evaluate whether or not programs are adequately leveraging women's strengths. Governments and financial institutions can look at specific ways that they can increase women's participation and entrepreneurship through policies and access to finance.

These best practices should be actively and continuously considered and implemented:

- **Understand community gender dynamics.** It is necessary to understand gender relations before being able to effectively develop strategies to ensure the inclusion of both women and men. Additionally, conducting gender-informed surveys, focus group discussions, and expert interviews allows organizations to get an accurate assessment of the current state of the sector in communities that they work.
- **Be flexible and considerate of women's availability.** Women have many competing demands on their time and program opportunities should be flexible in terms of time commitment, participation levels, locations, child care options, and schedules.
- **Build strong local partnerships.** No one organization can effectively conduct all necessary activities to scale up adoption. Create relationships with local partners who understand social and cultural dynamics, challenges, and opportunities. Partnerships with women's groups should strongly be considered. Local partnerships can leverage women's trust and expand the program's reach without reinventing the wheel.
- **Create livelihoods that work for women.** Leverage women's large networks and traditional skills to build upon a valuable foundation. Organizations can increase the likelihood of success of livelihood opportunities by matching them with women's needs, such as allowing for part-time employment, and increasing capacity building, and access to finance.
- **Train, mentor, and train again.** Tailor training topics to address specific gaps in women participants' knowledge and emphasize business, financial, and leadership skills and technical knowledge. Ensure that women have access to continuous educational opportunities to stay up-to-date on the latest technologies and market data. Consider providing mentorship opportunities to complement trainings to provide continuous coaching and counseling.
- **Be innovative.** Consider all options—trial periods, rent-to-own schemes, entrepreneur starter-kits, sales incentives, mobile phone applications, collective transportation solutions, central product hubs, and revolving loan funds. These all offer an innovative solution to a common problem. Think outside of the box and test cutting-edge approaches to overcome many of the common challenges women face.

The Alliance is committed to helping our partners continuously improve their empowerment impacts and their overall bottom lines. We will learn from and test different ways of engaging women to leverage their potential to ensure sustained adoption of clean cookstoves and fuels. We will continue to share these learnings through a variety of practical, actionable tools such as this *Resource Guide*. You can find the latest Alliance research, resources, and information on gender and empowerment on our website at www.cleancookstove.org/gender.

Now is the time for every stakeholder to step forward together; to support women in their own empowerment and engage them as leaders in order to guarantee clean cooking solutions for all.

UNIVERSAL BEST PRACTICES FOR ENGAGING WOMEN

These best practices are common throughout each section of the clean cooking value chain. They relate to understanding gender roles and dynamics, engaging men, and overcoming common challenges that women face.

These best practices have been collected and designed after a review and analysis of desk research and relevant case studies, including the ones highlighted in this *Resource Guide*. The *About* column describes the best practice in more detail and outlines any specific lessons learned from past experiences. The *Challenges Addressed* column describes specific challenges that can be overcome by applying this best practice. Each best practice is linked to specific tools and resources that practitioners can use to apply the intervention in their work. All of the tools and resources can be accessed on the Global Alliance for Clean Cookstoves' website at www.cleancookstoves.org/gender.

BEST PRACTICE	ABOUT
Conduct analysis to understand gender roles and dynamics in a community	Understand men and women's roles in the community, as well as gender expectations and responsibilities, in order to appropriately approach and engage community members. A gender analysis focuses on understanding the differences in gender roles, activities, needs and opportunities in a given context. As roles and learned behavior of men and women vary across cultures, class, ethnicity, income, and time, it is highly recommended that an initiative conduct a gender analysis. This will help practitioners understand the gender-specific challenges, needs, priorities, intrahousehold dynamics, and interhousehold relations in order to appropriately engage women without causing unintended negative consequences. Gender analyses help identify gender equality objectives and indicators for measuring success, foster equitable relationships, and institutional commitment to gender mainstreaming. Further understanding can be achieved through an examination of identity, power, and politics within a community. This is important for practitioners to understand when working with community members.
Develop a strategy to engage men	Community leaders and men (husbands/heads of households) should be educated on the initiative before activities with women begin and their approval should be sought. Men's opinions and concerns need to be taken into account, as well as women's. Strategies can include: ■ Engage both men and women in meetings, discussions and FGDs; consider separating men and women for some or all of these activities to encourage women's full participation. ■ Ensure that men are fully aware of the program and how women may be involved. Ask for their approval to engage women and their support. Conduct gender trainings for men and women. ■ Educate men to understand the importance of saving money and how the saved money can benefit their family (e.g. education for children). ■ Within supplier and consumer finance, encourage men to help women access loans (through offering collateral) and pay back loans. ■ Within production, distribution and after-sales service, engage men to assist with transportation to access supplies or sell goods.
Schedule times and locations of meetings/ activities around women's availability and remain flexible	In order for women to be actively and consistently involved in the program, meetings/ discussions/ activities need to be compatible with women's other competing duties and flexible to allow women to prioritize their household responsibilities and family. An understanding of this should be taken into account while working to understand gender roles and dynamics. Strategies for this can include: ■ Consult with local partners and the women themselves regarding when to schedule meetings and activities, and hold them in easily-accessible locations. Include questions in initial surveys on women's traditional work schedules and duties. ■ At meetings, consider including accommodation for childcare needs. ■ Within production, consider allowing women to work from home, if possible. ■ Within production, distribution and after sales, allow women to work part time. Integrating women into programs can be a long process, and implementers must be aware of possible unintended negative consequences that may occur. It is critical to remain patient when building the trust within the community and allow women to take the lead in determining what roles are best suited for their lives.

OVERARCHING CHALLENGES ADDRESSED	TOOLS AND RESOURCES
■ Gender norms are disrupted by the project and/ or it is causing intra-household conflict. ■ Women are inadvertently excluded from activities. ■ Women have low representation in decision-making. ■ Gender expertise within businesses/organizations is low.	Gender Analysis (The World Bank) Tips for Conducting a Gender Analysis at the Activity or Project Level (USAID) Stakeholder and Gender Analysis (UNDP) *Read more:* – Mainstreaming Gender in Energy Projects: A Practical Handbook (ENERGIA) – Worksheet: Identity, Power and Politics (From: Human Centered Design Toolkit page 159)
■ Men are not supportive of women's involvement. ■ Intra-household conflict is being caused. ■ Men control assets and resources. ■ Women entrepreneurs are limited in business activities due to restrictive gender norms.	Engaging Men and Boys in Gender Equality and Health: A Global Toolkit for Action (ProMundo, UNFPA) *Read more:* – Engaging Men and Boys: A Brief Summary of UNFPA Experience and Lessons Learned (UNFPA) – Gender Training: Training Manual on Gender and Climate Change (IUCN)—pages 27–40
■ Women are time poor due to many household and other responsibilities.	Human-Centered Design Toolkit (IDEO) *See Chart on Further Readings and Master Gender and Energy Outline*

UNIVERSAL BEST PRACTICES FOR ENGAGING WOMEN
continued

BEST PRACTICE	ABOUT
Identify and build strong local partnerships with trusted individuals and organizations; Strongly consider working with women's groups	Identify strong and dedicated local partners (CBOs, NGOs, SMEs, women's groups and associations, etc.) who can make introductions and help establish trust in the community. Community members who are respected leaders or people with a reputation for intelligence/ fairness are often good to identify as partners. Partnership strategies can include: ■ Partners lead surveys and meetings/ discussions - other people in the community may be able to express concerns more openly and honestly. ■ Work with/ through partners to identify, recruit and retain women; allow the opportunity for women to self select themselves. ■ In conservative societies, women may be more comfortable asking and answering questions among other trusted women, and woman-to-woman communication is the most effective method for candid and honest feedback and dialogue. It is particularly valuable to partner with women's groups. Groups of women can either be created or programs can work through existing groups. Group settings can enhance the ability of women to overcome constraints, both cultural and social. Women within groups may have more confidence and greater opportunities for personal and business growth. Women working in groups can have greater access to markets and intermediaries who can source local materials, distribute and transport goods, access new retail outlets, etc. How to utilize groups of women within strategies: ■ Conduct trainings, initially and continually, within the women's groups. ■ Encourage women to collectively pool their assets and resources. ■ Encourage sharing of best practices. ■ Enable an internal leadership structure. ■ Within distribution, encourage women to utilize existing group networks to access new female customers.
Conduct gender-sensitive trainings on relevant topics; Offer continuous training opportunities and mentorship	Training needs to be tailored to the program participants. Trainings should be gender-sensitive, and may be more effective if conducted in single-sex groups to encourage full participation of women. ■ Basic training on clean cooking technology is key to engaging women in all value chain segments. ■ Business and customer service training should be incorporated when women are involved in any business or customer relations functions (Production, Distribution, After-Sales Service) ■ Financial training should be incorporated into the business-related value chain segments as well as for women in Consumer or Supplier Finance. ■ Training on personal development and leadership can assist in greater individual and group success in all value chain segments. Themes can include: leadership, communication, conflict management, and decision making. Training and educational opportunities should be ongoing to ensure women have access to the latest information and knowledge. Consider incorporating theater, role-playing, art, music, and other creative, participatory activities that are culturally appropriate into trainings. Mentorship programs can provide women with continuous coaching and support.

OVERARCHING CHALLENGES ADDRESSED	TOOLS AND RESOURCES
■ Community members are untrusting of outside organizations. Men are concerned about or do not approve of outsiders working with women. ■ Women lack access to resources/ assets. ■ Women entrepreneurs lack access to a variety of market actors and intermediaries, as well as valuable market data.	Analysis and Selection of Partner Group Organizations (*From*: A Manual for Practitioners page 14-15) Monitoring Form for Measuring Sustainability of Women's Groups or Associations (*From*: A Manual for Practitioners, pgs 32-33)
■ Women have limited technical knowledge and little familiarity with finance and business skills.	*Business Training:* Gender and Entrepreneurship Together: GET ahead for women in enterprise training package and resource kit (ILO) *Personal growth training manual example:* Leading to Choices: A Leadership Handbook for Women (Women's Learning Partnership for Rights, Development and Peace) *To help evaluate training needs:* Gender Entrepreneur Analysis for Monitoring and Evaluation (*From*: Gender-Oriented Entrepreneurship Promotion: Strategies and Tools along the Project Cycle) *Training tips*: Training Manual on Gender and Climate change (IUCN)—pg 7

DEFINITION OF KEY TERMS

Gender: Refers to the socially-constructed roles as well as socially-learned behaviors and expectations of being male and female. It considers notions of what a given society considers to be appropriate for men and women. It includes the responsibilities, social identities, power distribution, and other relations between men and women. The term distinguishes the socially-constructed aspects from the biologically-determined aspects of being male and female (referred to as 'sex').

Gender Mainstreaming: The process of assessing the implications for women and men of any planned actions, including legislation, policies, or programs, in all areas and at all levels. It is a strategy that ensures gender perspectives and gender equality objectives are integral dimensions of the design, implementation, and monitoring and evaluation of policies and programs so that women and men benefit equally and inequality is not perpetuated.

Empowerment: The process of enhancing an individual's or group's capacity to make strategic choices and transform those choices into desired actions and outcomes. This involves improving their assets and their capabilities so they can become agents of positive social change on their own behalf.

Clean cookstove: Improved cookstove technology that addresses the health and environmental impacts associated with traditional cookstoves. For the Alliance's Monitoring and Evaluation Framework, to be counted as a "clean" cookstove, stoves must meet the interim tiered performance standards for the sector initiated through the ISO International Workshop Agreement (IWA) in February 2012: Stoves that meet the tier 3 standard for indoor emissions or higher will be counted as clean for health impacts, and stoves that meet the tier 3 standard for overall emissions or higher will be counted as clean for environmental impacts. This framework will be re-evaluated at the end of Phase 1 in light of new scientific evidence, sector capacity, and progress with standards development.

Base of the Pyramid (BoP): The term for the largest and poorest socio-economic group comprised of 4 billion people who live on less than $2.50 per day. The people that constitute the BoP are largely an underserved and invisible market excluded from the modernity of globalized societies.

Internally Displaced People (IDP): Someone who is forced to flee their home but who, unlike a refugee, remains within their country's borders.

ACRONYMS

BoP: Base of the Pyramid

CARE2: Capital Access for Renewable Energy Enterprises

CBO: Community-Based Organization

CCT: Controlled Cooking Test

CEDESOL: Centro de Desarrollo en Energía Solar

DEEP: Developing Energy Enterprises Project

ESVAK: Ex-Spring Valley Kayole

FGD: Focus Group Discussion

GERES: Group Energies Renouvelables, Environnement et Solidarité

GVEP: Global Village Energy Partnership

HAP: Household Air Pollution

ICOPRODAC: Association of Producers and Distributors of Improved Cookstoves in Cambodia

ICSEE: International Collaborative for Science, Education and Environment

IDP: Internally Displaced People

IFC: International Finance Corporation

ILF: International Lifeline Fund

ITDG: Intermediate Technology Development Group

KPT: Kitchen Performance Test

LPG: Liquefied Petroleum Gas

MFI: Microfinance Institutions

MSME: Micro, Small and Medium Enterprise

NGO: Non-Governmental Organization

NLS: New Lao Stove

NKS: Neang Kongrey Stove

RLF: Revolving Loan Fund

SACCo: Savings and Credit Cooperative

SEWA: Self-Employed Women's Association of India

SHG: Self-Help Group

SME: Small and Medium Enterprise

SSE: Solar Sister Entrepreneur

SSP: Swayam Shikshan Prayog

SURE: Sakhi Unique Rural Enterprise

TIDE: Technology Information Design Endeavor

UNHCR: United Nations High Commissioner for Refugees

VLE: Village Level Entrepreneur

WDA: Women Development Association

WSCG: Women's Savings and Credit Group

VA: Village Agent

VSLA: Village Savings and Loan Association

CRITERIA FOR CASE STUDY SELECTION

The selection of the case studies was based on stated organizational goals and program achievements related to indicators of women's empowerment and livelihood impacts.

Organizational goals: Women's involvement in the program and women's empowerment was part of the organization's objectives.

Focus on overcoming common constraints for women as consumers and market actors: The program took initiative and was successful in addressing a significant number of the common constraints faced by women, including:

- Women faced exclusion through discrimination
- Women had lacked education and/ or technical and business knowledge
- Women's labor was undervalued and undercompensated
- Women lacked control over assets and resources
- Women had limited free time due to their many responsibilities

Focus on overcoming common constraints for women as entrepreneurs: (relevant to sections on Production, Distribution, After-Sales, and Supplier Finance). The program took initiative and was successful in addressing the following:

- Lack of affordable and accessible credit
- Lack of access to variety of market actors and market data
- Limited knowledge and skills in business and finance
- Lack of access to training and knowledge on technology
- Lack of mobility

Engagement of men: Men and women were involved in appropriate ways that fostered participation of both, with an emphasis on supporting women's preferences and needs.

Financial and practical viability: Programs were structured to continue beyond the initial phases with long-term and sustainable impacts.

Impact: Number of women, families, and communities impacted by the program (health and livelihood); number of households that adopted cooking products.

Empowerment: The program had success in some of the following women's empowerment indicators, as applicable in their featured value chain segment:

- Social engagement in clean cooking initiative
  - Support for women's involvement from men (husbands and community leaders)
  - 50% greater participation of women vs. men in cookstove meetings and social or community events
- Economic
  - Increased income generation opportunities
  - Increased women's savings
  - Loans, credit, or consignment accessed by women for activities or purchases
- Political
  - Women's participation in community groups increased
  - Articulation of women's needs and issues in village meetings increased
- Community
  - Platform for women's participation increased
  - Increased male support of women in community participation outside of cookstove programs
- Individual
  - Increase in women's self-esteem and confidence
  - Increase in women's capabilities and skills
  - Increased mobility
  - Increase in women's networking opportunities
  - Women's work burden affected—more or less work (negative or positive)

FURTHER READINGS

Training Manuals/Guides on Gender, Gender Mainstreaming and Energy

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Vincent, K., Wanjiru, L., Aubry, A., Mershon, A., Nyandiga, C., Cull, T., Banda, K. (2010). Gender, climate change and community-based adaptation: A guidebook for designing and implementing gender sensitive community based adaptation programmes and projects. *UNDP.*

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Brooks, K., Gill, K., Kes, A., McDougall, J., Patel, P. (2010). Bridging the gender divide: How technology can advance women economically. *International Center for Research on Women.*

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1 Ernst & Young, 2012.

2 Brush et al, 2011.

3 Corporate Citizenship, 2010.

4 Coleman et al, 2010.

5 Borges, 2007.

6 Osnes, 2012.

7 IFC, 2011.

8 A B Corp is a business that has been certified as meeting rigorous standards of social and environmental performance, accountability, and transparency.

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10 World Health Organization, 2004.

11 Institute for Health Metrics and Evaluation, 2012.

12 Genocide in Darfur. *United Nations Human Rights Council.*

13 Darfur. *Lawrence Berkeley National Laboratory.*

14 Impacts on families and fuelwood are taken from impact assessment surveys conducted in 2010 in the Zam Zam camp (largest displacement camp in Darfur). Adoption results from the 2010 baseline survey in the Zam Zam camp of 100 households using traditional stoves, and a follow up survey eight months later the women had received the cookstoves.

15 *GBD profile: Ethiopia.* Global Burden of Disease Study 2010.

16 Exchange Rate: 1 United States Dollar (USD) = 4.4 Sudanese Pounds

17 Our work. *International Collaborative.*

18 Exchange Rate: 1 USD = 1615.5 Tanzanian Shillings

19 World Bank, 2011: *Cambodia: The Neang Kongrey Cookstove Initiative.*

20 *GBD profile: Cambodia.* Global Burden of Disease Study 2010.

21 Exchange Rate: 1 USD = 4095 Cambodian Riels

22 Narain, 2009.

23 Jagriti offers pressure cookers, gas stoves, *tandoors* (local space heating cum cooking devices) and hamams (local water heating devices).

24 UNDP, 2011.

25 Exchange Rate: 1 USD = 65.7 Indian Rupees

26 A partial credit guarantee represents a promise of full and timely debt service payment to a private lender up to a predetermined amount. Typically the sum under the guarantee covers creditors irrespective of the cause of default. They are structured to reduce the probability of default on the debt instrument and increase the recovery if default occurs. (IFC definition)

27 Dutta, 2005.

28 Exchange Rate: 1 USD = .65 Pounds (Loan Guarantee Fund); 1 USD = 1618 Tanzanian Shillings

29 Microfinance and microenterprise issues in Uganda. *Foundation for Sustainable Development.*

30 These are isolated cases of surveys and this is an estimated number from those surveys.

31 *GBD profile: Uganda.* Global Burden of Disease Study 2010.

32 Exchange Rate: 1 USD = 2595 Ugandan Shillings

33 Exchange Rate: 1 USD = 87.6 Kenyan Shillings

34 Avon is one of the oldest and largest companies to use 'direct sales' distribution in which women and men could work from home as Avon sales people and go door-to-door selling products.

35 Credit is not provided in Tanzania because the country team staff advised against it as there are many easily accessible micro finance institutions, which women have no issues borrowing from.

36 The "Program in Support of Women's Entrepreneurship in Renewables" (wPOWER), is an public-private partnership initiative with the goal to empower 7,000 women clean energy entrepreneurs across India, Nigeria and East Africa launched by U.S. Secretary of State, Hillary Clinton.

37 What is microfranchising? *Microfranchise Ventures.*

38 How texting saves lives in Uganda. *Cisco Corporate Social Responsibility.*

39 mHealth is the practice of medical and public health supported by mobile devices.

40 A franchise brand is a wholesaler or retailer that has been given exclusive rights to sell a brand in an area. EzyLife seeks to create a recognized brand and strong business model attracting entrepreneurs and customers.

41 Exchange Rate: 1 USD = 77.5 Bangladeshi Taka

Photo: Global Alliance for Clean Cookstoves

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