

The Loodariak Kenya Village Solar Cooker Project: Collaborative Knowledge Transfer

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*Abstract: This paper explores process and issues surrounding the introduction of solar cooker technologies into the rural Maasai village of **Loodariak** in south eastern Kenya. It is part of the collaborative ongoing relationship of knowledge transfer between Loodariak Village in Kenya and Ryerson University in Toronto Canada, World Vision (Canada and Kenya), and more recently Solar Cookers International (SCI).*

Ryerson University and World Vision have been supporting economic and educational development in Loodariak since 2008, beginning with the four-year financial and logistical support of a young Maasai female student in the Ryerson University Social Work degree programme. She became the first person and only female in her region to achieve a University degree. At the invitation her Loodariak community, Ryerson University held a Convocation ceremony in Loodariak Kenya in 2012, attended by 1800 Maasai from the region. This began several collaborative educational and economic development projects, ranging from an educational foundation and scholarship and a fundraising foundation, to several Women's Beadwork Collectives, an international marketing website, a Bee-Keeping business, and financial and business training. World Vision recently built a girl's primary boarding school in Loodariak.

In 2016 the Ryerson Kenya Village Project asked the villagers if they would like to introduce solar cookers into their community, based upon the Project's knowledge and support of successful solar cooker implementation in other rural communities. In Loodariak, the community organizational infrastructure existed in the Women's Beadwork Collectives for the implementation of solar cooker technologies. Transfer of solar cooker knowledge began in the fall of 2016, with the assistance of Solar Cookers International.

Successful implementation of solar cooker technologies into Loodariak will contribute to furthering the health, economic, educational and environmental well being of the community. If the Loodariak villagers chose to pursue a future solar cooker business for their region, this will increase competencies, capacity and engagement of community members in their future, including women and the increasing numbers high school and universities graduates.

Key works: collaborative development, solar cookers, sustainability

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Introduction

This paper explores process and issues surrounding the introduction of solar cooker technologies into the rural Maasai region of Loodariak in south eastern Kenya. Solar cookers are the most recent part of the collaborative ongoing relationship of knowledge transfer between Loodariak Village in Kenya and Ryerson University in Toronto Canada, World Vision (Canada and Kenya), and more recently Solar Cookers International (SCI).

A Brief Historical Overview

Loodariak is situated in Kenya's Great Rift Valley in the district of Kajiado, 60km south-east of Nairobi, Kenya. It is a vast rural territory of approximately 10,000 persons, the majority being from the Maasai tribe. There is scarce access to electricity and water in the region, with water shortages aggravated by climate change. Travel is difficult over rough under-maintained dirt roads. The Maasai travel many miles on foot through areas rife with predators. Cell tower reception is sparse and intermittent in this vast area.



The Maasai are pastoralists. Cattle play a major economic, cultural and spiritual role in their lives. They require cattle herds for substance, trade, marriage, inheritance and community status. The Maasai have a traditional division of labour based on age and sex. It is a polygamous culture. Men are responsible for the cattle herding, protecting their land and trade. Young boys and youth assist their fathers and herd cattle far from home. Older men make decisions around land and negotiations with other communities.



Women are responsible for the domestic realm: food preparation, water and firewood collection, hut and enclosure building, leatherwork and beading. Young girls assist their mothers and look

after goats and sheep close to home. Education has traditionally been reserved for some boys. Few girls attend school and, of those who do, many drop out at puberty to marry.



The Maasai have been marginalized from main stream Kenyan economy and discriminated against by officials and policy makers who see the Maasai way of life as outmoded, unproductive and backward. Their ancestral grazing lands and traditional way of life are under threat from others who wish to exploit their natural resources for game parks and tourism, and the commercialization of agriculture and cattle ranching. As their lands shrink, mainly male youth seek additional sources of income from larger towns and cities. The Maasai wish to protect their vast land resources and wildlife, their livestock and traditional way of life, while entering the 21st century.

Institutional Collaboration

1. World Vision and Teriano's story

Collaboration between Loodariak and World Vision began over 25 years ago with the introduction of educational sponsorships and community projects. Most families resisted the education of their children who were needed to work with the livestock and in the home. World Vision Kenya provided uniforms, medical care and books, and supported school and community defined projects in Loodariak. One mother, the first wife of three wives, wanted her first born female child, Teriano Lesancha, to attend school. She wished for her daughter more life choices than she had growing up. Mama Lesancha had to leave school and marry at 13.



Teriano and Mama Lesancha 1990's

At first Teriano's father resisted, but finally agreed his first born could attend school. Teriano excelled academically. With the continued agreement of her father and financial assistance from Word Vision, Teriano attended a secondary boarding school, followed by a college social development program in Nairobi. Her father sold valuable cows to assist her. Teriano returned to Loodariak to work for World Vision in community projects, the first woman in her village to earn a salary. With this money she built her mother a concrete house, bought her father cows and improved the economic status of her family. She had demonstrated the importance of education for girls. She also saved some money to return to school.

2. Ryerson University, Toronto, Canada

In 2008, she arrived in Canada to further her studies, but was abandoned by her sponsor. With the assistance of her Sociology Professor Jean Golden, Ryerson President Sheldon Levy and a community of faculty, staff and students, Teriano was provided with financial support to complete her four-year degree in Social Work at Ryerson University. World Vision provided part-time employment for her as a motivational speaker about the importance of educating girls. Her Maasai parents came from Loodariak to attend their daughter's Convocation ceremony in June 2012.



Convocation in Toronto, Canada

At the invitation of the Loodariak villagers, President Levy and Professor Golden held a special University Convocation for Teriano in her home village of Loodariak in August 2012. The ceremony attracted national Kenya media attention and many distinguished individuals, including Kenya's Minister of Higher Education, the Canadian High Commissioner, World Vision representatives, the Kajiado County Governor and Maasai University Professors and students from Nairobi. More significantly, over 1800 Loodariak Maasai attended the celebration.



Convocation in Loodariak, Kenya



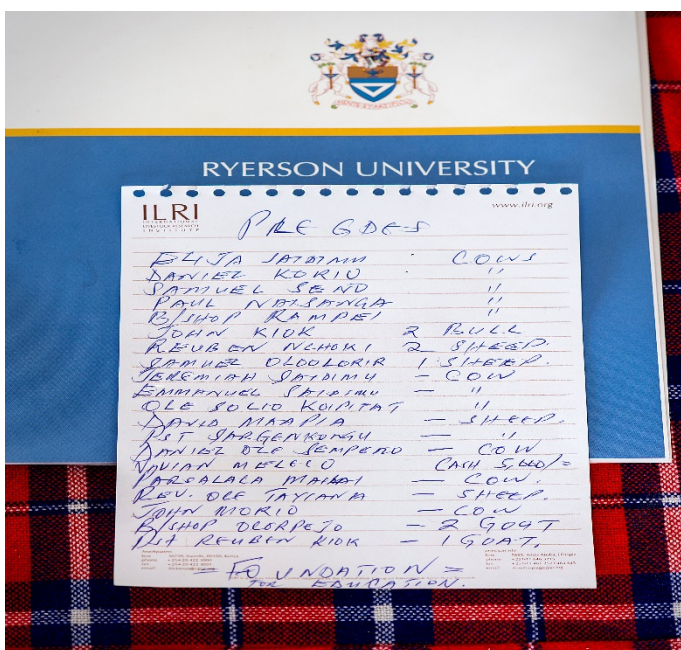
Maasai from Loodariak region at Convocation

Loodariak video

<http://www.youtube.com/watch?v=6vRpHT54H9o>

Ekiteng (Cow) Education Scholarship Fund 2012

At the Loodariak Convocation, Teriano announced the creation of the Loodariak Ekiteng (Cow) Youth Education Fund. Seventy percent of the scholarships were to go girls, long denied access to education in her region. Ryerson University donated cows and money to fund the initial scholarships. Teriano's father and other elders followed suit and made history as the first men financially to support girls' education in her village. Sixteen cows were donated, making it possible to establish the Ekiteng Education Fund.



Loodariak Elders commit to education.

3. Ryerson and World Vision Collaboration

After graduation, Ryerson University hired Teriano and provided expertise in business and digital media to assist her in the educational and economic development in Loodariak. Teriano is

now completing her Master's in Social Work at Ryerson University. She continues to speak for and work with World Vision.

Since 2012, Ryerson University, World Vision and Loodariak have worked collaboratively to create the following successful community organizations and enterprises run by Loodariak villagers. Ryerson business and financial expertise has been shared with Loodariak community members through students and staff staying in the village for extended time periods.

- **SupaMaasai Foundation 2012:** fundraising
- **SupaMaasai Women's Beadwork Collective 2013:** women's business co-operative markets good in Canada



- **Beekeeping Project 2013:** business developed with Ryerson students
- **MOU 2016:** in process between Ryerson University and the County Government of Kajiado, through the Office of the District Governor David Nkedianye, to transfer identified educational, technological and entrepreneurial knowledge to Kajiado County.
- **Loodariak Girl's Primary Boarding School 2016, built by World Vision Canada:** Ryerson University and Teriano sought a World Vision Canada grant to support the building a Primary Boarding School for girls in Loodariak. It opened in 2016.



Loodariak Primary School

4. Ryerson University and the Introduction of Solar Cookers to Loodariak 2016

The Ryerson Kenya Village Project (Professor Golden and lead researcher Peter Haastrup) is working with the SupaMaasai Women's Beadwork Collectives in Loodariak to introduce solar cooker technology to the community. This collaborative knowledge transfer between Loodariak Village in Kenya and Ryerson University in Canada is framed by several years of mutual trust and cultural understandings, and knowledge transfer. The recent Loodariak focus on solar cookers flows from the Kenya Village Project knowledge of successful solar cooker implementation in other rural communities and the Project's development of a solar cooker business plan and competency assessment tools for another rural Kenya village in 2016.

The Kenya Village Project team has summarized below the collaborative solar cooker implementation processes and issues in Loodariak for others interested in sharing solar cooker knowledge with rural communities.

How Maasai Cook in Loodariak

Maasai traditionally cook with firewood. Women and children walk miles to find wood and are at personal risk from animals and strangers. The surrounding area is facing increased deforestation, compounded by climate change and intermittent rains. The women cook in the open air or inside their poorly ventilated homes, with one small window space for smoke to escape. The family, especially the women and small children, are exposed to high concentrations of wood burning smoke and toxins from occasional use of alternative fuels. Respiratory issues and burns are common.

Using firewood and fuels inside Maasai homes



Using firewood in the open air



These issues of time consuming and dangerous firewood collection, deforestation, fuel costs, health issues, lack of boiled water and undercooked food have raised the Loodariak women's interest in solar cooker technology.

Where to begin?

This is the process developed by the Ryerson-Loodariak solar cooker team. The steps are evolving as we move through the process of solar cooker adoption.

i. Who do you know?

Begin with personal and institutional contacts in the village and build on those relationships.

Professor Golden has strong interpersonal ties with Teriano's Maasai family. Discussions were held over a year with the family in Toronto and in Loodariak, and with the Ryerson staff who lived and helped structure the Women's Beadwork Collectives in Loodariak. Solar cooker videos and experiences of other Kenyan villages, the role of Solar Cookers International and the SCI Faro Portugal Conference in 2016 were also discussed.

ii. What do you know?

Knowledge of local culture is essential for successful implementation of solar cookers in the communities. It is important to understand gender and power relations, family structure, decision-making patterns, economic and environmental issues, cooking culture and practices, and weather patterns.

Ryerson University's long term association with Maasai, in Toronto and in Loodariak, and discussions with World Vision personnel in Canada and in Kenya, provided a reliable source of continual information about the community and changes. This interactive information helped determine how best to introduce cookers into the community cooking and family culture.

iii. Building a Solar Cooker Team

It is essential to create a team with a range of expertise and skills in organization, networking, finance, fundraising, health issues, solar cooker training and cooking expertise. It is also critical to involve key members of the local community in planning and decision making.

The Kenya Village Project has organized a small organizational team in Toronto and in Loodariak. The joint team determined the best way to introduce the cookers into Loodariak. The

successful Women's Beadwork Collectives were chosen. There are four Collectives, ranging from 20-40 women in each Collective, legally registered as co-operatives with the banks, and each with a leader chosen by the group. One woman from a polygamous family is a member in each Collective. The women work together in designing, making, marketing and selling their beadwork, with part of their profits returned to the Collective to support community projects. One of the Toronto solar cooker team members with business expertise, George Phu, lived in Loodariak for several months and helped develop the Women's Beadwork Collectives structure and processes.

The Loodariak team consists of Collective leaders, one of whom is a nurse, plus the oldest brother of Teriano, who has strong financial skills. Both speak Maasai, Swahili and English. The elders of the family are acting as advisors in Loodariak.

iv. Funding and Budget

Successful introduction of solar cooker kits into poor rural communities requires a sustainable source of funding for the kits, cooker training and supplies.

The Kenya Village Project has grant funding for the introduction of solar cooker kits into Loodariak. We are seeking additional sustainable funding from Ryerson University internal grants and from external community partners in 2017. We have created a budget for cookers, food, training, transportation and communications. In addition, we are asking the Beadwork Collective women, who receive the cookers and one month of food staples, to return a portion of their food and fuel savings to the Collective to support the provision of cookers for economically vulnerable women outside the Collectives. The Collective already assists vulnerable women from the Collectives' communal co-op funds.

We also do not want the Collective women to become economically dependent on the Kenya Village Project for the provision of all cooker kits and wish to encourage community financial participation and accountability into solar cooker distribution and use.

v. Communication Issues in Rural Areas

Communication with the team members is essential within the region and between Canada and Kenya. Most rural areas use cell phones for communication and financial transaction. Computers and email communication may not be available. The team members may need money for phone data. This needs to be factored into the budget.

The Kenya Village Project created a private Facebook page for the team members and members also text frequently through a group on 'whatsapp'. Phone conversations are more difficult with poor phone connections. We have provided the team leaders with money for increased data use.

vi. Training Process Decisions

Which solar cooker kit?

It is important to decide what qualities are needed in a solar cooker kit.

Our team used the following criteria: available locally; simple and durable; low cost; easy to clean and repair; easy to set up and fold up, carry and move; can attain temperatures for boiling water; and can be made by the villagers with no patent issues.

We chose the inexpensive and durable SCI cook kit: a cardboard panel, covered with a foil reflective surface; long-life replaceable plastic cooking bag or 10 regular life cooking bag; a water pasteurization indicator (WAPI); and a dark pot with cooking food is placed inside the bag.

Which trainer? We needed a trainer experienced with demonstration and explanation of solar cooking benefits, knowledgeable about local cooking and foods, who speaks Swahili and English and can train the first group of women, who will in turn women to train those who follow in the next distribution round. SCI provided the contact.

When to train: What are the weather conditions, the daily cooking patterns and free time for training?

Where: Is there a covered space for rain and a centralized location, as many women come from far distances?

Size: What size of group is best for training? We are working with 20 women per session.

Timeline: How many training sessions and follow up visits are needed, over what timeline? We have chosen three sessions for each group over two months.

Transportation: Is transportation needed to deliver cookers to homes?

Food: Which foods will be used in the demonstration? What food will be provided to the women to encourage early use of the cookers and for how long?

vii. Monitor and Evaluate the Process of Solar Cooker Use

A system is required to monitor the number of cookers introduced into the community, the frequency of use, costs savings, health differences, and the women's assessment of cookers. The team will adapt the SCI Solar Cooking Adoption and Impact Survey for use in Loodariak.

viii. Information Dissemination

The results of the introduction of the solar cookers into Loodariak through the Women's Beadwork Collectives will be shared with SCI, at conferences and in community and academic publications. We will also be documenting the process in video and print format.

ix New Local Partners

Loodariak will be encouraged to seek local support from Ministry of Agriculture (MOA), Ministry of Health (MOH), and Ministry of Education (MOE) for local demos, information and food at local venues and in schools.

x. Solar Cooker Community Business

If the Loodariak decides to continue the distribution of solar cookers to families throughout the region, the Kenya Village Project will discuss with them the feasibility of a coop solar cooker business. It will seek a partnership with World Vision Kenya for this part of the Project. A business will increase competencies, capacity and engagement of community members in their future, including women and the increasing numbers high school and universities graduates.



Photographs by Ryerson University and Professor Golden. Source of Lesancha family phot unknown

