

# GENDER PRACTICE IN FOOD SYSTEMS INNOVATIONS: APPROACHES, LESSONS, AND CHALLENGES



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# GLOSSARY OF TECHNICAL TERMS

**Innovation:** Innovation refers to new ideas, new knowledge, and new technologies. Innovations are often triggered by a challenge. At the foundation of every innovation is the desire or need to “improve” “make better” from a previous state, condition, approach, result/outcome.

**Food systems:** Includes the interactions between and within the biophysical and human environment, which determines a set of activities related to the production, processing and packaging of food, distribution and retailing of food, preparation and consumption of food, the outcomes of which contribute to food security, environmental security and social welfare (Ericksen, 2008). Food systems are embedded in environments which differ according to a variety of factors such as agro-ecology, climate, social aspects, economics, health and policy (Combs, et al., 1996). The different environments interact to influence both the activities and the outcomes of food systems.

**Food system innovation:** Innovations in the food systems are therefore new ideas, new knowledge and technologies for addressing specific food system challenges.

**Gender:** A social construct that refers to relations between and among the sexes, based on their relative roles in a specific social context. It encompasses the economic, political, and sociocultural attributes, constraints, and opportunities associated with being male or female. The social definitions of what it means to be male or female vary among cultures and change over time (USAID ADS Chapters 200–203, USAID, 2010). Gender refers to the array of socially constructed roles and relationships, personality traits, attitudes,

behaviors, values, and relative power and influence that society ascribes to the two sexes on a differential basis. Gender is an acquired identity that is learned, changes over time, and varies widely within and across cultures. Gender is relational and refers not simply to women or men but to the relationship between them. Because of the variation in gender across cultures and over time, gender roles should not be assumed, but investigated. “Gender” is not interchangeable with “women” or “sex.” (USAID, 2010). Gender is therefore a product of the social environment in which food systems are embedded.

**Gender roles:** The role or behavior learned by a person as appropriate to their gender, determined by the prevailing cultural norms. A set of societal norms dictating the types of behaviors which are generally considered acceptable, appropriate, or desirable for people based on their actual or perceived sex or sexuality. These roles are assigned by social criteria rather than biological.

**Gender relations:** A term that emphasizes the relationship between men and women as demonstrated by their respective roles in power sharing, decision making, the division of labor, returns to labor, both within the household and in the society at large.

**Gender division of labor:** An overall societal pattern where women are allotted one set of gender roles and men are allotted another set. An unequal gender division of labor refers to situations in which there is an unequal division of the rewards of labor by sex, i.e., discrimination. The most obvious pattern in the gender division of labor is that women are mostly confined to unpaid domestic work and unpaid food production, whereas men dominate in cash crop production and wage employment (USAID, 2007).

**Gender-based constraints:** Restrictions on men’s or women’s access to resources

or opportunities that are based on their roles or responsibilities, encompassing the measurable inequalities identified by sex-disaggregated data and gender analysis and the factors that contribute to a specific condition of gender inequality. (Rubin, Manfre & Barrett 2009).

**Gender analysis:** Gender analysis is a subset of socio-economic analysis. It is a systematic social science tool used to identify, understand, and explain gaps between males and females that exist in households, communities, and countries. It is also used to identify the relevance of gender norms and power relations in a specific context (e.g., country, geographic, cultural, institutional, economic, etc.). Such analysis typically involves examining:

- Differences in the status of women and men and their differential access to assets, resources, opportunities, and services;
- The influence of gender roles and norms on the division of time between paid employment, unpaid work (including subsistence production and care for family members), and volunteer activities;
- The influence of gender roles and norms on leadership roles and decision-making; constraints, opportunities, and entry points for narrowing gender gaps and empowering females; and
- Potential differential impacts of development policies and programs on males and females, including unintended or negative consequences.

There are different gender analysis frameworks and there is no one framework that has been adopted as the standard

USAID approach. Nevertheless, most gender analysis frameworks involve collecting quantitative and qualitative information on a similar set of issues. These are called “domains” for the purposes of gender analysis at USAID and are described in detail below. All forms of gender analysis also entail gathering descriptive statistics on many aspects of the status of males and females (USAID, 2017).

Gender analysis makes clear how gender roles and relations create opportunities or obstacles for achieving development objectives. It is a very important step in creating gendered food systems innovations. It improves/enhances the processes and outcomes of food systems innovations, i.e. it adds value to research and increases that likelihood that food systems innovations will achieve their overall goals of reducing poverty, promoting nutrition and food security, and sustainability.

Gender analysis begins with the collection and analysis of sex disaggregated data collected using quantitative and qualitative methods. Gender analysis must be done at all stages of the development process; one must always ask how a particular activity, decision, or plan will affect men differently from women in areas such as access and value of labor, property access and ownership, access to information and services, and social status (USAID, 2007).

The idea of conducting a gender analysis prior to project design is often scary to many researchers and innovators—often push back for reasons such as time, finance, or simply with statements such as “this is not a gender research” or “my research has nothing to do with gender” or “gender is irrelevant in the work that I do.”

**Gender integration:** It refers to strategies for making women’s as well as men’s concerns and experiences an integral dimension in

the design, implementation, monitoring, and evaluation of policies and programs in all political, economic, and social spheres—such that inequality between men and women is not perpetuated (USAID, 2007). Gender integration involves identifying, and then addressing, gender inequalities during strategy and project design, implementation, and monitoring and evaluation. Since the roles and power relations between men and women affect how an activity is implemented, it is essential that project managers address these issues on an ongoing basis (USAID Policy on Gender Equality and Female Empowerment).

**Gendered food systems innovation:**

Processes that integrate gender analysis into all phases of the innovation cycle to ensure that the outcomes of the innovation benefit all or does not create unintended negative consequences on a specific group based on their gender.

**Gender disparity:** Measurable differences in the relative conditions of men and women, especially (but not only) as they relate to the ability to engage in economic or political opportunities; for example, illiteracy rates, levels of land ownership, or access to finance (Rubin, Manfre & Barrett, 2009).

**Gender equality:** Fundamental social transformation, working with men, boys, women, and girls to bring about changes in attitudes, behaviors, roles, and responsibilities at home, in the workplace, and in the community. Genuine equality means expanding freedoms and improving overall quality of life so that equality is achieved without sacrificing gains for males or females (USAID, 2012).

**Gender equity:** Fairness in representation, participation, and benefits afforded to men and women; processes used to achieve gender equality. The goal is that women and men both have a fair chance of having their

needs met, and each has equal access to opportunities for realizing their full potential as human beings (Rubin, Manfre & Barrett, 2009).

**Female empowerment:** When women and girls have the power to act freely, exercise their rights, and fulfill their potential as full and equal members of society. Although empowerment often comes from within (individuals empowering themselves), cultures, societies, and institutions create conditions that facilitate or undermine the possibilities for empowerment (USAID, 2012).

Female empowerment is achieved when women and girls acquire the power to act freely, exercise their rights, and fulfill their potential as full and equal members of society. While empowerment often comes from within, and individuals empower themselves, cultures, societies, and institutions create conditions that facilitate or undermine the possibilities for empowerment (USAID Policy on Gender Equality and Female Empowerment).



# Overview

## GCFSI

The Global Center for Food Systems Innovation (GCFSI) is one of eight development labs established through the Higher Education Solutions Network of the United States Agency for International Development. The Center addresses critical pressures on the world's food supply by creating, testing and enabling the scaling of solutions. GCFSI takes a multidisciplinary approach that encompasses the entire food system and considers major environmental, economic and social trends, as well as workforce development needs that will impact future food security.

Specifically, GCFSI works on improving food systems in a world facing shrinking natural resources, changing climate, and rapidly increasing demand—all in a context of technological changes. The goals of the Center include: to find creative ways to overcome the problems of shrinking farm land in developing countries, help under-resourced farmers deal with less rainfall due to climate change, and develop plans to improve systems dealing with food production, storage, processing, packaging, transportation and distribution strained by larger urban population.

GCFSI is developing and testing new approaches emerging from its interdisciplinary research ranging from production innovation through post-harvest processing to distribution and market evolution in a holistic approach. This effort is based on active contributions from a diverse mix of agricultural scientists, economists, engineers, geographers, supply chain experts, urban planners and others. Innovative ideas are supported directly by GCFSI's center-led projects as well as via student and faculty innovation grants. The innovation grants are designed to enable the development, refinement, or scaling up of food system innovations, with the ultimate goal of helping to support global food security efforts.

## GCFSI's Gender Strategy

Gender inclusiveness is key at GCFSI. Based on a recognition of the potential role of gender as an accelerator or inhibitor of food systems innovations, GCFSI is committed to pursuing proactively, as appropriate, innovations with a strong potential to transform unequal gender relations and empower women. While we acknowledge that gender is not synonymous to women, GCFSI also recognizes the central role women play in agriculture in most developing countries, as well as the numerous challenges that hinder their full participation in and benefits from food systems activities.

The ultimate purpose for the mainstreaming of gender into GCFSI's programming is to support the design of innovative solutions to food systems challenges/problems that are sensitive to the needs of, benefit men and women as food system actors, and do not create any negative unintended consequences for any specific gender group. GCFSI's Gender Strategy (<http://gcfsi.isp.msu.edu/files/2914/6229/3436/w6.pdf>) describes the Center's two major approaches to gender integration: 1) Gender integration in the innovation pipeline; and 2) Strategic gender research. Gender integration in the innovation pipeline involves systematically feeding in of evidence of gender issues identified through

gender analysis into the innovation lifecycle where it provides critical input for the design of food systems innovations. The goal is to ensure that designed innovations are responsive to the priority needs of men and women food system actors. As a tool, gender analysis helps the identification of existing areas of gender inequalities, why they exist and their implications for planned activities. It involves asking questions such as who does what and why? Who has access to and/or control over what resources and why? Who is able to participate in which development activities and why? Who makes what types of decisions and why? What are the implications for innovations?

According to USAID's requirement for gender integration and female empowerment, two key questions must be addressed by projects (USAID, 2010). Adapted to GCFSI's context, these include:

- Question 1: How are existing gender relations in the target communities affecting the design, implementation and monitoring and evaluation phases of the project?
- Question 2: How is the innovation project impacting are existing gender relations in the project communities?

**To satisfy USAID requirements, and overall support gender integration in GCFSI's activities, GCFSI gender team's work with Innovation Grants can be subdivided as follows:**

- Review innovation grant proposals to ensure: i) the problem identification and the design and testing of proposed solution, where appropriate, addresses potential gender issues; and ii) the indicators identified for monitoring any gender specific impacts of the innovation are appropriate
- Where appropriate, ensure that the innovation grant implementation teams have sufficient capacity for gender integration
- Build innovation grant recipients' capacity for gender integration as appropriate, through training webinars
- Monitor the implementation of the grants to ensure gender sensitivity, i.e. ensure that implementation decisions are based on existing evidence of gender issues in the context
- Serve as a gender resource link for the innovation grantees
- Support the analysis of any gender specific impacts of innovations to ensure that tested innovations do not exacerbate another facet of a "wicked problem", for instance, by widening existing gender inequalities in the food system. Work with grantees to develop gender success stories from their projects, thereby populating existing evidence on gender sensitive innovations in food systems.



## Goals of the research

The objective of the current research is to “evaluate” gender integration in the context of GCFSI funded innovations to respond to USAID’s two questions (mentioned above). Specifically, with respect to Question 1, the research looks at how conducting a gender analysis—a tool for understanding/describing gender relations in a particular social setting—enhances the potential for food systems innovations to generate positive outcomes/impacts for men and women food systems actors. With respect to Question 2, the research examines the potential for each of the GCFSI funded projects to transform existing gender relations in the communities using the Gender Continuum as the framework for analysis. This research provided a platform for GCFSI funder innovation projects to tell their stories on how they have integrated gender considerations in their innovation projects, the challenges they faced in accomplishing this, the lessons that were learned that can benefit future innovation grant projects, some of the best practices, and the gender-differentiated impacts of their respective food systems innovation projects. This activity was considered an important exercise, especially as GCFSI wraps up its first five-year phase under USAID funding. As GCFSI concludes the first phase of its work on food systems innovation, the data/findings from this process will not only be useful in strengthening GCFSI’s role in mainstreaming gender in its future activities, but also, the information generated will be useful for other food systems innovation projects.

## Data and Methodology

A total of six (6) GCFSI innovation projects participated in this research. Five of these projects were funded under Round Two of GCFSI’s funding (Year 2014/15) while one of the projects evaluated was funded under Year One of GCFSI’s Innovation grant funding (Year 2013/2014). See Table 1 for information on the innovation grant projects.

**Table 1. GCFSI Innovation Grant Project Information**

Project Title	Location	Name of PI
Human-Powered Bean Thresher for Small-scale Legume Production in Kasama	Zambia	Adam Lyman Ronald Averill
Cell Phones as a Lifeline for African Beekeepers	Kenya	Maryann Frazier Benjamin Muli
Market Access and Zero Waste through a Greener Cassava Processing System	Tanzania	Humphrey Ndossi Anselm Moshi
Field testing the Integration of Slurry Separation Technology & Refrigeration Units with Anaerobic Digestion Systems	Uganda	Rebecca Larson Vianney Tumwesige
Use of Orange Sweet Potatoes in Enhancing Vitamin-Nutrition	Tanzania	Chanapatna Prakash Theobald Masha
Grasshopper and Locust Farming as a Sustainable Source of Protein for Non-Ruminant Livestock and Humans	Kenya	John Nduko Anthony King’ori

Data gathering began with a review of secondary material such as project proposals and monitoring and evaluation data that had been gathered from the project staff over time. This was followed by a short online survey designed for additional data collection. See Figure 1. The information gathered through the online survey was complemented with Skype and phone interviews with project personnel. These interviews addressed follow-up questions from the online survey as well as provided a platform for the collection more detailed discussion on the project's experience in integrating gender into project activities.

- The data collected from each project team was analyzed to answer the following questions:
- Was a gender analysis (formal or informally) conducted prior to the design of the innovation project?
- What were the major findings from the gender analysis that had implications for the project's activities?
- How were these findings from the gender analysis incorporated (consciously or unconsciously) in to the design and implementation of the project?
- How has the project contributed to transforming gender relations (or addressing the gender issues identified in the GA) in the target communities (The Gender Continuum)?
- Where does the project fall or is likely to fall in the Continuum for Gender Integration?
- Did the project measure the gender differentiated impacts of its activities?
- How did attention to gender issues enhance the quality and impact of the innovations?
- Where there any unintended consequences of the project's activities on gender relations in the target communities?
- What would have been the cost of not wearing a gender lens in the design and implementation of the project?
- What are the capacity building needs to support gender integration?

### **The Gender Continuum identifies three major Gender Integration Strategies that can take place in the context of any project**

**Gender Exploitative** refers to projects that intentionally manipulate or misuse knowledge of inequalities and stereotypes in pursuit of economic outcomes. The approach reinforces and potentially deepens existing gender inequalities.

**Gender Accomodating** refers to projects that acknowledge gender inequities and seek to develop actions that adjust to and often compensate for gender differences and inequities without addressing the underlying structures that perpetuate the inequalities. While this approach considers the different roles and indentities of women and men in the design or programs, it does not deliberately challenge unequal power relations. In the process of achieving development objectives, projects following this approach may miss opportunities to improve gender equality.

**Gender Transformative** refers to an approach that explicitly engages women and men to examine, question, and chage institutions and norms that reinforce gender inequalities and, through that process, to achieve both economic growth and gender equality.

Rubin, Manfre, and Barrett (2009)

## Figure 1: Online Survey Instrument

### Grantee or Project Information

Name:

Project title:

Project location:

Year grant was received or year project started (round 1 or 2):

Skype name:

Email:

1. Was it important to consider gender relations in your project? Yes, or No
2. Please explain the reason for your response in question 1.
3. Please identify gender relations in your project communities which were important for your project. Please list and explain the top 3 major ones.
4. How did existing gender relations in your project communities (identified in Q. 3) affect/influence:
  - a. The design of your project (i.e. needs assessment, project setup, etc.)
  - b. The actual implementation of your project activities (i.e. data collection (sex-disaggregating, who you interviewed), training, demonstrations, farmer field-schools, testing/evaluation of technologies, etc.)
  - c. The monitoring and evaluation of project activities (type and appropriateness of data collection methods, choice of indicators, etc.)?
5. Has your project had any impacts on existing gender relationships in the project communities? Yes, or No.
6. Please list and explain any impacts that your project activities are having on existing gender relationships in the communities in which you work.
7. List the 3 most important ways in which your project has benefited women (including young girls)
8. List the 3 most important ways in which your project has benefited men (including young boys)
9. Did you experience any difficulty/challenges in mainstreaming gender in your project activities? Yes, or No
  - a. If yes, please list and explain the three (3) most important challenges experienced.
  - b. If yes, were these challenges anticipated in the beginning of the project?
  - c. Please explain what actions you took to overcome/address these challenges.
10. How did your knowledge/understanding/appreciation of gender and food systems issues change in the course of your project?
11. Do you think you have had adequate capacity to address gender issues in your work and to show gender-differentiated impacts?
  - a. If not, what type of assistance and in what specific activities in your project do you (would you) need assistance in?
12. Are there any materials (videos, papers, others) you would like to share with GCFSI to help GCFSI better tell the story of how your project is addressing gender issues, empowering women or promoting gender equity?
13. Overall, how many women/men have directly benefited from your project activities over the lifetime of your grant. Please breakdown by type of activity (attended training or farmer field-schools, adopted technology, etc.) For each activity, how many women/men.

# INNOVATION PROJECT ONE

## Human-Powered Bean Thresher for Small-scale Legume Production in Kasama, Zambia

### *Development Challenge or Goal*

Alleviate poverty and malnutrition by increasing bean production. In addition, to empower women in rural Zambian villages by introducing a technology that will add processing capacity.

### *What is the innovation?*

A bike-powered bean thresher designed to shuck beans four times faster than the manual method. The technology speeds up beans processing and eases physical strain felt by women who are major suppliers of labor in the production and processing of beans. By increasing processing capacity, the technology is expected to trigger increases in bean production, enhance livelihood, create an opportunities for the development of small-scale enterprises focusing on value addition for beans.

### *Gender in the practice of Innovation*

#### 1. Target food system activity and beneficiary/participants

- The target crop for this project is beans.
- In the social context, beans is commonly referred to as a “women’s crop” because women provide a substantial amount of the labor required in the production of beans and they are also heavily involved in small scale processing of beans. Thus the mechanization would be used primarily by women
- The project began with a first concept design of the technology in a USA laboratory. This first concept design, also referred to as the initial iteration of the technology, was an initial guess at a design based on previous work that was conducted by the project team in Guatemala. According to the project team, having this initial design was very helpful in in providing a technology that the end-users can visualize, touch and evaluate for its appropriateness or usability, as well as compare it to what they are currently using.

#### 2. Survey Design

A baseline survey was designed to collect data on existing gender relations in the target communities that were relevant to the success of the project. The survey collected sex-disaggregated data for the following purposes:

- i. To construct a Gender Activity Profile (GAP)—a gender mapping of activities in beans production and post-harvest handling.

- The GAP helps to get a deeper understanding of gender roles, i.e. who does what activities within the household—gender division of roles and responsibilities in beans production and marketing.

**“Understanding how the tasks are disaggregated is important in determining the type and appropriateness of technological intervention”.**  
Adam Lyman

- According to the innovator, it was important to have the first concept during the interviews so as not just to talk about gender roles but also to see how these roles manifest in actual practice.
- The analysis of survey data and secondary literature revealed gender-differentiated roles/responsibilities in bean production and processing. In general, there are strict societal norms dictating what tasks are appropriate for men and women in rural Zambia.
  - Beans Production:
    - Traditionally women provide most of the labor in beans production. This is because beans is regarded as a women’s crop. Production activities include land preparation, planting, land management (such as weeding, etc.)
    - Men are occasionally involved in some beans production activities, especially those activities that demand high levels of energy or are high in labor intensity. For example, beans harvesting, land preparation and the beating component of threshing. Pulling of beans from the ground or beating, the beans are activities with intense labor demand. Men mostly operate like seasonal laborers—came in when there was a need for labor
  - Beans Processing:
    - Small-scale beans processing—women provide most of the labor in small-scale processing
    - Large-scale beans processing—women are still heavily involved in large-scale beans processing, though would sometimes seek help from men.
    - Women responsible for winnowing and cleaning of the beans. Activities that require sitting, patience and care are more appropriate for women because men cannot exercise these attributes.

## ii. Access to and control over assets profile

The data was analyzed to identify any gender differences in access to, ownership, and control over assets/resources, including money—who owns/controls the

resources that are required in beans production and processing. Furthermore, since a major goal of the project was to empower rural women economically, it was important to collect data to understand the level of control that they have over assets, income and crops.

**“The ways in which money and assets are controlled will determine how effective an intervention can be in terms of incentives as well as in terms of achieving project goals”.**

**Adam Lyman**

- The analysis of survey data suggest gender disparities in assets/resources in the following areas.
  - Within the household, women are only occasionally in control of money and expenditures, even though they are typically the most responsible.
  - Men generally spend money on non-household related activities or assets, such as alcohol and gambling.
  - Women were more likely to responsibly control money and invest it in the acquisition of household items, or small enterprises for the creation of secondary incomes.
  - Women typically sell agricultural products at local markets, while men typically travel to larger city markets to sell larger amounts of goods, such as maize. Problems occur in the household over monetary control, because after the sale of a major crop or good, little, or no money returns to the household.
  - In rural Zambia, men typically control/own more assets than women. For example, bicycles are a main asset in Zambian village life. It is more common for men to own and operate bicycles than women. This is because bicycles were symbols of power and wealth, which men exemplify. Note that the bean thresher that is being designed here is mounted like a bicycle.

### iii. Societal norms and participation in public settings/spaces

- Traditionally, men are dominant members of the society, especially in public settings. In these settings, if women and men are in mixed groups, men are expected to do most of the talking. Women on the other hand, are expected to be passive, and listen to what the men have to say. In most cases, it is inappropriate for women to make comments in a communal setting.

### iv. Gender differences in preference for the different components and in the appropriateness of the technology.

- The analysis of survey data and end-users assessment of the first concept design of the technology revealed the following to the research team:



- The term component here refer to aspects such as the size of the machine, type of power input and how complex that is (bicycle, diesel, solar, manual vs. external motor); how complicated whole system is.
- Gender differences in the scale at which beans in cultivated. Although beans is generally regarded as a women crop, men growing beans are more likely to do so at a larger scale compared to women—they were more likely to grow larger volumes of beans compared to women. Not only were such men likely to be richer (have more money), but they were also more likely to have operated machines than women were.
- As a result, interviews revealed gender differences in preference in the type of power for the technology/machine—men preferred a motor/diesel powered bean thresher—a technology with high energy demand. Women were less excited about such a machine. Having a diesel-powered thresher would have been intriguing for men. However, the consequence would have been the exclusion of women, who will have a harder time using such a technology.

### 3. Participatory Evaluation/Assessment of first draft of the technology

#### **What did the project team learn from the findings from the analysis of sex-disaggregated data that was relevant for the design of the next concept/iteration of the technology/machine?**

- Women are more likely going to be the primary users of the technology since they are already heavily involved in beans processing.
- The observed difference across gender groups in terms of “appropriateness of the technology” highlighted the potential risk of excluding one gender-group if the technology was designed by taking into considerations only the definition of “appropriateness” by the other gender group. For example, men indicated a preference for a motor/diesel powered thresher because they were more confident in operating machines. In this case, a motor/diesel powered thresher would exclude women and potentially give men more control over beans production and processing.

A participatory evaluation was conducted on the first concept of the technology. Just as the survey, the participatory evaluation/assessment also included a section focusing on gender relations.

- Participants from the farming communities selected for the study were disaggregated based on sex for the participatory evaluation; and an equal amount of males and females were chosen to appropriately represent the population.
- These participatory evaluation sessions were conducted by male and female research specialists—ensuring that the sex of the scientist matched the sex of the group in which they were assigned. This was done mainly to control for the power dynamics that were usually observed in communication between males and females

in-group settings. Doing this allowed female participants to speak openly and comfortably with female research assistants, thereby improving the accuracy of the data to be collected.

#### 4. Machine Design—Implementation of a Human Centered Design Process (HCD)

- The findings from the gender analysis and participatory evaluation were integrated into a human centered design process in order to develop/design the next version of the technology or machine.
- Generally, the HCD process allows users to define the constraints they face, and what solutions would be appropriate.
- According to the project lead, “women are the main beneficiaries of the proposed intervention. Therefore understanding that as a group of users they experience constraints that are unique to their gender was a motivation for implementing the human-centered design”.

### Gender in the technology design

Gender related factors from the evaluation phase that were incorporated into the machine design specification include ease of use, ergonomics, transportability, and aesthetics. For example, the machine was designed so that a person with a limited technical background or physical athleticism could operate the machine, features that were identified by women participants in the evaluation phase.



*Adam Lyman loading the thresher into a truck in Zambia.*

## ***Gender in Monitoring and Evaluation***

According to the project team, in depth information and metrics pertaining on existing gender relations in the target communities highlighted the need for a mixed methods approach (qualitative and quantitative) in the monitoring and evaluation phase of project activities. While the project is still ongoing in the sense that the final version of the thresher is yet to be designed, the project staff anticipates recording quantitative and qualitative impacts of the project on gender relations and on income/poverty and food security in Kasama.

For example, the technology in itself is expected to reduce the burden on women's time/labor by freeing up some of time that was previously devoted to manual threshing and winnowing of the beans. The machine will also improve the quality of the beans, which could be sold at a higher price, thereby potentially generating income gains for beans producers. However, the extent to which this additional income will affect food and nutrition security for everyone in the household would depend on gender power relations in control over income—who within the household makes decisions on how, and on what this additional income is spent or utilized. Qualitative data will be collected to record any observed changes in control over crop income and decision making as a result of the introduction of this technology.

According to the Project PIs, such an approach to technology design that works with end-users in evaluating the effectiveness and appropriateness of a given technology, and further recognizes gender as a potential source of disparity in the preferences and needs of the end users is very unique. Many times, common practice is to introduce to smallholder farmers technologies that are mass-produced in china or India, and were designed without considering the specific needs of the end-users.

**Human Centered Design approach and Gender analysis enhances technology design and appropriateness. Gender analysis enhances HCD of a bean threshing technology.**

## ***Conclusion***

The above discussion examines how conducting a gender analysis and integrating the findings thereof in technology design can enhance the design, appropriateness and adaptability of the technology, in this case a bean thresher, to the needs of the specific end-user. Coming into the project with very basic level of understanding about gender relations in Zambia, the project team lead observed how he was able to interrogate his a priori assumptions about gender relations in the study community as well as gain an in-depth understanding of gender dynamics in rural Zambia. Sex-disaggregated data collected from the baseline survey and the participatory evaluation of the first design of the technology allowed for an understanding of existing gender relations in the target community that would have implications for the specific design features of the technology. This data is currently informing adjustments to the design specifications of the thresher to ensure that it would actually facilitate women's empowerment and build their capacity in food processing.

### Remark from PI

“As an Agricultural Engineer, I can say that there are things on the design that are important. So I already have these a priori assumptions about what is important, things like “how efficient is the design of the machine, and how much input.” These are what we call “performance parameters.” Coming from a Western culture, we prioritize time and efficiency in technology design. With human-centered design (HCD), we want to understand in more empathetic ways how the population understands these parameters. However, having a gender lens pushes you to want to understand how specific gender groups evaluate these parameters. For example, is time an important variable/parameter and if yes for who (men or women)? Is less dust in their eyes important consideration? For who (men or women)? Is less strain on the user’s back an important? For who (men or women)? The design process help to identify which parameters are more important for each gender group/category.”

Gender analysis in HCD implies you transition from the phrase “end-users” to “men-users” and “women-users”—using gender-specific information (needs and preferences) in the design of the technology. For example, how will “power requirements” for the technology differ for men and women as end-users? Who has more experience biking with heavy loads and for who is “balance” going to be an important component in the design of the technology?

Having a gender lens really enhances the effectiveness of the HCD approach—being able to design a technology that are usable and useful to both gender groups.

Adam Lyman

# INNOVATION PROJECT TWO

## Cell Phones as a Lifeline for African Beekeepers, Kenya

### *Development Challenge or Goal*

Improve livelihoods for rural bee farmers through a cell phone-based, data collection initiative aimed at identifying best management practices and most productive landscapes for honeybees.

- New income generating opportunity—Harnessing other economic value of other hive-based products
  - Solar wax melter for harvesting of wax. Previously thrown away by beekeepers in spite of the high demand from the international cosmetics industry for clean, pesticide-free wax

### *What is the Innovation?*

Using cellphone-based app to collect data on bee production aimed at identifying best management practices and most productive landscapes for honeybees.

### *Gender in the practice of Innovation*

#### 1. Target activity

- Beekeepers in rural Kenya. Targeted a total 40 beekeeping households

#### 2. Gender Issues in beekeeping as an economic activity

- Gender stereotypes and cultural taboos restrict women's participation in beekeeping as an economic activity.
- Traditionally, beekeeping is considered/labelled a male dominated activity for several reasons including:
  - It involves climbing of high trees, an activity that is considered a taboo for a woman to do. Gender stereotypes originating from cultural norms make it inappropriate for a woman to climb on a tree.
  - Beehives are located far away from the home/house—activities located far from the home are considered inappropriate for women. Cultural norms restrict women to the “domestic sphere” or in activities close or within their homes.
  - Harvesting of bees usually takes place in the night. Culturally, it is not safe for a woman to be out of the house at night.
- Recently, some women have been engaging in beekeeping as an economic activity—i.e. women whose husbands were previously engaged in beekeeping but



have passed away. Such women would hire male labor to assist in harvesting of the bees. Some of hung their beehives low, strung between trees, so they do not have to climb trees.

- Gender division of labor in beekeeping
  - Men are responsible for production and harvesting.
  - Men are actively involved in the inspection/monitoring of the apiaries
  - Women oversee marketing of the products—honey
  - men do packaging and processing
  - Women clean the equipment and bottles used for packaging.
  - Women are also responsible for domestic chores
  - Identified two categories of households involved in beekeeping as an income generating activity:
    - Joint—husband and wife (complementarity) husband and wife go out at night, husband on the tree harvesting while the woman is on the ground.
    - Women widows and hired laborers (paid for harvesting if the hives are located high)
- Gender and decision-making in beekeeping
  - As heads of households, decision-making related to finance was the preserve of men.

### ***Integrating gender considerations in project activities***

- Recruitment of beekeepers
  - This was done through snowball sampling
  - Of the 37 beekeepers selected to participate in the project, 3 of the households were single women households (widows) while the rest were joint (husband and wife)
- Data collection:
  - Beekeepers use cellphones and pre-paid SIM card to provide researchers with data that will be used in creating a map that indexes the landscape in relation to honey production.
  - For the initial interviews, research team interviewed the husband and the wife from households when both were jointly involved in beekeeping as an economic activity.



Subsequent interviews to collect data on honey bee production was held mostly with men because men had more accurate information on bee production since they were those who were actively involved in the inspection and monitoring of the apiaries.

Examples of information collected include how much honey and wax they produce and when; what plants are blooming; if they have encountered problems with drought, and whether or not there has been colony loss due to ants or issues with honey badger attacks; number of hives are occupied, and the time at which the bees abscond or recolonize the hive.

Women were allowed to participate or speak up during data collection on aspects in which they were actively involved.

- Method for the collection of data—cellphones:
  - While the gender disparity in ownership of cellphones was not so relevant to this project, gender differences in literacy levels (generally low levels but worse amongst women) affected the choice of data collection mechanism. Specifically, women can't send text messages (text messages would have been complicated for women). As a result, the project staff resolved to collect data through direct phone calls using the local language (Kamba);
  - The data collected was analyzed to help beekeepers predict where they are likely to have the healthiest colonies and produce the most honey.
- Training on wax extraction.
  - Women were the main target for training on wax extraction because this is an activity that takes place at home.
  - Gender stereotypes expect women to be at home most of the time. Men are not usually at home (gender accommodating; identify activities for women based on their existing gender roles—takes advantage of the existing gender division of labor)

#### **Research evidence:**

Lifts barriers to access that women faced in engaging in beekeeping - supports gender equitable access to beekeeping as income generating opportunity—high local demand for bees—beekeeping is a profitable activity.

Increases the safety of bee harvesting for both men and women—most men are older, and harvesting from high trees can be very dangerous especially since it is done at night—activity is now safer.

## ***Impact of the Innovation***

- Evidence from research on the impacts of landscape quality on honey production (impact of the height of the bee hive on bee harvest) contradicts gender stereotypes (cultural norms) that barred women from engaging in bee farming or made bee farming to be perceived as a domain reserved for men.
  - Data generated showed that the height of the beehive was not an important determining factor in honeybee production.

## ***Other general benefits of the project***

- Project introduces solar wax melters for sophisticated extraction of wax. . In spite of the high demand and ready market for wax in Africa, beekeepers would typically throw away all wax, mix it with honey, or given to dogs.
- While wax processing is not specifically for women, it could be an important source of income for them.
- Giving them opportunity to increase income without adding much to the labor.
- Project is yet to evaluate the impact of this additional income generating opportunity on food security—i.e. who controls or makes decisions on how this additional income is allocated and utilized within the household.



*Maryann Frazier checking on a hive. Photo credit Lou Blouin.*

# INNOVATION PROJECT THREE

## Market Access and Zero Waste through a Greener Cassava Processing System, Tanzania

### *Development Challenge or Goal*

The overall goal of this project is to improve income of small to medium scale farmers in the cassava value chain through innovative processing technology.

Previously, farmers use mills which do not dry the cassava in a uniform fashion, thereby resulting in discoloration of the cassava flour—brown flour and therefore of low quality, and fetches a lower price in the market.

### *What is the Innovation?*

A new system of low-cost cassava processing system that produces high-value cassava flour with virtually no waste and powered by renewable energy.

Bio-waste from the cassava (peels, fiber, and even liquids) is converted to ethanol (biogas) and combined with solar power to power the cassava-grating machine

The system includes a hybrid dryer powered by renewable energy, thereby allowing for uniform drying of the cassava

Polysaccharides, called prebiotics, from the fibrous part of peels is utilized at the end of processing to fortify the flour with nutrients that can lower cholesterol.

### *Gender in the Practice of the Innovation*

#### Target

- Cassava processing groups that are predominantly women
- However, men are also involved in the activity.
- 10 groups

#### Project activities with beneficiaries

Design and development of technology: Project team visited and engaged processing groups in discussion about how this technology will change what they will do.

- Gender division of labor
  - Women and men are involved in cassava farming but women are more involved in cassava farming than men are.
  - Cassava machinery fabricators and operators are predominantly men--they do most of the construction work in the cassava value chain.

- Both men and women are laborers—(peeling cassava, etc.). We pay both men and women.
- Women as the major actors in cassava processing and most cassava processing groups are comprised of women.
- Evaluations of existing cassava processing technologies
  - Project staff visited processing groups to identify/understand shortfalls in existing processing technologies/techniques.
    - Grating technology—labor intensive
    - Sun drying—results in pollution, insects and color changes (brown cassava paste)
- Implementation phase
  - Project staff shared photos and drawings of prototype that will deal with the challenges that women’s groups identified during the evaluation—project staff explains how the prototype works to solve existing problems.
  - Project staff invited leaders of ten SME groups to the power plant at the university to observe the development of the technology, its operation and its performance (i.e. how the cassava is drying).
  - Women’s groups brought cassava tubers for testing at the university, and they peel the cassava.
  - Project staff trained women’s groups on the following topics: hygiene, processing of high quality cassava, biogas production through anaerobic digestion (AD), operation and maintenance of the AD system.
  - Men were largely involved in the construction of the system.
- Analysis of access to resources and skills that necessary to adopt technology for cassava processing enterprise.
  - Certification by the regulatory bodies that regulate food processing enterprises—e.g. The Tanzania Food and Drug Authority. Certification is very important to accessing markets with their products to get their products.
  - Land: Unlike men, women in Tanzania have limited access to land, a gender disparity that is rooted in a culture of patriarchy.
  - Difficulty to access credit: the weak land ownership status amongst women also has negative affects on their eligibility for loans given that land titles are often required as a collateral for loans.
  - Illiteracy levels: Illiteracy level is higher amongst women compared to men.

## ***Integrating gender considerations in the design and implementation of the project***

- To address the need for certification in any cassava processing activity, the project helped the women's groups become formal—two groups of 33 women.
- The project also provided training to support these women in getting their certification. Certification is very important to accessing markets with their products to get their products. However; previously, non-compliance with regulations and lack of certification posed a major barrier to access to markets (supermarkets).
- To deal with the land constraints that these women's groups faced, the project, through the Tanzanian Food Processors Association (TAFOPA) lobbied the government of Tanzania to secure land in every district (processing parks with shared ownership). The infrastructure (cassava processing system) was installed on this land and the land is owned by the TAFOPA. TAFOPA releases land to anyone interested in growing cassava.
- By formalizing the groups and building their capacity, the project enabled them to function as a business the project enabled the group to disburse loans to members. Members of the groups can now easily access loans from the group, and the risk of default is greatly minimized/reduced.
- The project addressed the issue of illiteracy amongst women by using a training of trainers approach. Women were trained to train other women. This also took care of other potential gender issues that could occur when men are used to deliver training to women.

## ***Impact of the Innovation***

- The installation of an efficient and sustainable drying system will stimulate the production of cassava, thereby creating opportunities for employment in cassava farming and processing.
- The technology will enable women to get more value from their cassava tubers as it allows for a variety of products from cassava tuber.
- The technology will also create job opportunities for men in the fabrication of machines required by the cassava processing groups.

# INNOVATION PROJECT FOUR

## Field testing the Integration of Slurry Separation Technology & Refrigeration Units with Anaerobic Digestion Systems, Uganda

### *Development Challenge or Goal*

Traditionally, the cook at Kampala's Lweza Primary School prepared meals for the students over a wood-burning stove. While reliable, the smoldering indoor fire caused poor air quality in the kitchen and contributed to the relentless harvest of timber. Seeking an alternative, the school switched to a biogas-powered stove, but struggled with the problem of burning through the biogas supply before the food was fully cooked.

### *What is the Innovation*

This innovation project develops a slurry separation system to generate biogas, a form of renewable energy produced during anaerobic digestion that can be used for powering refrigeration units; yields no-cost fertilizer; and a dual-fuel stove that cuts down on deforestation while easing cooking challenges at a local school.

### *Gender in the practice of this innovation*

#### **Who are the target?**

- Project targets institutional/commercial and single family households.
  - Schools in the city have taken up biogas system in an attempt to replace firewood for cooking needs.
  - People with livestock or who use other waste for cooking, chilling, etc.

#### **Prior to project start**

- No gender analysis was done before the project started.
- Gender issues surfaced in practice and attempts were made to handle them. However, the Principal investigation recognized the need to have women in decision-making positions in their project team—this was one of the ways that they saw that they could integrate gender in project activities.

#### **Gender issues noticed during the project:**

- Gender in main activities:
  - Installation of systems, evaluating their performance and determining best practices for field application, water conservation, and other considerations
  - For institutional scale—Meetings held prior to the installation of the systems revealed gender issues that had to be considered for a successful innovation. The meetings revealed the following:



## **i. Gender division of labor/ownership**

- Institutional/commercial scale (school kitchens, slaughterhouses, hospitals):
  - School owners and headmasters were mostly men.
  - women were mostly involved in cooking and management of the kitchen activities because cooking is a female gender role
  - women were not involved in decision making—only men (e.g. headmasters) come to the meetings or only men are sent to come to the meetings;
  - However, visits to see the systems and carry out daily activities revealed that women were actually the ones using and managing the system.
- At household levels:
  - Women are responsible for cooking activities in the villages.
    - Therefore, the digester that provides cooking fuel would become part of their management of cooking activities.
- Implications of the gender division of labor:
  - Project team realized that while only men attended the meetings, they were not the managers/users of the systems that the project was going to help install. The project staff was therefore confronted with the need to work directly with the users/managers of the systems—look for ways to bring these women in, talk with these women, work with them and have them evaluate the performance of the system that was installed.
  - The gender division of roles at the both the household and institutional scale implied that women would be more responsible/involved in the management of the slurry separation systems.
  - The finding that women did most of the cooking meant that they would be ones operating the biogas system.
  - The project PIs ensured that they had women in the project team who would work with the women end-users of the technology.

## **ii. Gender differential access to resources required to install the system**

- Land (but does not need a lot of land)
- Sufficient capital—a major resource requirement for installation. How challenging was it for women to access capital and why?

## **Implications**

- It was necessary for the project staff to design a unique way to help individuals who

install the system to pay off depending on their benefits.

- An example is the case of a single woman who installed and is operating the system. The system has helped her to reduce the spoilage of milk, making her more capable of having more funds to expand her operation or purchase more land or do other things; overall improves her capacity to pay off the system.

### **iii. Gender Stereotypes and power dynamics limit the interaction between men and women in the public space.**

Women were recruited to join the project team. This was to show the communities and others that women are capable of performing high value jobs; and to ensure that the project had a representation of women when working with women end-users.

### ***Impact of the Innovation***

- Institutions—cooking and refrigerator units
- Single household installations—using the biogas for cooking;

#### **1. Labor/Time Saving—reduction in workload:**

- The technology decreased time required for cooking—e.g. cooking of beans is done much faster. Because women are responsible for food preparation, cutting down the time spent on food preparation frees up time for women to engage in other activities (opportunity cost of time spent on cooking is lost time on other “potential” income generating activities. Dairy farmers who installed the system now spend more time managing their herds than in cooking
- The technology decreased firewood collection needs—wood collection is an activity that was done previously by women and young boys. Again, this frees up time for other profitable activities.

### **Negative unintended Consequences led to a modification of the system/innovation**

An unintended consequence of the technology was that it increased water needs—more water had to be poured into the systems. Water collection was also a women and boys chore. The project worked with decision makers (men) as well as directly with the end-users of the systems (women) to understand the issues with the systems and the additional demand on their time that was created by the system.

**First installation of the technology creates unintended consequences for boys in the villages who were responsible for firewood and water collection. Thus, while the technology eliminated the need to collect firewood, it increased the need to collect water.**

To address the time constraint, the project designed an add-on to the initial system known as a solid-liquid separation unit. This unit separates the liquid from the solid waste component and recycles the water back into the system for use. This reduced the need to collect new water to add to the solid waste in the system each time.

**Project staff designs an add-on, a solid-liquid Separation unit, which recycles water back into the system, thus eliminating the need for frequent water collection and input into the system.**

**Not noticing this unintended consequence would have created a “wicked problem”—i.e. innovation addresses a specific problem but creates another problem.**

- Health: Positive effect on women’s health because technology significantly improves air quality during cooking.
- Food Production: In addition to the biogas, another end product of the technology is solid waste—fertilizer.
- Opportunities for income generation: Technology has created an opportunity for businesses that need cool storage. For example, women with chillers observe that they can now buy more milk from their neighbors to satisfy the high demand for milk - customers want more of the milk because it is cold.

### ***Major Challenges/Lessons Learned***

1. It is important to understand very early in the project who the end-users of the technology would be. A gender mapping of activities collects data on who is involved in what activities as it relates to the technology that is being designed or introduced
  - Project staff made several trips to the school to gather information relevant for the installation of the technology. It took several meetings to realize that they have been talking to the decision makers (men—e.g. headmaster) but not to those who are actually involved in kitchen activities and would be the ones operating/managing the systems that were going to be installed. For example, in attempts to troubleshoot problems with the systems, the team found out that the headmaster’s perspective was wrong. However, direct talks with the cooks (women) generated information that was very useful in troubleshooting the problems and the systems (e.g. “I am not using this because...”). According to the Principal Investigator, “You don’t get the right story the first time.”
  - An analysis of roles by gender and an understanding of gender power relations within the institution/context at onset of the activity would have reduced the time and costs involved in installing a working system. Conducting such an analysis early on in the project helps to identify the correct target/audience for specific types of discussions/activities—wrong target/audience will generate wrong or imprecise information/data. Thus, knowing who does what or who is involved in which activity is critical in terms of having the correct information for the design and installation of the system.

- How could this have been addressed?
  - Work with local partners in conducting a quick analysis of the gender division of labor in the institution to know who is responsible for which activities as it relates to the project and who makes decisions with respect to what.
  - Considering the power dynamics within the institution and the gender roles, it would have been great to organize for multiple data collection meetings—each meeting targeting specific teams/groups or individuals depending on their involvement in activities the system that was to be installed.

**“Hard to always convince partners on the importance of considering gender issues in activities, more often they agreed with the importance but didn’t get around to making it a priority. In addition, while I think having women in decision making roles is important it is very difficult to break traditional roles.”**

**Becky Larson**

## 2. Lack of gender sensitivity in local partners

- Working with male implementing partners who rely more on men and are less likely to invite participation from women, and do not always value women’s opinion. Such partners bring in their own gender stereotypes into the project.

### According to the PI:

“I intentionally ask my male implementing partners to give female colleagues/scientist an opportunity to participate in all tasks. However, I do worry about what is culturally appropriate—some people are a little more progressive while some are not. Nevertheless, even a lot of women think they have no place to be. I worry that pushing too much will end up alienating them. I am not sure what is recommended or how to navigate this... I think I have trouble, because our culture here and culture there are different. I have to be constantly checking my own vision of what is wrong and what is right, and what will actually improve the lives of these women. I don’t want them to be part of some other mission that I have.”

- How could this challenge be addressed?
  - Build gender capacity for local partners to eliminate pre-existing gender stereotypes and ensuring that they understand the project’s commitment to offer gender equitable opportunities to participants, and to improve the lives of men and women involved in the project, either as employees or as project beneficiaries.

# INNOVATION PROJECT FIVE

## Use of Orange Sweet Potatoes in Enhancing Vitamin A Nutrition, Tanzania

### *Development Challenge or Goal*

Reduce hunger and malnutrition amongst rural households in Tanzania by introducing the orange flesh sweet potatoes (OFSP), a variety of potatoes that is orange color and rich in micronutrients such as vitamin A, Iron and Zinc.

Tanzanian farmers traditionally grew a different type of sweet potato, along with cassava, both “white foods,” said Prakash, which are drought tolerant but lack crucial micronutrients. Vitamin A deficiency results in stunted growth and night blindness are frequent results of vitamin A deficiency. As a result, a specific goal of the project was therefore to improve the Vitamin A status of women and maybe lactating and pregnant women in rural communities where sweet potato is consumed.

Since sweet potatoes is considered a women’s crop, the goal/objective of the project was to increase women’s capability and their capacity to increase income and provide more nutritious food for their families.

### *What is the innovation?*

Develop and market innovative food products from bio fortified orange sweet potatoes (OFSP) to address widespread hunger and vitamin A deficiency while promoting enterprise development among rural women in Tanzania.

### *Gender in the Practice of this Innovation*

#### **Target beneficiaries**

The project targeted women’s groups. However, both men and women participated in training demonstrations and testing and evaluation of technologies. The project included/ allowed men to participate in some of the project activities as “collaborative partners”. However, these men were not allowed to take on any leadership roles in groups because of concerns that they will want to dictate the terms of the group, and could squander the money. Participating men also had no voting rights. Men who participated in the project activities were usually accompanied by their spouses or were attending the meetings on behalf of their wives

#### **Gendered crop**

Project specifically focuses on sweet potatoes, a crop that is considered a women’s crop because:

- women are heavily involved in its production and management;
- The crop is produced mostly for household consumption—the crop helps women to

fulfil their traditional role of provisioning food for their families;

- The crop has a lower market potential—not usually bringing much income to the household, when compared to other crops.

Thus the classification of sweet potatoes as a women’s crop draws from the traditional “food crop” versus “cash crop” dichotomy.

### Specific project activities

- Phase 1: Organizing women into groups—worked with women to form groups
  - Groups elected their own leaders and signatories, with the project playing an overseeing role.
- Phase 2: Capacity building and outreach
  - Training: train Tanzanian women in food processing, product development and business management activities associated with the particular orange-fleshed sweet potato variety
  - Developed several recipes and trained women on these recipes. For example, recipes for cookies, French fries, and tortilla-like bread made from the orange sweet potato flour. This is because when the new variety was introduced to farmers, they were not able to make the traditional sweet potato foods the same way, so we helped them with a whole range of recipes.”
- Phase 3: Train women on in entrepreneurial skills— issues of bookkeeping, managing money, keeping records.



*Women being trained to produce sweet potato products. Photo Credit Channapatna Prakash.*



## **Analysis of resource required for participation/adoption—to what extent was access gendered? How did the project address the constraint?**

Business start-up capital: Obtaining a loan was very difficult for individual women because they lacked collateral.

How did the project address this gender-based constraint to capital?

- Project started a Village Community Bank (VICOBA).
  - Women organized in the groups were encouraged to join the VICOBA. To become a member of the VICOBA, each woman had to pay a small amount of \$5-\$6 for a period of 2 months. By making the contributions (kind of like buying shares), women felt ownership of the bank.
  - The project registered the VICOBA with the government. Because you cannot operate microfinance without it being recognized by local government.
  - The VICOBA also had relationships with other commercial banks in and around the village.
  - Seed money from the project was deposited in the VICOBA account.
  - The network of Village Community Banks (VICOBA) helped to bud approximately 200 women entrepreneurs. Funds were spent on the purchase of processing equipment amongst other things. Examples of products processed from sweet potatoes include noodles and pancakes,
  - Then eventually, we told them how to start the issue of small loans for each member as a group.

**Project empowers women to overcome gender-based constraints in access to financial capital by helping them establish village community Banks. Women's access to small loans for establishing small enterprises in cassava processing is improved.**

- The project also empowered the groups (VICOBANK) to start issuing small loans to members by helping the groups write/develop a constitution that includes rules and regulations for managing the group and borrowing the money. As examples of the rules and regulations:
  - Borrower must return money within 3 months with small percent of interest on the amount-borrowed money;
  - Borrower must invest money borrowed in a business involving sweet potato processing—i.e. not all businesses were eligible; money cannot be used for school fees, or health bills;

- Borrower needs two persons to stand as her surety before they can get the loan.
- At the end of the year, the margins of profit are shared amongst group members to help them take care of other family issues.

The district government, after receiving info on how groups are doing well, has extended 2 million shillings to the group. This will help support the women by increasing their available working capital, and the money available to loan to members. The idea is that after a period of one year, the group will return money to district and will be given to other groups

### ***Impact of the innovation***

- The project increased women’s knowledge and skills in sweet potato processing.
- The project-increased access to small loans for establishing small businesses related to sweet potato processing.
- The project improved women’s knowledge and skills on business and entrepreneurship.

Overtime, the increased engagement of women in microenterprises linked to sweet potato processing is expected to increase income, reduce hunger and improve nutrition for participating women and their households.

Project is yet to formally evaluate the impact of women’s engagement in project activities on the nutritional status of the women and their children as well as on the poverty and food security status of their households. The project is yet to investigate the impact of women’s engagement in these activities on their empowerment—including decision making on the allocation of income, or any unintended consequences from women’s increased income, such as gender-based violence.

# INNOVATION PROJECT SIX

## Grasshopper and Locust Farming as a Sustainable Source of Protein for Non-Ruminant Livestock and Humans, Kenya

### *Development Challenge or Goal*

Nutrient-poor diets due to protein deficiency, resulting to diseases and cognitive development problems.

### *What is the Innovation?*

Working with chicken farmers to integrate wild-caught protein (grasshoppers and locusts) as an ingredient for in the manufacturing or protein-rich animal feed or protein-rich foods for human consumption. The overall effect will be an increase in the availability of protein-rich foods.

### *Gender in the Practice of this Innovation*

#### Target

The project is working with approximately 50 community members who are raising chicken- 60% are women and 40% are men.

#### **Gender roles and responsibility influence the selection of targets for different project activities**

- Women are responsible for the feeding and nurturing of children
- Men dominate large-scale chicken production
- Women dominate small-scale chicken production
- Men make decisions on income spending

#### **Project activities [most of these were yet to happen at the time of interview]**

- Survey in line to understand activities associated with chicken production and the extent to which participation in these activities are gendered.
- Training will be provided on insect rearing/breeding
- Training will be provided on feed formulation

Data (survey and interviews) on this project is scanty. The project is still at a very early stage compared to the other five projects.

# CONCLUSION

This short report examines the effectiveness of gender integration in GCFSI innovation grant projects. These projects have been going on for 2 to 3 years. The motivation for this small research stemmed from a need to document the experiences of GCFSI grantees in attempting to integrate gender into their innovation projects; understand the challenges that the projects encountered during project design and implementation; examine the potential for these projects to transform gender relations in the project communities; and overall, generate lessons on “Gender integration in Practice” for future food systems innovation projects.

The results highlight a diversity in the approach to gender integration, one that was influenced by the nature and focus of each innovation project. The discussion highlights a case study where gender analysis was done before project design and the outcomes from the gender analysis were carefully inculcated in the design and implementation of the later stages or activities of the project (Bean Thresher Project). The discussion also highlights a case where there wasn't any upfront gender analysis or consideration of gender issues in the beginning of the project. Yet, in the implementation of the project, the project team encountered difficulty that made them realize that they have not been talking to the actual users of the technology (the women who were in the kitchen and would be the ones responsible for operating the biogas system that was being installed). An understanding of who was involved in what roles/activities as related to this project could have saved the time and resources. Notwithstanding, it is better late than never.

The analysis also highlights the need for food system innovators to pay attention to any negative unintended consequences from their innovation. In the case of slurry separation system project, we see how the initial technology, while it met the objectives of the project (to produce biogas, an alternative fuel), generated some negative consequences for young men. This initial technology, brought with it an increase in volume of water needed for the system to function effectively. This increase in water demand by the technology implied an increased labor burden on young men who according to the gender division of labor were responsible for water collection for the operation of the system. Failure to fix or pay attention to such unintended consequences often result in “wicked problems”, a situation whereby an innovation solves a problem but creates another one.

Most of these case studies have a strong potential to economically empower women in the target communities. For example, the bean thresher project, the beekeeping project and the cassava processing projects have a strong potential to increase incomes for women. However, the extent to which the income derived from selling higher quality beans or from the selling of wax or processed cassava would contribute towards improving women's economic status depends on the intra-household power relations and how these manifest in decision-making on the use of earned income. The projects also have a strong potential to improve the food and nutrition security status of beneficiary households in the target communities. However, in the absence of a structured impact assessment/evaluation, it is hard to ascertain any of these claims.

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Launched at Michigan State University in 2012, the Global Center for Food Systems Innovation (GCFSI) is one of eight development labs established through the Higher Education Solutions Network of the United States Agency for International Development.

Through research and capacity-building activities, GCFSI creates, tests and enables the scaling of food security solutions.

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