

“With Solar Sister, Forward We Go”: A Qualitative Assessment Exploring How Solar Sister Brings Light, Hope, and Opportunity to Women in Africa

Research Conducted by the International Center for Research on Women

with Support from wPOWER, a U.S. Department of State Initiative

Lizzette Soria (ICRW), Kathryn Farley (ICRW), and Allie Glinski (ICRW)

ENTERPRISE BACKGROUND

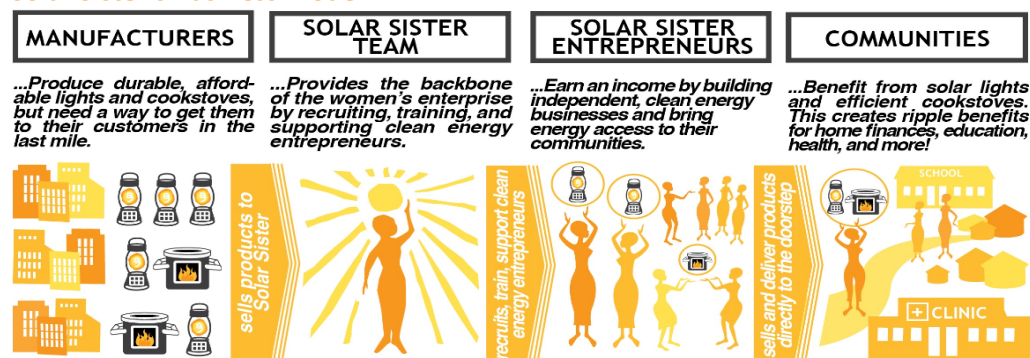
Putting income and energy in women’s hands can have powerful economic and social impacts on women’s businesses, their families, and their communities. Evidence shows that the income of self-employed, rural women who have access to energy is over twice that of their counterparts without access to energy. For rural women, access to energy is correlated with 59% higher wages.¹ Moreover, research suggests that as women earn higher wages, there is a cascade of potential benefits to their social and economic well-being, translating to better educational, nutritional, health, and productive outcomes for their families and communities.²

Acronyms

- **BDA** – Business Development Associate
- **FGD** – Focus Group Discussion
- **ICRW** – International Center for Research on Women
- **PCI** – Project Concern International

The mission of Solar Sister is to eradicate energy poverty by empowering women with economic opportunity and access to energy in rural Africa. Solar Sister currently has operations in Tanzania, Uganda, and Nigeria. In order to achieve its objective, Solar Sister’s business model deliberately creates women-centered direct sales networks through women’s enterprise development and capacity building. Management staff train and recruit Business Development Associates (BDAs), who are direct, locally-hired Solar Sister field staff. In turn, each BDA recruits, trains, and supports a group of 1-25 self-employed Solar Sister Entrepreneurs (SSEs). In total, Solar Sister has recruited and trained 65 BDAs and over 2,000 SSEs, the majority of whom are women.³

Solar Sister’s Business Model



¹ O’Dell, K., Peters, S., & Wharton, K. (2014). *Women, Energy, and Economic Empowerment: Applying A Gender Lens to Amplify Impact*. Deloitte University Press. Available at: <http://dupress.com/articles/women-empowerment-energy-access/>.

² Morrison, A., Raju, D., & Sinha, N. (2007). *Gender Equality, Poverty and Economic Growth*. Policy Research Working Paper 4349. Washington, DC: The World Bank.

³ Solar Sister Website. Available at <https://www.solarsister.org>.



RESEARCH PURPOSE AND METHODS

The purpose of this study was to better understand whether and how being a clean energy entrepreneur with Solar Sister impacts women's and men's lives at the individual, family, and community levels. As a secondary purpose, this study sought to reveal initial insights about the benefits experienced by customers as a result of using Solar Sister's clean energy products. Through our research, we also identified potential areas for further research and opportunities for improvement.

In order to explore these issues, we focused our study around the following key research questions:

- How does Solar Sister engage women and men throughout its business model? To what extent does this engagement contribute to the company's success?
- What are the main social and economic effects (positive or negative) experienced by Solar Sister's female and male entrepreneurs and employees as a result of their engagement with Solar Sister?
- What are the main social and economic effects (positive or negative) experienced by customers as a result of adopting Solar Sister's clean energy products?

To answer these questions, we conducted interviews with, management staff, BDAs, and female and male entrepreneurs. We also conducted focus group discussions (FGDs) with SSEs and customers, and carried out a PhotoVoice workshop.

What is PhotoVoice?

PhotoVoice is an innovative and participatory methodology that allows participants to use photography and/or video to capture the social, economic, political, and psychological changes they experience and share them with others. For this project, we taught a group of female Solar Sister Entrepreneurs how to use digital cameras, and then asked them to go out and visually capture how being a part of Solar Sister has changed their lives.

The data collection took place in four regions of Tanzania, Mara (Rorya and Musoma), Mwanza (Mwanza), Manyara (Babti) and Arusha (various districts). These locations were selected due to the large number of SSEs in the region and the socio-economic diversity between the two regions.



The table below details the data collection activities conducted:

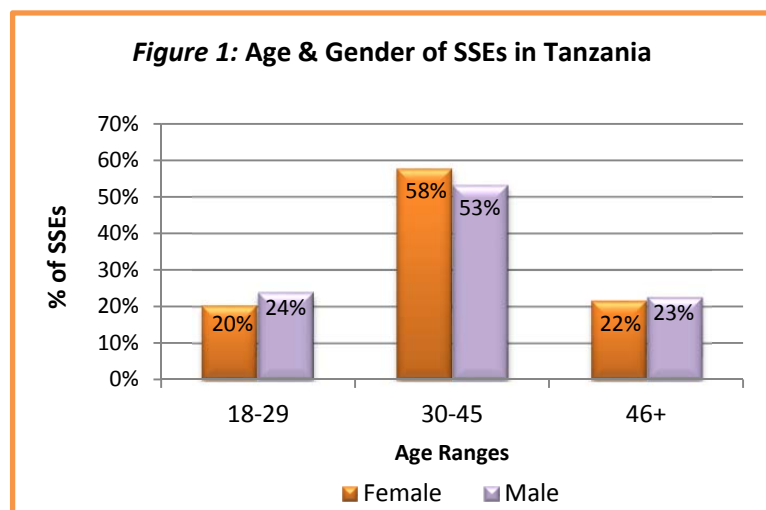
Participant Type	Number and Type of Data Collection Activity	Total Number of Participants
Management Staff	2 interviews (1 female, 1 male)	2
Business Development Associates (BDAs)	4 interviews (3 female, 1 male)	4
Solar Sister Entrepreneurs (SSEs)	6 interviews (4 female, 2 male)	6
	4 FGDs (4 female)	25
	PhotoVoice exercise (7 female)	7
Customers	2 FGDs (2 mixed groups, male and female)	13
TOTAL	19 data collection activities	57 participants

FINDINGS

BUSINESS ENGAGEMENT OF FEMALE AND MALE ENTREPRENEURS AND EMPLOYEES

Profile of Solar Sister Entrepreneurs and Employees:

The SSEs in Tanzania are composed of 67% female entrepreneurs, and 33% male entrepreneurs. As shown in **Figure 1**, the majority of both female and male SSEs are between the ages of 30 and 45. These female and male entrepreneurs are recruited by BDAs through local partners and savings and credit co-operatives (SACCOs). Solar Sister also has strong networks and relationships with informal saving groups and women's groups that refer them to potential entrepreneurs who already have access to capital.



Source: Solar Sister Sales Data – Tanzania, December 2015

With these referrals, BDAs carry out community meetings and door-to-door recruitment, where they explain the work of Solar Sister and the qualities they are looking for among their entrepreneurs including: flexibility, trustworthiness, problem-solving skills, quick learning ability, creativity, and an entrepreneurial spirit. According to Solar Sister management staff, *“For the SSEs, existing experience is not as important as it is for the BDAs. What we are looking for, first of all, is willingness to become an SSE. We focus on those women who are open and who are already in...income-generating activities. It is*

easier for them to [borrow] money and to get capital.” For recruitment, BDAs mentioned that education level, age, and religion are not as important as the entrepreneurship and interpersonal qualities that SSEs possess.

Motivations to Join Solar Sister:

The main motivations to join Solar Sister differ among female and male entrepreneurs. For female entrepreneurs, the main motivation to join was their desire to have **their own source of income** to be able to support their families and children. Indeed, the ability to gain earnings is particularly important for women in rural Africa, where unemployment and wage gaps are deeply pronounced.⁴ During the group discussions, some female entrepreneurs explained that they joined Solar Sister because they saw how well other SSEs were doing, and wanted to experience the same benefits. One BDA also noted this motivation, and specifically the ability to use profits from Solar Sister to pay for adequate food: *“Other [women] want to join when they see others’ success. Some cannot even afford meals, but Solar Sister Entrepreneurs get lunch and dinner.”* Moreover, this type of business is particularly attractive to female entrepreneurs because it is a sustainable source of income from which they can rely on over time. One manager noted: *“This business does not expire. It is not like selling tomatoes. It is [a] durable business and is attractive to women.”*

One BDA reflects on her recruitment strategy:

“Sometimes before I go out [for recruitment], I used to go to...the lady who is so high up, you know she is a community mobilizer; she is in a lot of ladies groups. So through her, I go around to ladies groups. I introduce myself, my intentions and what I want from them. And these women, if they happen to be ready to work with me, I tell them they must be active because we are looking for active entrepreneurs, not people who won’t be active. So through these meetings, we can get usually two or three of them from the different lady groups...When I say active, I mean a woman who is able to do business. Who is not scared, because before when we say you need to be entrepreneurs, they come, but they can’t do anything. Now, we want to work with women who can do business. For example, I am looking for someone who will be like me: strong, to be creative, to be active, to be good, presentable.”

Other common motivations for joining Solar Sister, specifically among female entrepreneurs, included a strong interest in **fuel savings** and women’s need for a safe source of energy to *“protect their families.”* One female entrepreneur noted that she bought a stove for herself, but when her neighbors expressed interest in also saving earnings from kerosene, she realized there was a market for these products and decided to become an SSE. Another Solar Sister explained how she became even more interested in Solar Sister when the BDA described each of the products and their benefits. She said: *“I had a kid who was sick. Kerosene was affecting [his] health even more, but with the use of the lamp, [it] has helped him a lot.”*

Male entrepreneurs were notably less motivated to join Solar Sister than female entrepreneurs. One BDA reported that few men express interest in becoming SSEs because they already have other income generation opportunities and said that they attend the introductory meetings only to learn about the products. One said: *“Women are doing most of this job. Men are engaged mainly in the farmers’ activity; none of the men approach to Solar Sister. In the meeting, they might be there only to buy the product,*

⁴ Nopo, H., Daza, N., and Ramos, J. (2011). *Gender Earnings Gaps in the World*. World Development Report 2012 Gender Equality and Development: Background Paper. Washington, DC: The World Bank.

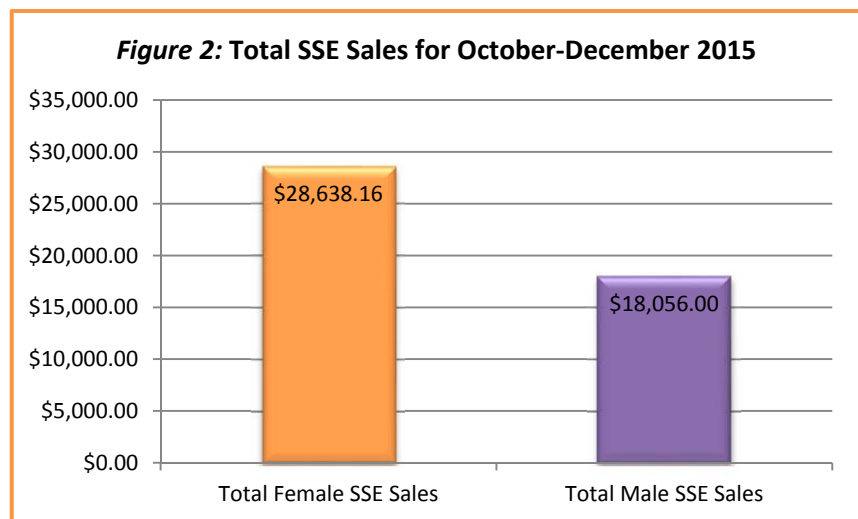


but don't become entrepreneurs." Some male entrepreneurs joined Solar Sister because it provided an additional source of income. One male entrepreneur even said that he makes more as an SSE than he makes at his shop. The few existing male entrepreneurs noted that they already had a store and were motivated to join Solar Sister to **increase their inventory and their material possessions**.

Female and male entrepreneurs and BDAs all mentioned that they were highly motivated to join Solar Sister in order to contribute to their communities and share knowledge about the health and economic benefits of solar energy. Several female entrepreneurs described the enjoyment they get from helping the community and earning an income at the same time. This was an especially motivating factor among BDAs. One male BDA described: *"My motivation to join Solar Sister was to empower the community and transform lives! I can actually be proud of that."*

Sales Performance:

Across the board, all types of respondents – including management staff, BDAs, and entrepreneurs – noted that female entrepreneurs are more effective at selling than male entrepreneurs. Some reasons for this that were given include: **women's convincing power, their large networks, and their ability to talk to fellow female customers and relate to their energy needs**. One entrepreneur explained: *"Women can talk with anyone and know how to talk better, [while] men are more shy to sell to other men."* Other entrepreneurs noted that female entrepreneurs can relate to female customers because they know what is needed at home and how solar products can help make life easier. One female manager explained that a common challenge for male entrepreneurs is difficulty with initiating conversations with someone's wife. This is particularly challenging among Maasai customers, who are often more reluctant to allow their wives to talk with male sales agents. The Maasai are a patriarchal ethnic group living in Northern Tanzania and Southwestern Kenya with significant gender role distinctions; women are often regarded as "social minors" in its structure.⁵ Some male SSEs are also shy to sell to other men in the community.

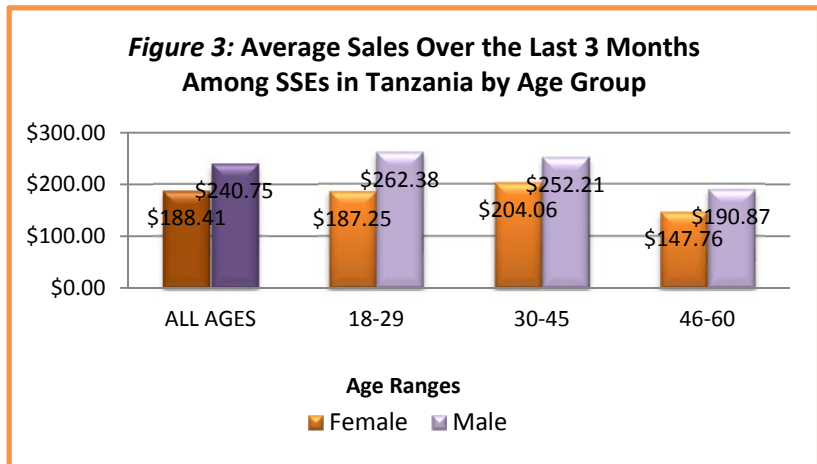


Source: Solar Sister Sales Data – Tanzania, December 2015

Overall, sales data from October 2015 through December 2015, as depicted in **Figure 2**, show that female SSEs sold a total of \$28,638.16 in clean energy products during this time period, while male SSEs sold only \$18,056.00.

⁵ Coast, E. (2001). *Maasai Demography: PHD Thesis* London: LSE Research online. Retrieved from http://eprints.lse.ac.uk/264/1/Maasai_Demography_PhD.pdf. Accessed 12/14/2015.

While the total sales were higher for female SSEs because there is a much greater number of female entrepreneurs, average per SSE sales were actually higher among males, as shown in **Figure 3**. From October 2015 through December 2015, male SSEs sold an average of \$241 in clean energy products, while female SSEs sold an average of \$188. While male SSEs are selling more products, there are more than twice as many active female SSEs as there are males, so there are clearly more females who are benefitting from the Solar Sister opportunity. Additionally, the female SSEs often register in groups, wherein some members are very active, while others are not. Male SSEs on the other hand, tend to register as individuals and often use Solar Sister as their primary income source, while females may have many different businesses they are juggling. While younger men (18-29) had the highest sales among male SSEs, middle-aged women (30-45) had the highest sales among female SSEs.



Source: Solar Sister Sales Data – Tanzania, December 2015

Another strength of female entrepreneurs acknowledged by both entrepreneurs and managers is their **hard work ethic** and willingness to go the extra mile to sell the products. One BDA noted: *“Women work harder at home...and are more persistent when things get hard. [Also] women work harder because they are concerned with what children eat. Men spend money on alcohol. Women are more responsible because they have to pay school fees. Men are just relaxing.”* This perspective was also shared among female entrepreneurs in the group discussions. One female SSE said: *“Women have more responsibilities so are more motivated to earn more.”*

Alternatively, male entrepreneurs were appreciated for their **competitive drive**. Management staff mentioned that that men tend to work harder when they see other men achieving high sales. Management staff also noted that having men in attendance at the recruitment meetings is critical for gaining their support, which, in some cultures, is required in order for the women to be able to join an organization like Solar Sister. One management staff reflected on these reasons for engaging men: *“We also invite men in our meetings, so you can find some men who are interested to become SSEs. Actually, I encourage the BDAs to invite men, like in any business – men are very up front. When they see other men that outperform them, they work harder. Also if men are not involved from the beginning, some women feel reluctant to join. They can prohibit their wives to join if they don’t know what it [Solar Sister] is all about. Especially in some villages, for instance with the Maasai, men are coming with their wives to listen.”*

Challenges:

The main challenges experienced by both female and male entrepreneurs and BDAs were **pricing and access to capital**. One BDA noted: *“The challenges we are facing now...is the price, some entrepreneurs you can see, are complaining that the price is too high. So if [Solar Sister] want[s] to fix and deal with the community, they could fix it. This month the price may rise to this much. It is getting very confusing. They need to have a fixed limit. If they want to help [the entrepreneurs sell products], they need to have a*



fixed price.” Along the same lines, some female entrepreneurs mentioned that their lack of capital hinders them from expanding their business and increasing their inventory.

Female entrepreneurs also specifically mentioned the additional challenge of **unsafe transport**. Several female entrepreneurs described that they felt insecure travelling alone with the products and at night, while male entrepreneurs described feeling insecure in places that are very far away and remote. One manager pointed out that safety and potential risk is actually used as a reason to recruit more male BDAs: *“Yes, we say a program aims to improve women economically, but also we recruit men. I recruit male BDAs in difficult areas...Some areas are difficult in terms of their location and safety – when the town center is too far from the villages, a man can survive better the long distance.”*

In talking with management staff, it appears that Solar Sister is already aware of the transport issue and is taking steps to educate BDAs and entrepreneurs on how to better address this challenge, including encouraging SSEs to add the transport cost into their price margin. One management staff noted: *“We are working on the challenges we have heard. For transportation, we ... advise them [SSEs] to add the transport cost if they foresee [needing] to travel far and they need a boda boda [motorcycle]. We train them, includ[ing on] transport costs to go to the market, how to organize the orders from the village, [and] collect orders of many customers, so they don’t have to travel every day. They arrange with someone who has the boda boda, or is going to town.”*

For male entrepreneurs, one challenge identified was **anger management**, especially when facing problems or unexpected events. One female BDA mentioned that it is sometimes more difficult to counsel male entrepreneurs than female entrepreneurs because they tend to blame others and get frustrated by their failures. She described that male entrepreneurs are often visibly upset when they come to the BDAs with a challenge, and before resolving them, have to be calmed down: *“It is quite different with men. Men, they come with—they are arrogant. It’s like, they expect you to be, ‘Why aren’t you getting this?!’ It’s not like women...Women even when they present challenges are calm. Men, you have to be calm before you are dealing with them. You have to be calm...I know that even before I started working with them. So I’m saying I have to be calm, let them talk, then I come up and discuss it when they are calm...at least once you let them talk they reveal what they have...and once you say ‘okay lets discuss this’ then they discuss without anger.”*

CUSTOMERS’ EXPERIENCE WITH THE SALES PROCESS

Motivations to Buy Products:

Almost all of the customers interviewed said that they were immediately excited about Solar Sister products upon hearing about them and their benefits. When asked what they think about Solar Sister, one customer exclaimed: *“Solar light is free. It helps even poor people!”* In particular, the promise of not having to use expensive and dangerous kerosene anymore, or batteries that do not last long, was a motivating factor for customers when considering purchasing from Solar Sister. Customers also expressed liking the dual-purpose of the lanterns that simultaneously provide light and charge their phones, as this allows them to save additional money. Some customers noted that they appreciate being able to pay for everything up front, as compared to other solar companies which force you to pay a bill each month. Overwhelmingly, customers seemed most familiar with and interested in the lanterns, though a few noted owning clean cookstoves and said that they did indeed use less charcoal than traditional stoves. Customers mentioned that many people in their community own other solar



products, including solar radios, TVs, fridges, and CD players, and suggested that Solar Sister consider selling other types of products like these, as well as larger solar panels, as they continue to expand their business.

Men in one group discussion noted that they appreciate the quality and durability of Solar Sister products, which differentiates them from other similar products on the market. Specifically, they mentioned that Solar Sister lanterns are brighter than others, which allows children to study for longer periods of time and at night. Customers also confirmed the importance of the receipts and guarantees, which was similarly noted by SSEs as a business practice customers really appreciate. Customers explained that these Solar Sister practices make them feel more secure in their purchases. In particular, customers like that they are able to return faulty products with ease, something that many other companies do not allow customers to do.

Purchasing Process:

The majority of the customers reported learning about Solar Sister through women's groups, as well as through other local NGOs like Project Concern International (PCI). Some also heard about the products through word-of-mouth from other customers or one-on-one from SSEs.

There was some variance between customer responses about the decision-making process for buying solar products. Most female customers talked with their spouse first before buying from Solar Sister, though at least one female customer made the decision to purchase a small Solar Sister item independently without first asking her husband. Interestingly, most male customers interviewed noted engaging in a joint decision-making process before purchasing from Solar Sister. One man even indicated that his wife played a key role in household decisions, saying: *"If my wife tells me it will be useful in the kitchen, then I will buy it."*

Solar Sister Reputation:

The customers overwhelmingly reported that the community holds SSEs in high regard, since they are bringing much-needed products to the people. One said: *"With the use of these products, the community is very happy because before with kerosene children would get burned."* Consumers noted that SSEs are hard workers and well-respected in the community. They appreciate the time that SSEs take to explain each of the products to consumers, which is unique from other solar sales agents in the area.

IMPACTS ON SOLAR SISTER ENTREPRENEURS AND BUSINESS DEVELOPMENT ASSOCIATES

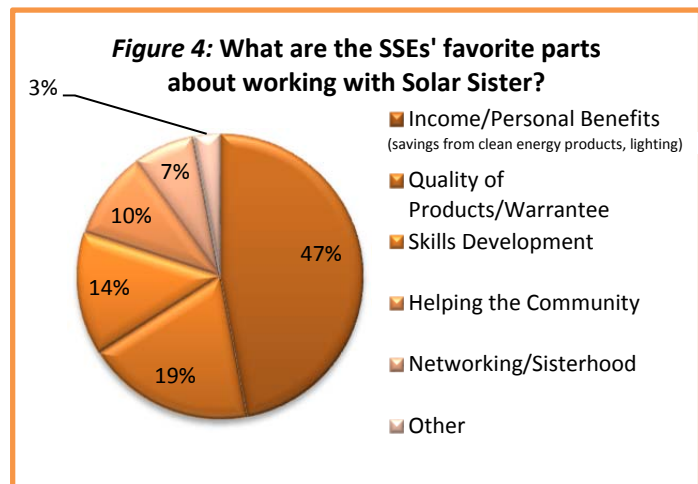
Solar Sister has influenced the lives of SSEs and BDAs in many ways and at multiple levels. Here, we discuss how these effects are seen at the individual, family, and community levels.

INDIVIDUAL LEVEL

At the most basic level, women's engagement with Solar Sister as entrepreneurs and employees provides them with their **own source of income** and the creation of **new productive capital** and **income generating opportunities**.



Some female entrepreneurs mentioned that their engagement with Solar Sister was their first opportunity to work and to have access to their own source of income and savings. When asked about their favorite part of working with Solar Sister, nearly half of the SSEs interviewed listed the income earned and personal benefits experienced through increased income and product use, as shown in **Figure 4**. One BDA described: *“They’ve [SSEs] changed their lives a lot. Now, they are able to send their kids to school; they are able now to get food; they can save money for other issues. So it’s a big impact...The majority of them are able to support their family, especially women. You know, in Rorya, women, they are like the head of the family. Men, they are not so responsible with their family. So the list of the responsibility is directed to women. So now once I talk to these entrepreneurs, they say at least now I am able to support my family without any fear.”*



Source: Solar Sister Tanzania 2015 Year End Survey

In addition to supporting their families, female entrepreneurs said that they were investing their profits in productive assets including land for farming, animals like chickens and goats, and machinery, like sewing machines, while male entrepreneurs said they invested most of their profit in their existing shops, through buying more inventory. BDAs also mentioned being able to use profits from Solar Sister to **start new businesses or boost existing businesses**: *“At home we have been sharing what we have and have been able to start other things. [We] share ideas/capital to start business[es].”*

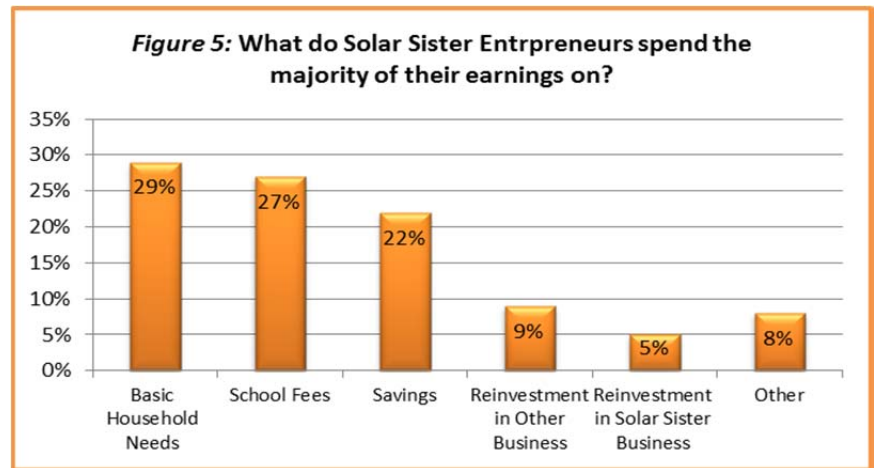
Using Solar Lanterns to Support Other Income-Generating Activities

Several PhotoVoice participants decided to take pictures showing how they use Solar Sister products (most often solar lanterns) in their other business ventures. A number of female SSEs and their customers, like the one depicted in the photograph to the right, reported using the lanterns to help weave baskets and other household items at night.



© Basila Thomas 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

Increased profit/income, financial stability, and financial independence were also seen as benefits to BDAs, many of whom had never had the ability or confidence to buy things for themselves before. The BDAs reported using their income from Solar Sister to buy food, pay the rent for their houses, and, in some cases, to help their families, for example, in case of emergencies. One BDA explained: “[I am] earning income by being employed by Solar Sister. It has been helping me to eat. Buying food isn’t as hard, and [I am] paying for the health rights. [I] send money to my parents, and sometimes they might be having problems, and when they call [me], [I] have to support them.” Some BDAs use the extra income from Solar Sister to pay for school fees, both for their children and for themselves. They are also able to buy a more balanced diet for their families. BDAs seem to feel a great sense of pride from this financial independence: “...I’m happy, I’m not dependent on anyone. That’s what I can say...I came from the university straight, then I started working for Solar Sister. So [before that] I was still dependent on my parents.” **Figure 5** demonstrates that the majority of SSEs surveyed reported spending their earnings on basic household needs, school fees, and savings.



Source: Solar Sister Tanzania 2015 Year End Survey

Source: Solar Sister Tanzania 2015 Year End Survey

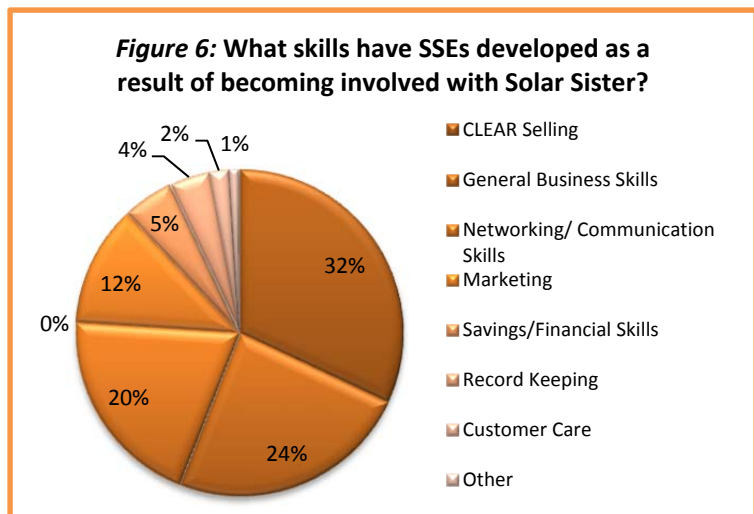
“Solar Sister Supports My Handwork Activities”

The photo to the right, entitled, “Solar Sister Supports My Handwork Activities”, shows how solar lanterns allow one female SSE to do her work at night. Weaving these baskets provides additional money for her and her family. Using solar also helps her to avoid buying expensive kerosene, which further boosts the income she generates from this activity.



©Petronila Gobi 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

Another important benefit that entrepreneurs said they gain from their association with Solar Sister is the adoption of a number of **business, technical, and entrepreneurial skills**. Research has shown that providing women with the opportunity to learn needed skills, such as these, can greatly increase their ability to succeed in business.⁶ **Figure 6** shows the skills that SSEs recalled developing through their involvement with Solar Sister. Most SSEs mentioned that they have participated in face-to-face sisterhood meetings and have received additional mentorship to continue to develop their business skills, including: communication, record keeping, marketing, time management, and knowledge about Solar Sister products. One female entrepreneur emphasized the importance of such trainings for learning how to better manage her time during the day, delineating 7:00am until noon for household chores, and then using the afternoon to sell products.



Source: Solar Sister Tanzania 2015 Year End Survey

“Solar Sister Grows Strong Women in the Community”

The photo to the right, entitled “Solar Sister Grows Strong Women in the Community” shows one of the PhotoVoice participants writing a receipt for a customer, a skill she said she learned through Solar Sister. The caption the SSE chose for her photo demonstrates how female SSEs have gained an increased sense of self-confidence from their involvement with Solar Sister.



© Basila Thomas 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

⁶ McKenzie, D. & Woodruff, C. (2012). What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World? *Discussion Paper Series No. 6895*. Bonn, Germany: IZA.

Karlan, D. & Valdivia, M. (2011). Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions. *The Review of Economics and Statistics*, 93, (2) 510-527.

Valdivia, M. (2012). *Training or technical assistance for female entrepreneurship? Evidence from a field experiment in Peru*. GRADE.

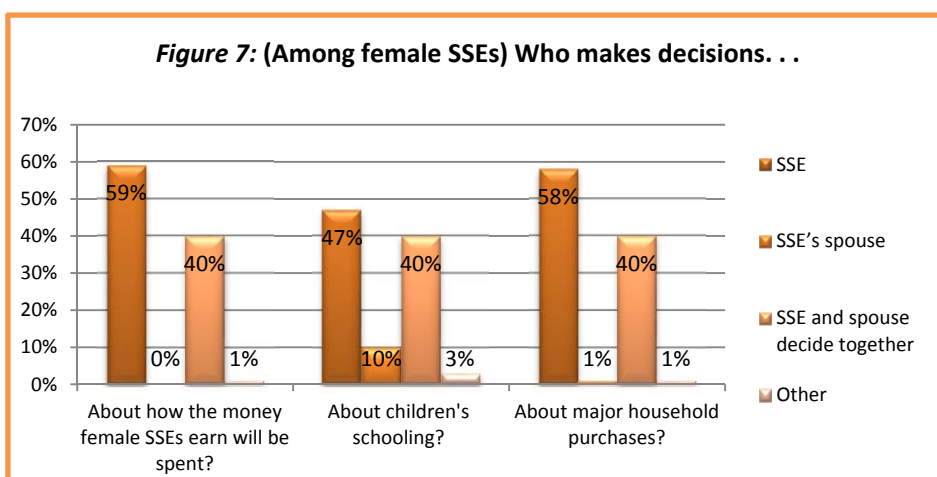
De Mel, S., McKenzie, D., & Woodruff, C. (2012). *Business Training and Female Enterprise Start-up, Growth, and Dynamics: Experimental Evidence from Sri Lanka*. Washington, DC: The World Bank.

BDAs noted increased knowledge and skills as well. Knowledge and skills gained included: product knowledge, communication and sales skills, mentorship and management skills, and knowledge of how to look for new markets. How to work effectively with the community was seen as one of the most valuable skills learned by BDAs. Management staff described the positive changes seen in one female BDA: “[One BDA] *was very shy when she started to work with us. Now, she talks to everyone, does PowerPoints without a problem...her English has improved a lot. They [BDAs] practice with American interns when they come to visit. I can tell about the messages they post in Facebook and WhatsApp.*”

Similarly, the **business know-how** gained through trainings and through their role as sales agents was identified as an important source of economic empowerment for the female entrepreneurs. Most female entrepreneurs described the importance of learning how to separate personal expenses from their business expenses, and how this practice has helped them to better manage their household expenses and to balance their capital and consumptions. Additionally, some entrepreneurs utilized new marketing knowledge to develop very creative marketing strategies for their businesses, such as using solar lanterns at night to attract clients or showcasing their solar lamps when they go fishing to get people’s attention across the islands.

Research suggests that as women entrepreneurs are engaged in new roles and adopt new skills and business practices, they also learn to negotiate and advocate for their interests.⁷ The women

entrepreneurs we spoke with mentioned an increase in **decision-making power**, as evidenced by their role in deciding what proportion of their income is spent on themselves and their children, including for expenses such as school fees, children’s books, uniforms, food, soap, and clothing.



Source: Solar Sister Tanzania 2015 Year End Survey

Figure 7 shows that the vast majority of SSEs reported making decisions about how the money they earn will be spent, their children’s schooling, and major household purchases on their own or together with their spouse. One entrepreneur noted: “*Now I have the confidence even to decide if I want to buy this, and if I need something I will go to buy it.*” Some women entrepreneurs noted feeling “*proud*” of having control over how to spend some cash or savings and happy that they had become a resource their children can rely on in case of a problem or a need. During several group discussions, female entrepreneurs expressed pride that their children look up to them now because of this newfound financial independence. One female entrepreneur explained that her relationship with her children has grown because of the increased income she has earned through her work with Solar Sister. Now, she can independently buy

⁷ Morrison, Raju & Sinha, 2007.

Golla, A., Malhotra, A., Nanda, P. and Mehra, R. (2011). *Understanding and Measuring Women’s Economic Empowerment: Definition, Framework and Indicators*. Washington, DC: ICRW. Available at: <http://www.icrw.org/files/publications/Understanding-measuring-womens-economic-empowerment.pdf>.

more things for her children, whereas previously they had to ask their father. Now, he only handles large money matters. She explained that in the eyes of her children, she is “*seen as the same as their dad*” because she is able to financially support them in ways she previously could not.

As a result, most of the female entrepreneurs described an **increased sense of autonomy and independence**. One female entrepreneur noted a newfound “*peace of mind*” from the ability to provide for herself and her family; another entrepreneur described this feeling in her own words: “*Before I was waiting in my house for my husband to buy everything for the house. Now I can buy whatever I want.*”

Future Aspirations of Solar Sister Management Staff, BDAs, and SSEs

Solar Sister managers, BDAs, and SSEs all have big dreams for their futures and seemed to feel that Solar Sister is already and will continue to support them in reaching their goals.

For SSEs, future aspirations centered around: **expanding their sales and markets** (one SSE mentioned wanting to travel to nearby islands to sell) and using increased profits to **buy material possessions**, to help **support their families**, and to **open up new businesses** (like poultry farming or a shop). SSEs feel confident that Solar Sister will help them to reach these goals. Material possessions are desires of both male and female SSEs, though it seems that male SSEs have slightly more lofty aspirations in this regard. Female SSEs identified wanting to buy a car, while male SSEs said they wanted to own both a car and a house. Female SSEs were especially interested in using Solar Sister profits to continue to help their families, and in particular, to pursue further studies, like secondary and university education. One SSE explained that while her Solar Sister earnings are helping the family, she wished that Solar Sister could reduce the product prices, which would allow her to earn greater profits, enabling her to send her children to school.

One male BDA also expressed high hopes for his SSEs, saying that he wants them to gain notoriety in the community and **hold leadership positions** as a result. While some of his SSEs are already community leaders (a consular for political issues, a chairperson for a group, a village chairperson, and a mediator), he would like to see more in formal positions of power.

BDAs, like SSEs, aspire to **open their own businesses**, though some seem more confident in their ability to do so than others. One BDA explained: “*In two or three years, I am planning to save money to start my own business, a small shop with water and soap. I also want to have a house to rent out. Solar Sister should give me loans to help with these things.*” Another mentioned wanting to own a firm to carry out community assessments. BDAs expressed that through interactions with international Solar Sister colleagues, they are gaining valuable experiences, such as learning how to interact with people from different countries who might be able to help them in their future careers.

Female BDAs also voiced the desire to **go back to school** to pursue higher education, for example, to earn a Master’s degree. One BDA asked for Solar Sister’s support in this pursuit, explaining: “*For example, [Solar Sister] should think about those people that want to go back to study and how they can support them in one way or another...*”

For most BDAs, male and female alike, future aspirations are **both professional and personal**. One male BDA expressed wanting to continue to grow in his career, become a better entrepreneur, and have a good family life. A female BDA expressed the desire to start a family and settle down.

Management staff also have high aspirations, and want to continue to **grow professionally** and to **expand their energy expertise to global markets**. One management staff member noted that in five years, she hopes to be working internationally as an energy advisor in Africa. Like BDAs and SSEs, management staff value the experiences they are getting from Solar Sister; one staff member reflected: “*At Solar Sister, I learn something new every day.*”



In turn, increased income and financial independence further **strengthened the women entrepreneurs' self-confidence and self-esteem**. One BDA noted *"...when I came here, then she [a female entrepreneur] told me 'Do you see this house?' and I said 'Yes.'...Then she was telling me 'At last I have made something of myself doing my business.' and I say 'Wow, I never imagined you can do such a thing within a short period of time."* Some of the entrepreneurs mentioned they felt *"privileged"* and *"proud"*, while others thought of themselves as *"stronger women"*. In addition, both female entrepreneurs and female BDAs mentioned they were investing more now in self-care, including in their physical appearance through purchasing soap and clothing. Some entrepreneurs proudly described how they had learned how to take care of their appearance and be more presentable for potential customers in order to make a good first impression.

FAMILY LEVEL

The most common benefit mentioned by the SSEs at the family level was the **improvement of household finances**, through both fuel savings and their contribution to household income. In addition to the income earned through solar lantern sales, entrepreneurs said that having access to a sustainable source of solar energy has helped them to enhance their economic stability at home. One male SSE said that in the past, it was a constant concern for him to provide daily for kerosene, and sometimes he would be afraid of or embarrassed to go back home when he was not able to pay for the kerosene. Now he feels happy that he does not have to purchase fuel for lighting, but rather can rely on solar energy and is also able to contribute to other household expenditures instead. Some of the female BDAs and entrepreneurs mentioned the benefit of being able to create better, more sturdy homes for themselves and their families as a result of their increased income from Solar Sister. One BDA noted: *"When I started to visit [the SSEs], they lived in poor houses. Now they use bricks...They have painted their houses and now it is shining because the light they are using is not emitting smoke."*

Solar Energy & Safety

Safer Businesses: One female SSE mentioned that she was able to venture into new business opportunities, such as processing and selling cotton, for the first time now that she has access to safe light at home to store these cash crops. Previously, she feared storing the cotton in a room with a kerosene lamp that could start a fire and cause her to lose the crops. Another female SSE noted that her business has improved since she has started using a solar lamp at night to attract customers. Like SSEs, several customers who were businesswomen mentioned using lamps at night to look for and attract customers, and said that as a result of using the lamps in this way, their sales have increased significantly.

Safer Households: Entrepreneurs and customers discussed the advantages of solar energy as compared to other fuels like kerosene. Specifically, women described a feeling of relief when leaving their kids at home with solar lamps, even when they have to stay in the field late at night. One said: *"Due to the presence of Solar Sister, it has reduced the number of deaths, because before when they were using the kerosene lamps it was very dangerous. Anything could catch fire, but now she is safe. The people are safe because they are using the solar."*

Safer Communities: SSEs are bringing solar light to communities that were previously in the dark. This has the potential to make communities safer for women and young community members, especially at night. Several female SSEs and female customers mentioned that they feel more protected now that they can use their solar lanterns when they go outdoors to the bathroom during the evening hours. According to one respondent: *"The young people use the product[s] for different late night ceremonies...for walking at night. Others are livestock keepers. They use that [the solar lantern] to make sure all the cattle is safe."*

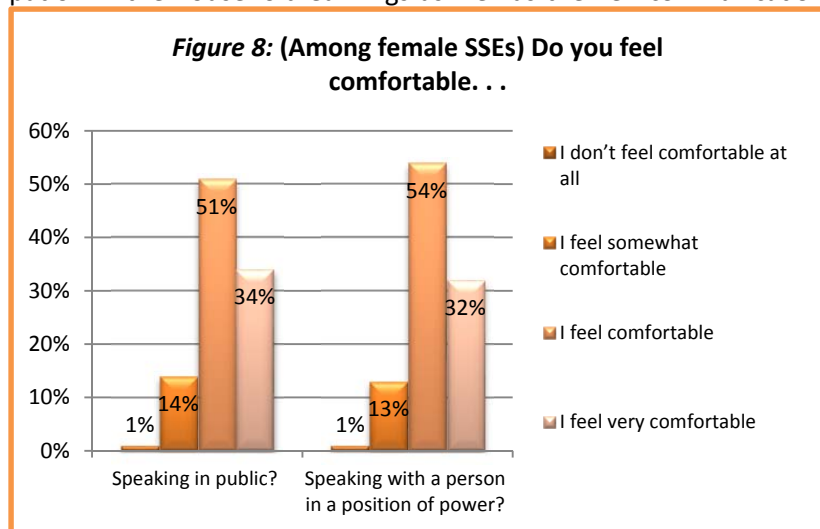


Another BDA described how profit gained from Solar Sister helped one of her SSEs protect her family from a potentially devastating financial shock: “[One of my SSEs]...she couldn’t make it today I think because of her husband’s situation, but once we visit[ed] to her place. She is the one supporting her husband when he became blind. He supported the family, he supported the kids...so it’s a...big big big opportunity...[an] achievement. It’s a big achievement because I never thought she can be able to support herself through a difficult situation like that.”

According to BDAs, community members are aware of these improvements in SSEs’ finances and thus, see Solar Sister as a way to make a sustainable livelihood. One BDA even explained: “[Community members] want that [financial stability] for their children, so they come to Solar Sister to get their children a job instead of waiting for a government job.”

In turn, female entrepreneurs mentioned increased **negotiation skills** with their husbands and families as a result of their increased participation in the household earnings as well as the new **communication skills** acquired through Solar Sister trainings.

When asked whether SSEs felt comfortable speaking in public or speaking with a person in a position of power, the majority of female SSEs reported feeling “comfortable” or “very comfortable”, as shown in **Figure 8**. During the group discussions, female entrepreneurs shared a common experience about how their voices are more heard in the house since they are now able to contribute some of their earnings toward household expenditures. BDAs also noted



Source: Solar Sister Tanzania 2015 Year End Survey

small changes in interhousehold communication, specifically between husbands and wives of female entrepreneurs. One BDA noted that husbands of female SSEs now respect their wives’ opinions more — for example, around building a house, because now they both contribute to covering household costs.

As a result of their financial contributions to household expenditures, some entrepreneurs, both female and male, described that their **marital relationships** have slightly improved in terms of “*independence and love*”. Some female SSEs mentioned that their husbands are more willing to help with household chores at home now that they see their wives are working and contributing to the family. Similarly, a male SSE mentioned how his exchange with fellow female entrepreneurs has helped him to improve his communication with women in his own family and in the community. Another male SSE said that the opportunity to work with Solar Sister has helped him to better understand the women in his family, and to be more productive with his free time: “Before, I was hanging out with the men in the community. Like those in the corner, I was not doing much with my free time. Now I am working at different hours. I can sell solar light any time...I am happy I can provide for my family.” One BDA also noted: “I don’t think they [husbands and wives] change[d] a lot about the interaction, but I can say at least now men understand that women can do something if you give them an opportunity. That’s what they’ve come to learn.”

SSEs and their families also significantly benefit from use of the products themselves. SSEs noted that using clean energy technologies has contributed to improvements in their children's education, as well as positive health outcomes. The improvement of the entrepreneurs' **children's education** through access to solar light and the ability to pay for education fees was one of the family-level benefits mentioned by almost all BDAs and entrepreneurs.

Among SSEs surveyed in Solar Sister's quantitative 2015 Tanzania End of Year Survey, 91% reported that their children used the light for studying. One female entrepreneur mentioned that her children's grades have improved because they use solar lamps to study at night. This benefit is reinforced by the evidence from a recent study in rural Kenya that shows that children with access to solar lamps have improved math scores in school as compared to children who do not have access to light.⁸ A male entrepreneur expressed that he was very proud to be able to provide solar light for his children and for other children in the area who meet at the evenings at his house to study.

"With Solar Sister Forward We Go"



© Hilaria Pachal 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

The photograph to the left entitled, "With Solar Sister, Forward We Go", illustrates the value that SSEs place on being able to provide solar light for their families. Several PhotoVoice participants chose to capture similar images, depicting how schoolchildren in the community use solar lanterns to study after it gets dark.

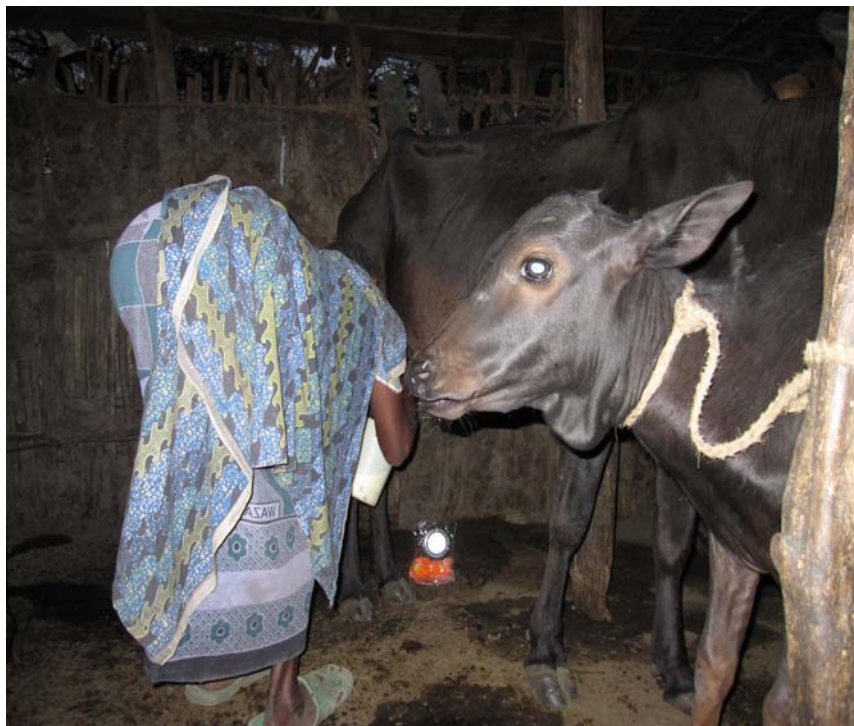
Female and male entrepreneurs also described **positive health outcomes**, both as a result of their increased earnings and from the use of the solar products themselves. Common health outcomes described by entrepreneurs who use the solar lights and clean cookstoves include slight improvements in eye problems and in the nutrition of their families. One BDA explained: *"For example, their [the SSEs'] kids now, they can stay safe and are out of this program where they are using candles. I think you know...They use[d] lamps, kerosene...smoke cause[d] eye problems... Now at least it has been reduced to some extent."*

⁸ Evans, D. (November 9, 2015). *What's the Latest in Development Economics Research?: A Round-up of 150+ Papers from NEUDC 2015*. The World Bank. Retrieved from: <http://blogs.worldbank.org/impactevaluations/what-s-latest-development-economics-research-round-150-papers-neudc-2015>; Accessed 2/26/ 16.

Some entrepreneurs, particularly those living in areas with high HIV prevalence, explained the importance of experiencing better nutrition and access to medicine due to the profit they get from Solar Sister. One female BDA noted seeing similar impacts among SSEs, saying: *“The ones who are so excited [by Solar Sister] are suffering when we come to these family issues...the ones who are using firewood, the ones who are going far searching for firewood, the ones who are facing problems. So when we come and introduce this [Solar Sister] to them, they are the ones who know what they have been through before. Also they know through this business they are able to serve something for their family. They have something new. They are selling something. They have income. Even when you talk to them, they say they have some money now. They can pay school fees. They can buy food and whatever. And if you talk to them before, some of them are HIV victims, so at least now they can buy medicine. They can buy food, not like before. But now they can at least eat a balanced diet.”*

Livestock in Tanzania contribute to household nutritional status as a source of animal protein, as well as a source of income that enables households to purchase more nutritious foods. Women often assume significant responsibility in raising livestock, both for household consumption, as well as for income generation. In fact, women appear to be more commercially oriented when it comes to livestock.⁹ Some female entrepreneurs mentioned that they use solar lamps to keep and guard their livestock including sheep, goats, hens and cattle. Others mentioned they use the solar lamps to walk with their livestock at night. In this way, some female entrepreneurs mentioned that they were able to take better care of their livestock and subsequently improve the nutrition of their families through the use of the solar lanterns.

Improving Livestock Safety



© Hilaria Pachal 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

“... [Community members] see [the entrepreneurs] as the savior because of this light it [the solar product] brings. When you go from this side to the way where we came from, every house, now, they have a day light like that one outside...They have panel[s] of solar. So you can see, people, they love [the SSEs] for what they’ve brought in their society. Because before, they were not having such a service. But now at least they can get service. They are not using kerosene. Before they were using kerosene and candles. But now they are using only the day light and whatever solar products.” (BDA)

⁹ Gaile, A., Mulema, A., Mora Benard, M., Onzere, S., and Colverson, K. (2015). Exploring Gender Perception of Resource Ownership and Their Implications for Food Security among Rural Livestock Owners in Tanzania, Ethiopia, and Nicaragua. *Agriculture & Food Security*, 4 (2).

COMMUNITY LEVEL

Through Solar Sister, SSEs are able to **provide access to clean energy** to their families and community members, a privilege that was previously only available to the wealthy. According to one member of the Solar Sister management staff: *“Previously they [the SSEs] used kerosene. They had to wait for a month [to get more kerosene]. With Solar Sister products, energy is more reliable – before they were in darkness, they didn’t see solar energy... just rich people had access.”* As a result of this very important role, both female and male entrepreneurs expressed experiencing **increased status** within their communities. Several female entrepreneurs described an increased recognition of working women within their communities and a slight improvement in community members’ attitudes towards working women. One Tanzanian SSE, located near the Tanzania-Kenya border, excitedly explained that she is even known in Kenya: *“Even when I talk to them, other customers, they come from Kenya to buy products. They [SSEs] are very popular in this place...”* In the group discussions, women described energetically how they are increasingly recognized as ‘business women’ and that they feel more respected and appreciated. The change in status of female entrepreneurs was further reinforced by the recognition that SSEs are viewed as agents of change in their communities. The SSEs are bringing new, beneficial technology and energy products to their communities for the first time, and are also contributing to their societies’ **knowledge and understanding of the health and environmental impacts** associated with solar energy.

The photo to the right, entitled *“Solar Sister Provides Light at Night”*, shows the important relationship between SSEs and their clients. The photographer noted: *“I am famous to others. Whenever [customers] need [a product], I will get it to them.”* She explained that she took this photo to portray how she recruits new customers and sells products. She said that the lantern this customer bought is easy to carry and will help him to cook at home and help his children to study at night. She also said that it may be used in parties or ceremonies. Many SSEs who participated in the PhotoVoice workshop took pictures with their clients, demonstrating the significance of this relationship for SSEs.

“Solar Sister Provides Light at Night”



© Basila Thomas 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

BDAs also noted a change in the way female and male entrepreneurs are viewed. BDAs explained that SSEs are seen as role models because of the positive effects the products they sell are having on members of the community. According to one BDA, *“The community [is] happy for her [an SSE] because they see the impact they [SSEs] bring into [customers’] lives... she [the SSE] changes their lives. She [the SSE] is happy because she has helped the community to bring light.”*

Increased status and notoriety was noted among BDAs as well. One female BDA noted: “Now, where I came from, they know me as ‘Wanda* Solar’ not Wanda*, my daughter-in-law. So, many know me as giving solar products, so everywhere ‘you Wanda Solar* come here!’ And my kids say my nickname also. So I am popular to some extent...I’m happy, because even when I’m having a problem, I approach someone. They don’t know me yet, but they know me through [Solar Sister], so they assist me very easily.” BDAs said that through Solar Sister, they have been exposed to many different types of people, and that these interactions have given them the ability to work more effectively with the community and to handle diversity more comfortably. According to BDAs, this experience has made them **“more confident and courageous”**. Increased confidence was seen especially among BDAs who had been given the opportunity to travel to other regions, or in some cases even internationally for Solar Sister meetings and international conferences. One female BDA said: “To me, it [Solar Sister] has changed me a lot because now people. They know me everywhere. I have met a lot of people. I have exposure. I like traveling...I’ve met many people I never expected. And now at least, even me, I have the courage...”

PhotoVoice makes an impact!

In addition to gaining skills from Solar Sister directly, PhotoVoice participants also gained unique knowledge, status, and self-confidence from the participatory methodology. Not only did participants gain experience in using cameras and taking pictures, but as a result they were also seen as leaders and teachers among their family members and peers. PhotoVoice participants noted that their family members were excited that SSEs were bringing this new technology into homes and communities. Several participants noted teaching family members and others in the community – church/choir members, husbands, sons, friends, daughters, and customers – how to take photos. This knowledge about and access to new technology increased SSEs’ status and seemed to have positive impacts on participants’ self-confidence and self-efficacy. During the closing PhotoVoice session, one female SSE noted, “I now have peace of mind that my family and community sees me as able [to take pictures].” Another PhotoVoice participant expressed similar sentiments saying she was “so happy because she never thought that one day she would be able to take pictures”.

Solar Sister entrepreneurs and BDAs also described **leadership** opportunities as an important benefit gained from their participation with Solar Sister. Among the network of entrepreneurs, some female entrepreneurs became leaders of a small group of SSEs, as one BDA described: “I have a little group. I choose a group with a good leader, someone who can monitor them when I am far and is able to attend to them. So with [my designated SSE leader], I am able to trust her to look after the groups. Maybe someday I will come down and visit them.” In addition, female entrepreneurs proudly described how they have transferred their leadership skills to other roles within their communities. One female SSE noted: “Now, even men in the community listen to me more.” Others mentioned that they are now able to provide advice in their communities and to speak in public to many different types of people, both one-on-one and in groups. BDAs have noticed this change in their SSEs as well, explaining that because of Solar Sister, SSEs have gained **self-confidence** and **public speaking skills**. According to one BDA: “They [my SSEs] have gained popularity [and] can share social issues with others in the community or even in other communities...some of them have been elected because of Solar Sister notoriety. One is an accountant because people think they are good with

money.” Several of the BDAs interviewed strongly support SSEs taking on these leadership roles in their communities. One male BDA said that he hopes Solar Sister will help some of his entrepreneurs continue to gain recognition in the community and hold leadership positions as a result. He said that some of his

* Name has been changed to ensure the anonymity of the respondent.



SSEs had already held these types of positions before Solar Sister and some have gained them since, including roles such as consular for political issues, village chairpersons, and mediators.

Finally, the **connectedness** and **sisterhood** created among female SSEs was strongly identified by both entrepreneurs and BDAs as a key impact of working with Solar Sister. The “sisterhood” varied from community to community, and, in some cases, may have been dependent on the proximity of SSEs to one another. Solar Sister convenes sisterhood meetings through creating safe spaces where the entrepreneurs have the opportunity to connect with female colleagues, order inventory and other business supplies, reinforce skills, and build trust. These formal interactions lead to informal interactions and lifelong friendships. For the SSEs who reported increased networks and social support among themselves, these relationships seemed to have an extremely positive impact, economically and socially. Access to **social and business networks** has been identified as an important benefit that promotes greater sharing of information, skills, and resources.

Most female entrepreneurs described the importance of coming together with fellow entrepreneurs to improve their business skills, solve problems, discuss new individual and collective business ideas, and find support when needed. This sisterhood is particularly important for new SSEs. One BDA explained how SSEs mentor each other: *“When they [female entrepreneurs] are starting their business, for example, they were scared, but those who were in the business already told them you can do it, you can handle it. It’s like they are giving them moral support, mentally support[ing] them. Then they [the new SSEs] are not scared like this. When she [an SSE] was starting her business she was so scared, and [another entrepreneur] told her you will do it, like the way I did. Then you have me and [the managerial staff], [another entrepreneur], and the daughter of [an entrepreneur], that will show you how to start the business...I think two months ago she was complaining the business was very hard, whatever, then [another entrepreneur], told her ‘You wait a minute. As the days go on, people will know you. The challenges will go.’ And later, like now she calls and tells me what she needs.”*

One group of SSEs noted sharing successful strategies for how to advertise their products to groups versus individuals. Another group explained how they work together to keep their customers happy: if one SSE is out of a product, they will refer their customer to a fellow SSE, and then the next time that SSE will refer a customer to them. By sharing customers in this way, clients are able to get their desired products in a timely manner. SSEs said that their profit has increased as a result of this sales technique. In addition, some female entrepreneurs mentioned the importance of the entrepreneur networks as a way to make friends, discuss family issues, and to serve as a support system in times of need. Most of the female entrepreneurs mentioned these relationships were very “useful” and had “life-changing” impacts on their everyday lives. On the other hand, respondents noted that this same relationship/sense of sisterhood is not seen among male SSEs. While men are sometimes also part of the entrepreneur networks and SACCOs, they only share business ideas, as opposed to sharing about their families as female members do.

Support networks are essential in helping women to navigate challenges, learn new sales techniques, and have a support system that increases the sustainability and success of their businesses or employment.¹⁰ SSEs noted, however, that they would like to have the opportunity to meet more often and to have a more formalized sisterhood.

¹⁰ The World Bank. (October 2014). *Female Entrepreneurship Resource Point*. The World Bank. Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGENDER/0,,contentMDK:23392638~pagePK:210058~piPK:210062~theSitePK:336868,00.html>.



While this was not something that was noted by the BDAs themselves, management staff strongly felt that Solar Sister has similarly provided a critical support system/network, or “Solar Sister family” for male and female BDAs. According to management staff, this brother/sisterhood also has positive impacts on the BDAs’ businesses, as it provides them with opportunities to share best practices and to learn from one another: *“They [the BDAs] have grown in a sisterhood family, among [the] Solar Sister family. They meet here, they share the ideas, copy the good behaviors. I started with some [BDAs] – they come and copy the good performance. They become role models themselves.”*

All of these important changes at the individual, family, and community level described by Solar Sister entrepreneurs and employees represent a valuable contribution to increasing **women’s agency and economic empowerment**.¹¹

IMPACTS ON CUSTOMERS

Solar Sister’s business model aims to solve the problem of ‘last mile’ access to clean energy by bringing solar technology right to the doorstep of rural households.¹² Accordingly, a secondary focus of this study was to reveal initial insights about the benefits experienced by customers as a result of using Solar Sister’s clean energy products. Through two FGDs with customers – most of which were farmers and fishers, depending on which industry was common in that region – we were able to identify the following about how customers use these products and the benefits they are experiencing as a result. Customers also identified a few challenges they experience and gave related suggestions for Solar Sister in the future.

Reaching Last Mile Customers

The photo to the right shows the rural setting in which many Solar Sister customers live. It is due to Solar Sister’s unique “last mile” approach, through teams of locally-networked sales agents, that they are able to reach the most rural and remote villages in Africa. The communities where SSEs work greatly benefit from access to solar lighting and clean cooking, as they often lack access to such energy resources, clean or otherwise.



©Mwanaidi Mohamedi 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

¹¹ Golla, Malhotra, Nanda, & Mehra, 2011

¹² Solar Sister (2011). *Empowering Women with Light and Opportunity*. Available at: <https://www.solarsister.org/blog/solar-sister-empowering-women-with-light-and-opportunity>.

Uses of Solar Sister Products:

Customers use Solar Sister products in a variety of different ways. Small solar lanterns were the most popular, especially among women, and were noted as particularly useful in lighting the house at night. For women, using these lanterns at night allows them to cook more safely and later into the evening hours. It also gives them the opportunity to choose when to cook. Men, on the other hand, noted that they liked using the lantern to light the way to the bathroom at night. Both men and women praised the lanterns' use by children to study after it gets dark. Customers said that children like having the lights at night because *"kerosene burns out quickly, but Solar Sister lamps last for hours and hours."*

"Solar Sister, Go Solar Sister, Go!"



The PhotoVoice submission to the left captures one Solar Sister customer who, according to the photographer, is a tailor and uses her lamps to help her sew at night.

©Moshi Mohamed 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

Both male and female customers said that they use the solar lights to check to make sure cattle are safe at night before they go to sleep. A few female customers also reported using the lights to help "grow their chickens" at night. One male customer noted that he uses the lights to check for dangerous animals outside in the dark.

Customers also mentioned using the lights for social purposes. Neighbors, for example, use them for nighttime meetings or conversations, and others use them to light up parties and celebrations that continue into the evening.

Benefits Experienced by Customers:

The benefits customers reported experiencing are similar to those mentioned by the SSEs, including **money and time saved** and **improved school performance for household children**. Financial savings came from no longer having to buy kerosene for lanterns, as well as money saved on fuel from the use of more efficiently-burning cookstoves. One customer noted that before Solar Sister, they used one bucket of charcoal per week, but with the cookstove she bought from Solar Sister, the same amount of fuel lasts three weeks.

Another female customer noted that with the money saved from kerosene, she was able to pay off school fees and add capital to her business. A male customer said that he was accumulating his savings through a SACCO, which he later plans to use for his business. Another uses the savings to buy small things that are needed for the household, like water, which is scarce in many of the communities where Solar Sister works.

“Care for Customer”



The photograph to the left, entitled “Care for Customer”, was taken, according to the photographer, to show some of the financial benefits customers experience from using Solar Sister products. She described the photo as: “A picture of a customer who has benefitted after using the solar product. He is no longer buying kerosene. He is charging his phone and he keeps his environment clean.”

© Hilaria Paschal 2015, Produced by ICRW and Solar Sister through the use of PhotoVoice

Customers who use purchased cookstoves from Solar Sister said that meals are able to be prepared faster and children are able to eat sooner. With time saved in the kitchen, customers noted that they were able to spend more time on other businesses and on their farms, and said that these other sources of livelihood had flourished as a result. The solar lanterns sold by Solar Sister have also increased the quality of the time that women spend in the kitchen. One female customer said: “Using the Solar Sister products has helped me a lot. Before I was using the phones that have the torch [light]; whenever I was cooking, I needed light in the kitchen, so kept my phone in my mouth to get the light and cook. Now with the help of this torch [Solar Sister light] it has helped me, so now most of the time instead of using the phone torch I use the phone [to make calls] and [to] listen to the radio 24/7.”

As a result of using the Clean Cookstoves, customers reported saving:

- **1.6 hours** per week in time spent on **fuel collection**
(a 62% reduction from the baseline)
- **\$1.92** per week on reduced expenditure on **wood**
- **\$2.41** per week on reduced expenditure on **charcoal**
(a 44% reduction from the baseline)

Source: Solar Sister Tanzania 2015 Year End Survey

As with the SSEs, the **safety** that lanterns provide was also noted as a key benefit by customers who were interviewed. Mothers like that the solar lanterns are safer for their children to use. One customer explained: “When using a kerosene lamp before, I didn’t feel safe leaving my children alone, but now I feel comfortable leaving them at the house [without me].” Customers also use the lamps to protect their



families from dangerous insects, like scorpions, that may be found inside the house.

As a result of using the Solar Lanterns, customers reported saving:

- **1.5 hours** per week from switching to **solar lighting**
- **1.7 hours** per week from switching to **solar mobile charging**
- **\$3.23** per week on reduced **kerosene** costs
- **\$2.96** per week on reduced **mobile charging costs**

Source: Solar Sister Tanzania 2015 Year End Survey

Although to a lesser extent than the SSEs, customers also experienced small changes in **household dynamics** as a result of using Solar Sister products. One male customer said: *“My wife always used to ask for money for kerosene and water, but now I have money to give her for water and kale.”* Other customers experienced similar positive changes, noting increased communication between husbands and wives.

Health benefits were mentioned by some, but not all customers, and not as often as they were by the SSEs. However, it is impressive to note that customers reported having completely switched from kerosene to solar after purchasing Solar Sister products, which did produce some changes in family members’ health. One customer explained that before Solar Sister, many household

members were frequently coughing which shows how kerosene was detrimental to their health. Now, however, the customer went on to explain: *“[We are] happy because [we] no longer have to use the kerosene lamp, which was destroying the health of children and families.”*

Customers were so excited about the products that almost all said they had talked about Solar Sister and their products with others in the community. In particular, other community members took notice of the lights that were used in customers’ businesses, which gave Solar Sister customers a chance to tell others about the products. Customers said that many of their friends had bought Solar Sister products after they had recommended them.

Customer Challenges:

Security, price, and use of the products during the rainy season were the three main challenges noted by customers. Similar to the SSEs, customers noted concern with charging their devices outside. They said that Solar Sister products are coveted by many in the community, and the current method of charging the lights provides a prime opportunity for others to steal them.

Another common challenge among customers was charging their products during the rainy season, when there is a limited amount of sunlight. Customers asked for Solar Sister to consider improved solutions for charging products during this time. They also asked Solar Sister to reduce the price of their products. While customers said they understand the value of buying products from Solar Sister because of their durability, they also noted that the high price of Solar Sister products precludes some community members from being able to buy from them. One group of customers said that many of their neighbors choose to buy from other vendors because of Solar Sister’s high prices. One customer asked for more information about the quality and durability of each product; more systematically providing this information to customers might help to validate the rationale for the higher price.

