# THE UNTAPPED MARKET FOR AGRICULTURAL INNOVATIONS IN EMERGING ECONOMIES

## A PRACTICAL WORKBOOK TO HELP INNOVATORS REACH WOMEN SMALLHOLDER FARMERS

SECURING WATER FOR FOOD: A GRAND CHALLENGE FOR DEVELOPMENT

USAID FROM THE AMERICAN PEOPLE

Government of the Netherlands

SWEDEN

science & technology
Department: Science and Technology
REPUBLIC OF SOUTH AFRICA

## Women comprise 43% of the agricultural labor force in developing countries

Women farmers are involved across the value chain — producing agricultural crops, tending to livestock, processing and preparing food, working for wages in agricultural enterprises, collecting fuel and water, or engaging in trade — while also caring for home and family.

However, women farmers produce less than male farmers, and not because they are less efficient. They do not have equal access to productive resources, training, credit, information, or markets.

Women farmers play critical roles in ensuring food security and nutrition. Substantial evidence indicates that women are more likely to spend their incomes on the well-being of their families and the benefit of their children.[1] Tools that increase women's productivity or enhance the roles they play in agriculture can have widespread and long-lasting impact on farming, food production, communities, and countries.

Women farmers present an untapped market for agri-innovators to apply innovative business models and increase sales of products, services, and technologies, while creating significant social impact.

*1. FAO, "Women in agriculture: Closing the gender gap for development,"2010-11, p. 57.*

# Acknowledgments

*The Untapped Market for Agricultural Innovations in Emerging Economies: A Practical Workbook to Help Innovators Reach Women Smallholder Farmers* has been jointly prepared by the Securing Water for Food: A Grand Challenge for Development founding partners: The United States Agency for International Development (USAID), Sweden through the Swedish International Development Cooperation Agency (Sida), Republic of South Africa Department of Science & Technology (DST), and the Ministry of Foreign Affairs of the Kingdom of the Netherlands (MFA-NL).

Initially discussed at the USAID Ag Cluster meeting in 2016, the idea for this product came from Securing Water for Food: A Grand Challenge for Development, Powering Agriculture: An Energy Grand Challenge for Development, and Feed the Future's Partnering for Innovation Programs. Feed the Future created the working concept draft. Securing Water for Food finalized the draft, executed the procurement, and served as the project manager and instructional and graphic design advisor for the project.

The technical coordination of the publication was carried out by Sattva Consulting under the leadership of Dr. Donna Vincent Roa, ABC, CDPM®, Chief of Party, Securing Water for Food (SWFF) Technical Assistance Facility.

The primary field research in Ghana, Kenya, Nigeria, and South Africa was conducted by Women Organizing for Change in Agriculture and Natural Resource Management (WOCAN), led by Dr. Jeannette Gurung (Executive Director) and Dr. Nisha Onta (Regional Coordinator for Asia and Knowledge Management Coordinator). Primary field research in Uganda was led by Eriab Kiiza (Managing Director) at Management Innovations. In India (Andhra Pradesh and Telangana), research was led by K.S. Gopal (Director) at the Centre for Environmental Concerns and Ahimsa (Tamil Nadu).

We are extremely grateful for the support of Dr. Gurung of WOCAN and Dr. André Croppenstedt, Policy Officer of the Food and Agricultural Organization of the United Nations (FAO) Regional Office for Africa, for giving us expert insight into gender dynamics in agriculture.

In South Asia (India, Nepal, and Bangladesh), Dr. Vanita Viswanath, former CEO, Udyogini, Sugandha Munshi, Gender Specialist at the International Rice Research Institute, and Soham Sen, Director of Credit & Payments at Jumbotail, outlined nuances of gender perception, agricultural roles, challenges, enablers, and strategies for social innovators to reach women.

We are grateful for inputs on creating gender-relevant products from Dr. Chintan Vaishnav, Academic Director of the Massachusetts Institute of Technology (MIT) Tata Center for Technology and Design and Senior Lecturer at MIT's Sloan School of Management, and Shashank Mehta, senior faculty of Industrial Design at the National Institute of Design (NID), India.

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# About the workbook

Over the past two years, the SWFF partners — The United States Agency for International Development (USAID), Sweden through the Swedish International Development Cooperation Agency (Sida), Republic of South Africa Department of Science & Technology (DST), and the Ministry of Foreign Affairs of the Kingdom of the Netherlands (MFA-NL). — have strongly advocated for empowering women. SWFF supports the belief that focusing on women and gender equity could create lasting benefits to women, their families, and communities. Women farmers in emerging economies present an untapped and significant business opportunity for innovators who can develop and market relevant products, services, and technologies that are useful to women and have a positive impact on women's livelihoods and quality of life.

This workbook has been conceived as a practical tool for innovators working in the agricultural sector to reach and effectively serve the untapped market of women smallholder farmers in emerging economies. The workbook reviews existing resources and tools for designing and marketing products, services, and technologies, provides a way to assess barriers and opportunities for reaching the missing market of women farmers, and recommends specific tools and processes for the entire business cycle, from product design to market entry, retention, and growth.

## Use this workbook to grow your business

If you are interested in growing your business or establishing a competitive advantage, marketing to women can help you to improve your bottom line. This workbook addresses issues and circumstances experienced by small- and medium-sized businesses. It covers a variety of scenarios to explain how you can target business growth with a focus on women smallholder farmers in your current market, and it provides a framework for expanding to other countries and markets. For example, you may want to:

- Identify or define the ideal customer (2.1 Creating an ideal customer profile),
- Assess your competitive position (2.2 Evaluating your competitive position),
- Ensure that your technology is relevant to women (2.4 Creating or adapting your innovations to be gender relevant),
- Expand your engagement with women smallholder farmers (3.1 Market reach), and
- Sustain repeat sales to women in your current market and grow your market to women in other countries (3.3 Market retention and growth).

Each of these sections features specific steps to take and provides resources that can be accessed for further information. If you are an early stage business and are starting from scratch in your efforts to market to women who are smallholder farmers, you should start at the beginning of the document and work your way through it.

## How long will this process take?

While we understand that any estimation of timing to complete such a workbook is contingent on a variety of factors (such as business operations, environment, and strategic timelines), completing the entire workbook (not including expansion into other countries) will take approximately three-and-a-half (3.5) months.

If you are an innovator who has many of these items in place and want to focus on a specific section, we estimate that most sections will take about two to three (2-3) weeks to complete.

While it is recommended that you use the workbook as a step-by-step guide to develop a plan to access the market of women smallholder farmers, the workbook can also serve as a ready reference that you can use to tweak your market strategies, technology, operations, and outreach.

## Contents of the workbook

The workbook is divided into three chapters and provides some answers to the following:

### How can agri-innovations impact women farmers?

- What social impact can technology have on women smallholder farmers?
- How can innovators' businesses benefit from reaching women?
- What do we know about the landscape for adoption of agritech by women smallholder farmers?

### Preparing to reach women farmers

- How can you build a sustainable competitive advantage?
- How do you assess the market attractiveness and customer readiness among women smallholders in the market you want to serve? (The Adoption Index Tool is a self-scoring tool.)
- How can you create/adapt your product, service, or technology to be relevant to women? This section takes an innovator through the process of human-centered design specifically targeted toward women.

### Delivering to the untapped market of women smallholder farmers

- What are practical and actionable strategies to reach and acquire the market?
- How can you expand the distribution network in a sustainable manner, as well as ensure that the product, service, or technology is affordable to women?
- How do you sustain and strengthen relationships, document success stories, and build brand recall for your products, services, or technologies and the benefits they provide?

## Legend

These symbols designate the type of information presented throughout the workbook:

HOW-TO

CASE STUDY

### Note:

**Women in agriculture are an extremely diverse group, located across geographies, and working in various contexts. Their roles, incomes, skills, opportunities, and barriers are variable. Some of the unique points relating to countries and regions have been summarized in the Country Profiles in the Appendix. To ensure your product design and marketing provide enduring value to the customer, apply the workbook methodologies to the local context, and take into account regional uniqueness, crop patterns, and community dynamics.**

# Research methodology

The project team utilized both primary and secondary research methods to assess the market for agritech among women smallholder farmers. The team interviewed women farmers, experts in the field and in policy, and innovators who are already reaching out to farmers. In addition, the team reviewed existing literature on farming in emerging economies and the roles that women play on smallholder farms.

## Primary research

- Door-to-door surveys with smallholder women farmers were conducted in six countries: India, Uganda, Ghana, Kenya, Nigeria, and South Africa. A total of 245 women smallholder farmers, with equal samples from women who used technology and those who didn't, were engaged in these.
- Personal interviews were conducted with 10 experts from Asia and Africa in the areas of agriculture, policy, women's empowerment, livelihoods, as well as design and technology.
- A survey was conducted among SWFF and Feed the Future Partnering for Innovation programs (FTF-P4I) innovators to understand their experiences, needs, and challenges in reaching out to women farmers. The innovators' survey responses were used as inputs in the design the workbook. More than 20 innovators completed the survey.

## Secondary research

Research was performed to understand the agricultural sector and women's involvement in key geographies where innovators are located. Each region was studied from multiple perspectives to understand the suitability of the geography as a market for selling to women smallholders. The team mapped:

- Government programs in agriculture,
- Access to resources for women farmers,
- Socio-cultural factors that act as enablers or barriers for women,
- Ways to include men in order to improve technology adoption among women smallholder farmers,
- Technology adoption trends among women farmers,
- Legal factors that enable or restrict women,
- Assessment of partnership potential with different players in the value chain, and
- Links to further reading.

This enabled the team to compile detailed country profiles for the relevant geographies, which are included in the Appendix, pp. 70-108.

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# How agri-innovations impact women farmers

# 1.1 Women in agriculture

## Agriculture: New engine of growth

Agriculture continues to be the backbone of the economy in most developing countries around the world. The international development community deems agriculture as an engine of growth and poverty reduction in countries where it is the main occupation of the poor.[2] Men and women are an active part of this economy, which provides employment to more than one billion[3] people around the world, making it an essential contributor to rural economies in many developing regions of Africa, South Asia, South America, and fertile parts of the Middle East.

Agriculture today faces unprecedented pressures that require a re-examination of resources and systems that can sustain it. The Food and Agriculture Organization (FAO) outlines its vision for the future of agriculture as part of the the United Nations (UN) Sustainable Development Goals: "...farmers, pastoralists, fisher-folks, foresters, and other rural dwellers have the opportunity to actively participate in, and benefit from, economic development, have decent employment condition, and work in a fair price environment. Rural women, men, and communities live in food security, and have control over their livelihoods and equitable access to resources which they use in an efficient way."[4]

Women are important contributors to agricultural economies across the globe. In many regions, women are equal in proportion to male farmers, and in some countries, the ratio of women to men is even higher.[5] In agriculture, women are typically involved across the value chain – producing agricultural crops, tending to livestock, processing and preparing food, working for wages in agricultural enterprises, collecting fuel and water, or engaging in trade and marketing, while also caring for family members and maintaining their homes.

In numerous instances, women do not have access to productive resources and farm inputs, credit, support from extension services, and access to information and markets, to name just a few factors essential to their productivity. This means that they produce less than men do on average, which adversely affects their families, communities, and – in the long term – entire countries. If women had the same access to productive



*2. The World Bank, "The 2008 World Development Report," 2008; 3. FAO, "Statistical Yearbook," 2012; 4. FAO, "Building a common vision for sustainable food and agriculture," 2014; 5. FAO, "Women in agriculture: Closing the gender gap for development," 2010-11, p. 23.*

resources as men, they could increase yields on their farms by 20–30%. This could raise total agricultural output in developing countries by 2.5–4%, which could in turn reduce the number of hungry people in the world by 12–17%.[6]

Research supports the idea that women farmers play critical roles in ensuring food security and nutrition, especially in the production of climate-resilient crops. Women comprise about 43% of the agricultural labor force in developing countries, from 20% or less in Latin America to over 50% in Asia and Africa.[7] Substantial evidence exists to support the idea that women are more likely to spend their incomes on the well-being of their families, especially their children.

Bringing tools that increase women's productivity or enhance their role in agriculture, can have widespread and long-lasting impact on farming, food produced, communities, and countries.

## Factors in advancing livelihoods for women

There are several factors and trends that act as determinants for women to engage more powerfully in agriculture and adopt useful technologies.

| FACTORS THAT INFLUENCE ADOPTION OF AGRITECH AMONG WOMEN FARMERS | |
|---|---|
| **Community-based organizations (CBOs)**  | The formation of women self-help groups (SHGs) has led to several positive impacts by increasing their voice and agency to engage as a collective. |
| **Women-headed households**  | Due to male migration and other causes, many rural households are headed by women. Although women are head farmers, they face impediments, from farm labor to technology, in ensuring productivity. |
| **Need for recognition**  | Women are the backbone of agrarian economies. They comprise 40–50% of the world's agricultural labor force.[8] Yet, they are recognized merely as laborers in many developing countries. Even today, the image of a farmer is associated predominantly with a man. |
| **Land rights and titles**  | Evidence illustrating gender inequality in access to land is overwhelming. Women across developing regions are consistently less likely to own the lands they operate on, even if they are enabled by laws. |

6. FAO, "Women in agriculture: Closing the gender gap for development," 2010-11, p. 17; 7. FAO, "Women in agriculture: Closing the gender gap for development," 2010-11, p. 45; 8. World Farmer Organisation.

| FACTORS THAT INFLUENCE ADOPTION OF AGRITECH AMONG WOMEN FARMERS | |
|---|---|
| **Involving men and households**  | Despite the diversity in the roles and status of women in agriculture, decisions around acquiring productive assets, inputs, and services are often made either by men or other household members. Changing men's attitudes toward gender and involving the entire household and community is critical to empowering women. |
| **Access to finance**  | Closing the gender gap in access to financial services requires interventions in financial literacy, creating a women-friendly culture in financial institutions, and designing useful products. |
| **Access to information and extension services**  | Connectedness — the expansion of digital access and mobile phones-has transformed the world in the last decade. However, in many parts of rural Africa, South Asia, and the Middle East, access to agriculture extension services and information still remains a challenge to women farmers. |
| **Designing for women**  | Tools and services have long catered to men in agriculture. Women are at the receiving end of a systematic lack of empathy when it comes to the hurdles and challenges they face. Women also face a lack of opportunities in connecting to vendors offering products, services, or technologies. |

## The business and social opportunity in agritech

Reaching the untapped markets of women smallholder farmers in emerging economies with yield increasing or labor-saving technologies is an idea whose time has come.

Women farmers offer a significant business opportunity for agri-innovators to penetrate newer markets, reach a new customer segment, and increase their sales.

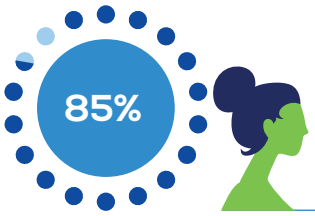
In turn, by tackling low productivity barriers that prevent women from being empowered on the farm, agri-innovators can help unleash the potential of farming to be a leading driver of economic growth and food security, with women at the center of it all. This can lead to long-lasting social outcomes including enhanced incomes for women, better life quality for children and the community, and food security.

# 1.2 Insight from primary research

## What we know about the landscape for adoption of agritech by women smallholder farmers

The project research team interviewed 245 women smallholder farmers in India, Uganda, Ghana, Kenya, Nigeria, and South Africa. Through these interviews, the following insights emerged.

### ADOPTION OF TECHNOLOGY AMONG WOMEN SMALLHOLDER FARMERS

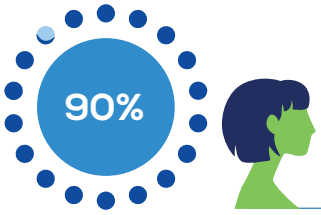



**Over 85%** of women said that they are willing to adopt new technologies for improving agricultural processes.

**Willingness to adopt tech is high.**
85% of women respondents across all countries felt that they were spending too much time in agriculture and that **they would opt for technology to reduce labor.**


**60–70%** of women confirmed that husbands are the key decision-makers in their families.

**Men are key decision-makers.**
Include men in product design, marketing, and implementation strategies for reaching women farmers.




**Over 90%** of women said **agriculture was their primary income source,** while **60%** had **no other income.**

**Agriculture is a significant source of income for women.**
A large body of research from many countries around the world confirms that putting more income in the hands of women yields beneficial results for child nutrition, health, and education.


22% of women farmers have a **monthly income** in the range of US$ 0-50 per month and make **their own lifestyle** choices.

Among those who earn in the range of **US$ 0-150,** 29% of women make their own choices of **lifestyle and livelihood.** Among those who earn in the **range of US$ 0-150, 24%** of women **consult their husbands** before making **lifestyle and livelihood choices.**


**Rain, farm pests, and soil are the top three challenges in agri-productivity.**
Tools designed to improve these challenge areas will have better uptake among women.

# How do innovators engage with women farmers?

To ensure a practical and relevant resource for agri-innovators, the project team conducted a survey among 22 innovators working in emerging markets across Asia, Africa, and Latin America. The innovators we reached out to are among the SWFF Grand Challenge winners and the FTF-P4I program participants. These innovators are involved in delivering useful agritech for smallholder farmers in these emerging economies.[9] We sought to understand the current lifecycle of agri-technology, design, and promotion practices for solutions, marketing and sales processes, and current engagement with women farmers. The following insights emerged from the survey.

## Women are underserved customers

- 60% said women constitute 25–50% of the current customer base,
- 13% said women customers constitute more than 75% of their revenue,
- 85% already consult and involve women in the design and testing phases,
- 45% of innovators said that they actively market to women,
- 89% of innovators said that they did not have a separate sales and marketing strategy for women, and
- 75% of the innovators said that they will consider targeting women for future sales.

## Top perceived challenges for women to adopt innovator products and solutions

- Lack of decision-making power among women farmers, and
- Labor intensive activities are not attributed to women.

## Top barriers for women to purchase agritech

- Access to finance,
- Lack of income, and
- Lack of consensus among groups.

## Top reasons to include women

- Improve the bottom line,
- Widen the client base,
- Reduce gender gaps in agriculture, and
- Enhance the livelihoods of women by including them in the value chain.

## Current strategies used to reach women

- Including women in the organization's marketing team,
- Doorstep marketing,
- Enabling access to knowledge and services,
- Ensuring participation in feedback processes, and
- Demonstrations through farm plots.

## Critical barriers while marketing to women

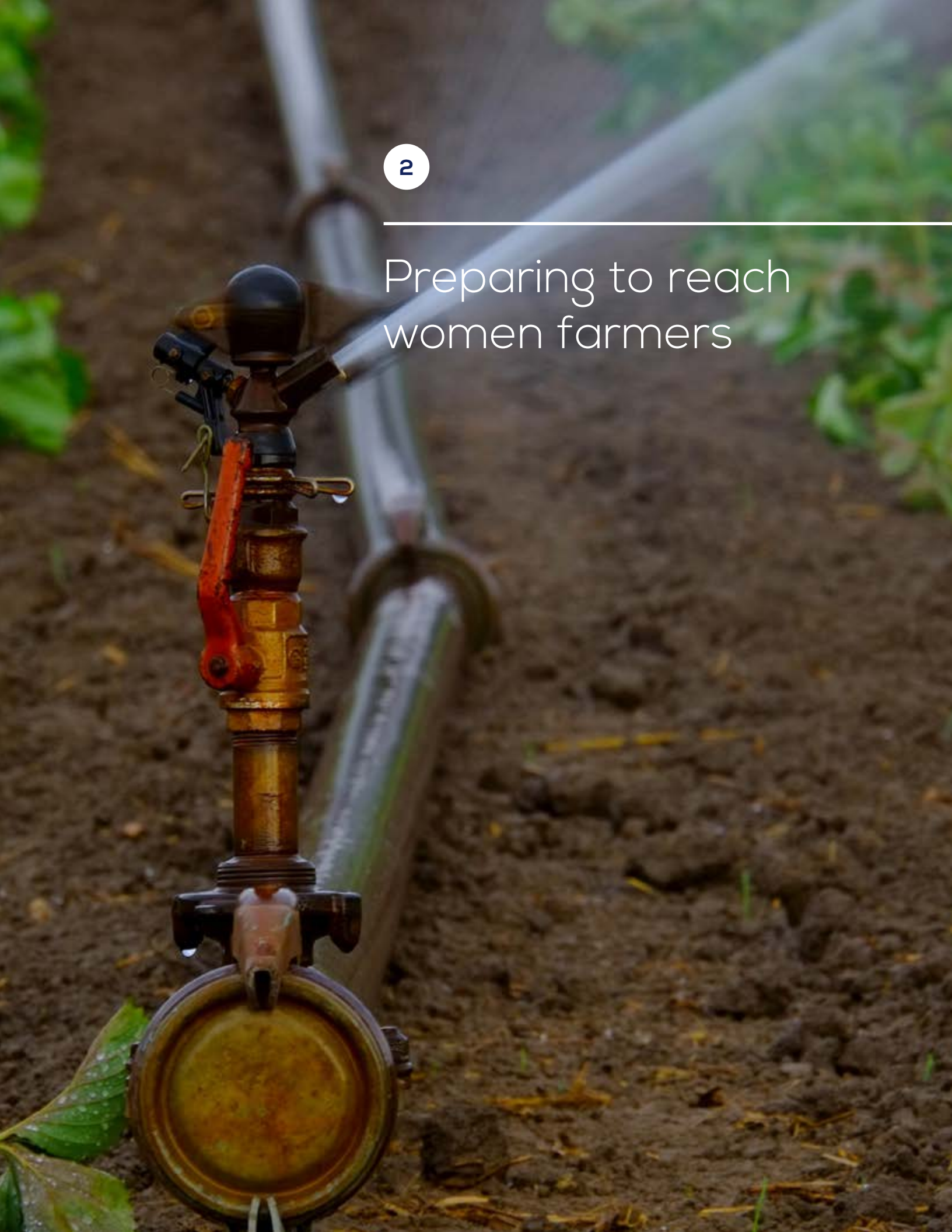
- Access to direct communication with women,
- Lack of awareness on agriculture-related technologies and innovations, and
- Social stigma associated with participation in social groups.

## Critical barriers while selling to women

- Lack of awareness of agriculture-related technologies and innovations,
- Lack of education,
- Access to finance, and
- Limited contribution to purchasing decisions.



9. Securingwaterforfood.org



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# Preparing to reach women farmers

# 2.1 Creating an ideal customer profile

## Outcome

Upon completion of this section, you will be able to:

1. Create a **detailed profile** of the woman smallholder farmer including her daily job, income levels, land use, and current tech usage, and
2. Capture household and community dynamics, as well as information about the **value that technology** can have on the woman smallholder farmer.

To effectively reach women customers, you need to develop a deep understanding of their needs. Creating and developing a customer profile will give you the information you need to develop an effective strategy.

Using the steps outlined below, create a detailed profile of your ideal target female smallholder farmer customer and document her context, needs, challenges, buying patterns, and habits.

## 1: Identity

Use the following set of questions to collect basic information about background, demographics, and identifiers (community connections and other important characteristics) for your woman customer.

### Information about her work and lifestyle

| | |
|---|---|
| 1. What is her age? | ☐ Years |
| 2. What language(s) does she speak? Can she read and write the above mentioned lanuage(s)? | |
| 3. What is her education level? | ☐ None ☐ High school ☐ Diploma course ☐ Bachelor's degree ☐ Other |
| 4. Where does she live? | ☐ Rural ☐ Urban |
| 5. Does she own the land she works on? | ☐ Yes ☐ No |

| | |
|---|---|
| 6. What are the characteristics of the land area? (acreage, growing season, annual rainfall, access to water/irrigation) | ☐ Acreage ☐ Growing season ☐ Annual rainfall ☐ Water/irrigation |
| 7. Does she contribute to agriculture in the family or does she work as a contract laborer or other capacity? | |
| 8. If she works outside of a family farm, what is her average daily wage? | |
| 9. What kind of crops does she grow? | |
| 10. How experienced is she as a farmer? | |
| 11. What was her occupation before farming, if any? | |

## People she is associated with

| | |
|---|---|
| 1. What is the average size of her household? | ☐ Members in the family |
| 2. Who are the members of her household? | |
| 3. Who does she frequently interact with in the community? What kind of activities bring her together with her community? | |
| 4. Which members in her community or village provide her with information on any kinds of products, services, or technologies? | |
| 5. Does she participate in community meetings and other social gatherings? | ☐ Yes ☐ No |

## Her use of technology

| | |
|---|---|
| 1. What are the agricultural products, services, or technologies that she has access to? | |

| | |
|---|---|
| 2. Where does she buy agricultural inputs like seeds, fertilizers, and tools? | |
| 3. What are the challenges she is facing in agriculture? | |
| 4. Does she have access to finance? | |

# 2: Aspirations

## Utility of agritech resources

| | |
|---|---|
| 1. What are the products, services, or technologies that could make a difference to the woman farmer (in terms of saving time, and increasing earnings, access to information, and extension services)? | |
| 2. What is the value she might obtain from the products, services, or technologies (saving time, reducing labor, or increasing income)? | |
| 3. How does she plan to finance her agricultural needs? | |
| 4. Does she have access to a water source within 1-2 kms of her house? | |
| 5. Does she have an open well, tube well or water source connection at her house? | |

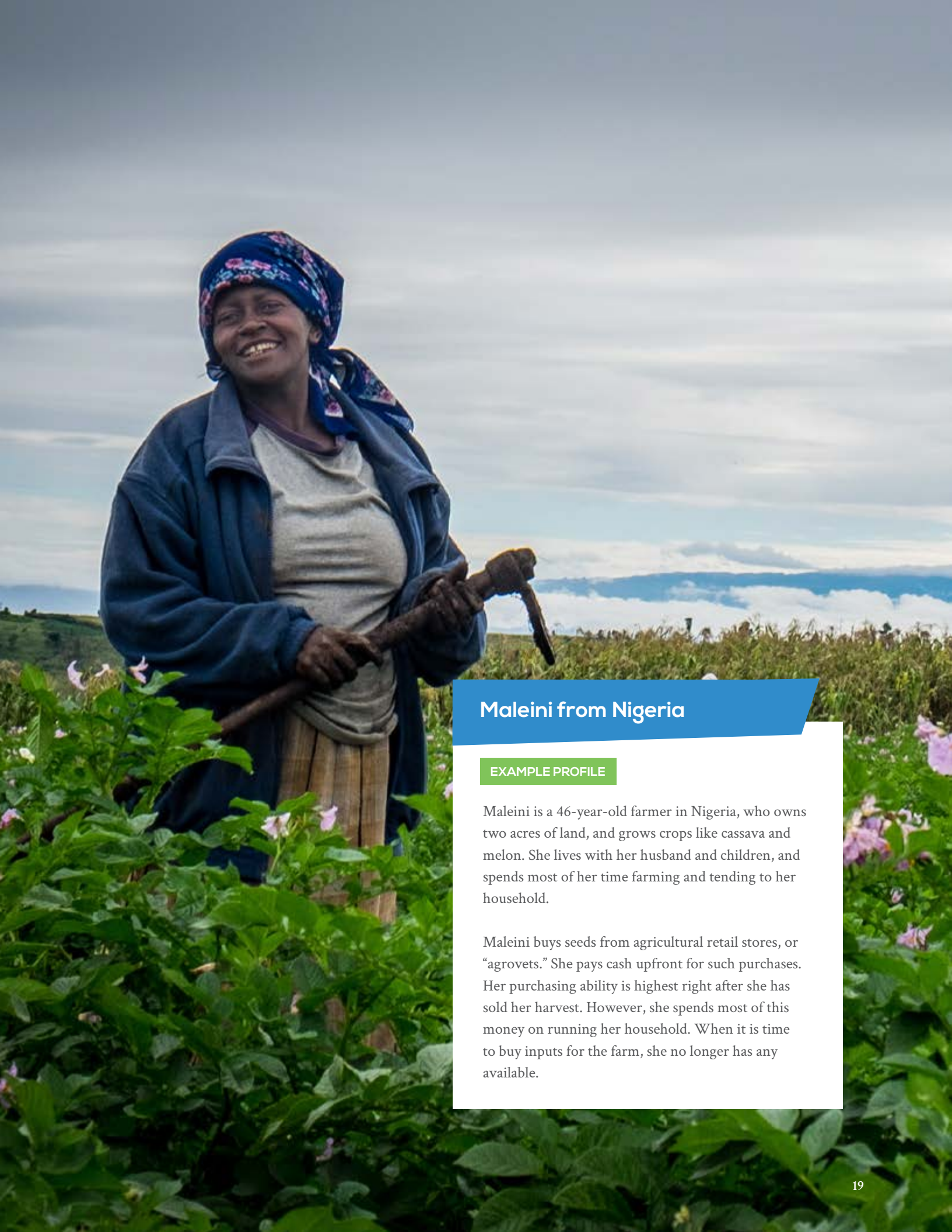
# 3: Putting together the customer profile

Use real or hypothetical individuals to create the profile

Build on the profile based on your initial idea of your target audience

Use secondary data research on different emerging markets (see Appendix pp. 66-108) to understand their contexts

Conduct interviews with the women and their peers to get additional insights into their life, values, and aspirations



## Maleini from Nigeria

EXAMPLE PROFILE

Maleini is a 46-year-old farmer in Nigeria, who owns two acres of land, and grows crops like cassava and melon. She lives with her husband and children, and spends most of her time farming and tending to her household.

Maleini buys seeds from agricultural retail stores, or "agrovets." She pays cash upfront for such purchases. Her purchasing ability is highest right after she has sold her harvest. However, she spends most of this money on running her household. When it is time to buy inputs for the farm, she no longer has any available.

# 2.2 Evaluating your competitive position

## Outcome

Upon completion of this section, you will be able to:

1. Complete a **competitive landscape analysis** of your market,
2. Identify the **primary decision-making parameters** for women to adopt a new agricultural technology, and
3. Validate your **product to market fit.**

Organizations that plan expansion within the markets and countries in which they are operating and in other markets and countries need to ensure economic profitability. Prior to expansion, you should examine the potential market and identify potential competitors and determine if your product, service, or technology adds value.

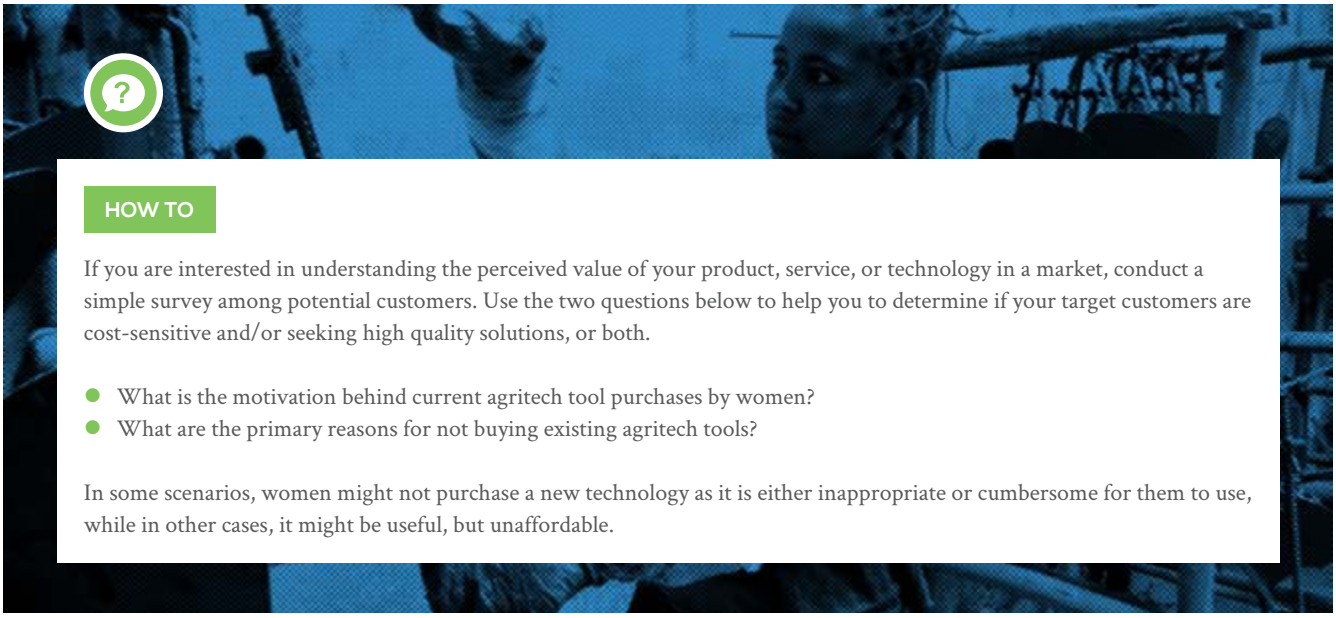
STEP 1

## Determine the perceived value of your product/service/technology for women farmers

Are the following true in your understanding of the perceived value of your product/service/technology for customers?

| | | |
|---|---|---|
| Farmers are looking for customized solutions in terms of quality, innovation, and applicability. | ☐ Yes | ☐ No |
| Farmers are looking for a lower cost product, service, or technology. | ☐ Yes | ☐ No |
| Both the above options are true. | ☐ Yes | ☐ No |

| TERM | DEFINITION |
|---|---|
| Differentiator | Your innovation has unique attributes that are of value to women smallholder farmers and are perceived to be better than your competitor's products. |
| Cost leader | Your innovation costs less than that of your competitor's for the target market. |
| Niche market | Your innovation has unique attributes that are of value to women smallholder farmers. Your innovations are perceived to be better than the competition. Your innovations also cost less than your competitor's. |



HOW TO

If you are interested in understanding the perceived value of your product, service, or technology in a market, conduct a simple survey among potential customers. Use the two questions below to help you to determine if your target customers are cost-sensitive and/or seeking high quality solutions, or both.

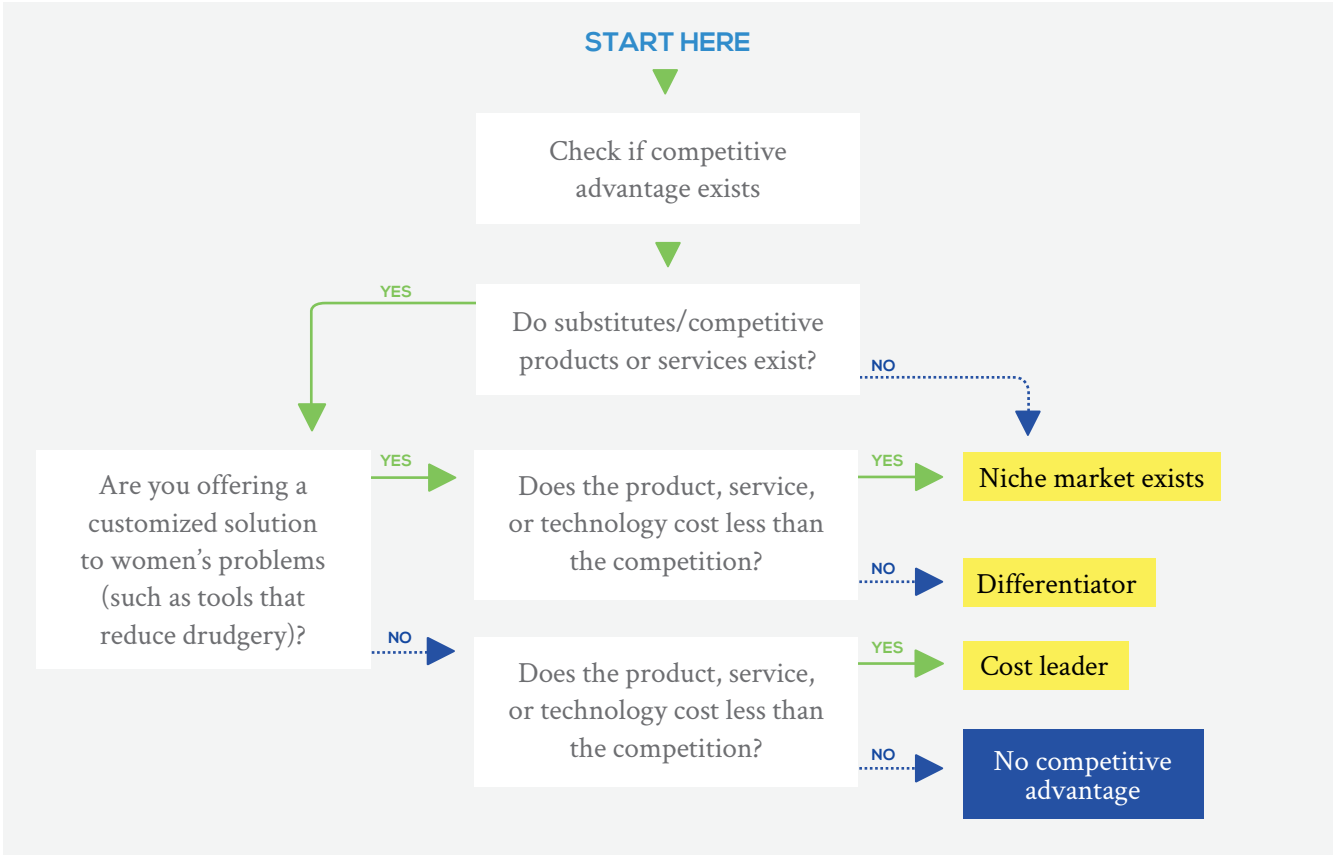
- What is the motivation behind current agritech tool purchases by women?
- What are the primary reasons for not buying existing agritech tools?

In some scenarios, women might not purchase a new technology as it is either inappropriate or cumbersome for them to use, while in other cases, it might be useful, but unaffordable.

STEP 2

## Determine your competitive advantage

The following steps will help you decide if you have a sustainable competitive advantage and where you are positioned with respect to your competitors.



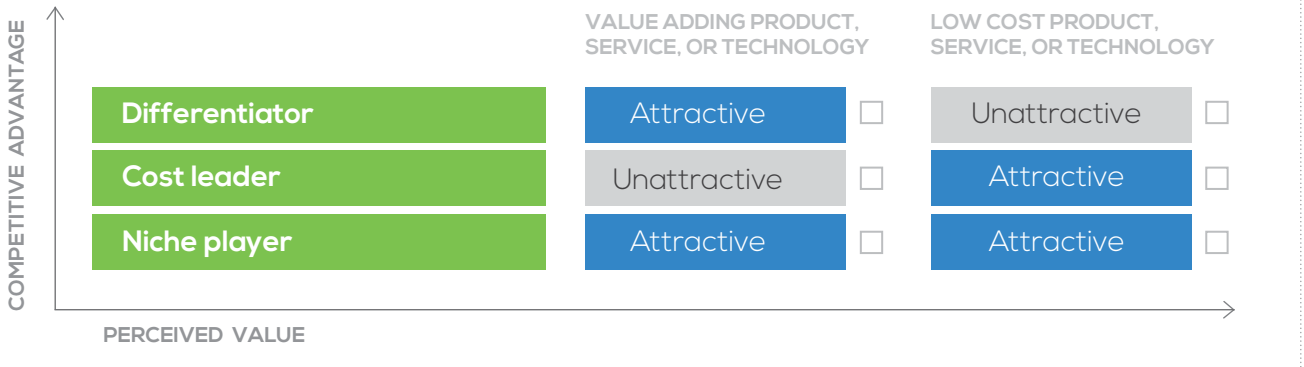
Check the boxes that apply to your product/service/technology in column 1 and column 2.

| DIFFERENTIATION (PRODUCT/SERVICE/ TECHNOLOGY RELEVANCE = HIGH) | COLUMN 1 | COST ADVANTAGE (PRODUCT/ SERVICE/TECHNOLOGY COST = LESS THAN COMPETITORS) | COLUMN 2 |
|---|---|---|---|
| Is your agritech product/service/technology an upgrade of existing solutions being used by the women? | ☐ | Does your product/service/ technology cost less than existing products? | ☐ |
| Does it offer an added benefit to women (e.g., reducing their labor hours, easy to carry and use)? | ☐ | Can your product, service, or technology reduce the overall cost of agricultural production for women? | ☐ |
| Does your product/service/technology directly address the activities that women carry out in agriculture (e.g., weeding, harvesting, and other traditionally labor-intensive work)? | ☐ | Can you leverage local subsidies to make your product, service, or technology more affordable? | ☐ |
| If you have marked more scenarios in column 1, you would be a differentiator. | | | |
| If you have marked more scenarios in column 2, you would be a cost leader. | | | |
| If you have marked scenarios in column 1 and column 2, you may have found a niche position in the market. | | | |

STEP 3

## Match perceived value to your competitive advantage

Matching your competitive advantage with the immediate value that women are seeking in your target community will help determine whether your product, service, or technology is currently attractive or unattractive to women, as well as the likelihood that women will adopt your product, service, or technology.



Your product, service, or technology is attractively positioned in the market if you fit one of the following scenarios:

1. If the targeted women farmers are looking for a product, service, or technology customized to their needs and your product, service, or technology offers added value as a differentiator, then it has a higher chance of uptake.
2. If targeted women farmers are looking for cheaper alternatives in the market and your product, service, or technology is priced cheaper than your competitors, it makes you a cost leader.
3. If you are offering a product, service, or technology that is addressing unmet needs of women and also costs less than the competition's, then you could create a niche market for yourself.

Your product, service, or technology requires a re-positioning in the market if one of the following is true for you:

4. Targeted women farmers are looking for a product, service, or technology customized to their needs. While your offering is cheap, it does not, however, address the perceived need.
5. Targeted women farmers are looking for cheaper alternatives in the market. While your product, service, or technology is customized, it is not, however, cheaper than existing offerings available in the market.

From the above analysis, if the market is attractive for your product, service, or technology, you are now ready to enter the market.

## NOTES

# 2.3 The adoption index tool

## Outcome

Upon completion of this section, you will be able to:

1. Analyze the **nature of the market** with respect to landscape and customer behavior, and
2. Identify the critical factors in your selected geography which **enable or hinder adoption of agritech solutions by women.**

The Adoption Index Tool helps innovators assess the favorability of the market and readiness of customers in the areas where he/she plans to introduce an agricultural technology.

## When to use the tool

Once the innovator has selected a geography or a sub-region and has an idea of the target profiles to sell solutions to, the innovator can use the Adoption Index Tool to do a quick check on the region and customer to validate market favorability.

## Tool elements

The tool contains factors for market attractiveness and customer readiness. Each factor is illustrated as scenarios, going from least attractive to most attractive, that the innovator can select before summing up scores.

## How to use the tool

- Select one scenario out of the three possible scenarios offered against each factor,
- Score yourself against each factor (0, 2, or 4),
- Add the scores obtained from each table, and
- Use the total score to determine the adoption levels you can expect from women customers.

### Expected outcomes

With this tool, you will be able to identify the technology uptake potential of a woman smallholder farmer segment in a selected region. The resulting analysis will show if a market is progressive, conservative, or unprepared.

| Progressive | Conservative | Unprepared |
|---|---|---|
| The market is most suitable to drive quick adoption of agritech products, services, or technologies among women farmers. | The market is moderately suitable to drive adoption of agritech products, services, or technologies among women farmers. | The market has low suitability to drive adoption of agritech products, services, or technologies among women farmers. |

# Legend

| Market attractiveness factors | | Example |
|---|---|---|
| Government support programs  | Women inclusive programs and schemes introduced by the government to support smallholder farmers. | **Negligible case**: The World Bank is running an Agriculture Development Projects (ADP) program in Nigeria, however, only 15% of women farmers have access to it. |
| National policy focus  | Region promotes use of agricultural technology and also has environmental sustainability as a key focus area in agriculture development. | **Moderate case**: India has a focus on conserving water resources in agriculture. Technologies like drip irrigation are heavily promoted and subsidized. |
| Regulatory support  | Legal rights to land titles, ease of process to claim property rights. | **Moderate case**: In rural areas of Karnataka, India, and the Kyrgyz Republic (two countries where inheritance by daughters is mandated by law), most women stated that they would not request land from their families even if they were legally entitled to it. |
| Availability of microfinance  | Microfinance structures in the form of community-managed organizations or formal organizations. These organizations should have successfully integrated a gender perspective. | **Moderate case**: If there are only one or two microfinance organizations serving in the area, the chances are that they may charge higher interest rates due to less competition. Hence, fewer women might be capable of paying these higher interest rates. |
| Competitor landscape  | Existence of similar technology companies that are already addressing the problem and offering better pricing and quality to the customers, thereby having the potential to prevent adoption of your product, service, or technology. | **Moderate case**: If competition exists that is providing either a low cost product, service, or technology which is not meeting women's needs or are providing a high quality product, service, or technology at an unaffordable price, then the innovator can exploit this gap in the market. |

| Market attractiveness factors | | Example |
|---|---|---|
| **Local partnerships**  | Local support organizations such as SHGs or women's groups, extension services in agriculture, and women advocacy nongovernmental organizations (NGOs). These communities act as critical agents to reach women. | **High case**: The Self-Employed Women's Association (SEWA), a registered trade union with a membership of 800,000 women, has two-thirds of its members among smallholder farmers or landless agricultural laborers. |
| **Technology adoption levels**  | The maturity of agricultural technology available to a farmer in a region, along with access to assets required to implement the technology. | **Moderate case**: If the women in the target area have adopted technology like mobile phones in the past few years, but do not show the same interest levels in adopting agricultural technology. |
| **Socio-cultural factors**  | Cultural attitudes can hinder women from assuming important positions in the agricultural value chains or getting access to finance. | **Moderate case**: The women are educated and contribute to household duties, but are not involved in any decision-making practice at home. These women might be interested in your product, service, or technology due to their awareness, but low decision making power will be a barrier for them. |
| **Customer readiness factors** | | **Example** |
| **Need**  | The immediate need of women farmers in the region. | **Moderate case**: The women are not interested in increasing yield or reducing labor, but have access to agritech. |
| **Role**  | The role of women on the farm reflects the type of farm activities, responsibilities, capacities, and relative decision-making power for a new agricultural purchase. | **Moderate case:** A contract farm worker might not be thinking of increasing yield, as it is not her land. |

| | | |
|---|---|---|
| **Access to credit**  | Income level of women farmers and credit options such as individual and group loans allowing them access to financial resources, as needed. | **High case**: A project in Niger (Project de Promotion de L'Utilisation des Intrants Agricoles par les Organisations Paysanne) provided women with their own incomes and inventory credit approach, which in turn improved their ability to make decisions. |
| **Awareness about technology**  | Existing awareness levels among women farmers about various agricultural technology. | **Moderate case**: The only source of information for women about agritech is other farmers in her area. One of the key gaps across geographies is women's ability to access information about choices available. |
| **Access to agricultural resources**  | Proximity to agri-markets, retail stores, distribution kiosks, or extension workers where women farmers can easily procure agricultural inputs. | **Moderate case**: Distribution agents, community organizations, and extension workers can take products, services, or technologies to the women's doorsteps. |
| **Ownership**  | Status of ownership for the current tools and technology being used by the women farmers. | **Moderate case**: If the women are currently renting or borrowing agritech products for their farm, they might convert to purchasing customers in the future. |
| **Influencers**  | Individuals and groups in the family and community who influence key decisions made by women. | **Moderate case**: The family members and other key influencers might support the women in certain cases, but are not supportive in agricultural technology adoption. In this scenario, there is still hope that through awareness, influencers can start positively promoting agricultural technology. |
| **Risk sharing**  | Presence of women collectives to share the financial risk among women. | **Moderate case**: If there are ways for women to access the products, services, or technologies affordably through loans, rentals, or in collectives, the innovator can seek these solutions to increase buying capacity. |

# How to use the Adoption Index Tool

1. The table below includes Market Attractiveness Factors (column 1), a description of each factor (column 2), and three scenarios that describe low, medium, and high states of affairs on that particular factor (columns 3-5). Evaluate each factor and use the grey box to document your score.
2. Score your organization on each factor (0, 2, or 4), then add your scores for this table.
3. Evaluate the Customer Readiness Factors (page 27) and score your organization on each factor.
4. Total your score for the Customer Readiness Factor table.
5. Add the two scores together from each factor evaluation exercise to get a total score that will help you to understand the adoption levels of your potential customers and if the market is unprepared, conservative, or progressive.

## MARKET ATTRACTIVENESS FACTORS

| FACTORS | DESCRIPTION | NEGLIGIBLE SCORE = 0 | MODERATE SCORE = 2 | HIGH SCORE = 4 | SCORE |
|---|---|---|---|---|---|
| **Government support programs**  | Government interventions, schemes, and programs to support women smallholder farmers | Absence of government interventions to promote women smallholder farmers | Presence of a few government programs/ schemes to promote women smallholder farmers | Presence of sustained, well-funded government programs to promote women smallholder farmers | |
| **National policy focus**  | National policy focuses directly or indirectly on the promotion of technology in farming practices | Uncertain policy environment or absence of a policy framework to support progressive agriculture | Policies aim to achieve self-sufficiency mostly through extensification* of agriculture | Strong policy focus on sustainable and progressive agriculture | |
| **Regulatory support**  | Laws to support women smallholder farmers (e.g., land ownership) | Absence of laws to protect women smallholder farmers' right to inherit/own land | Presence of laws to protect women's rights to access land, but with low awareness among women about the laws | Presence of laws to protect women's rights to access land with high awareness among women about the laws | |

 **Extensification definition provided in Glossary in the Appendix.*

| FACTORS | DESCRIPTION | NEGLIGIBLE SCORE = 0 | MODERATE SCORE = 2 | HIGH SCORE = 4 | SCORE |
|---|---|---|---|---|---|
| **Availability of microfinance**  | Access to finance for women smallholder farmers | Limited/no availability of microfinance/ credit schemes for women smallholder farmers | Few options for women smallholder farmers to access microfinance/ credit schemes | Multiple options available to access microfinance/ credit schemes at low interest rates for women smallholder farmers | |
| **Competitor landscape**  | Presence/ absence of competitors in the market | Multiple local competitors providing high quality products, services, or technologies at low cost | Competitors providing either high quality products, services, or technology, or competitive pricing but not both | Competitors providing neither high quality products, services, or technologies, nor competitive pricing | |
| **Local partnerships**  | Presence/ absence of local partners | Absence of SHGs/extension agents, NGOs, and local brands to partner with | Presence of SHGs, NGOs, and local brands with limited reach to women | Long serving extension agents, SHGs, and NGOs with substantial reach | |
| **Technology adoption levels**  | Current levels of technology usage | None or very low levels of adoption of any type of technological products by women | Some level of adoption of aspirational technology (e.g., mobile phone, television) by women | Women have shown increased adoption of not only aspirational technology, but also agricultural technology | |
| **Education level/ socio-cultural factors**  | Presence/ absence of social and cultural barriers for women | None or very low level of formal education for women, with no power to make financial decisions | Some level of formal education available to women with limited power to make financial decisions | Adequate to high level of formal education for women, along with power to be an independent decision-maker in a household | |
| | **MAXIMUM SCORE** | **32** | | | **SCORE** |

## CUSTOMER READINESS FACTORS

| FACTORS | DESCRIPTION | NEGLIGIBLE SCORE = 0 | MODERATE SCORE = 2 | HIGH SCORE = 4 | SCORE |
|---|---|---|---|---|---|
| **Immediate need**  | Immediate need of the women farmers can be addressed through tech solutions | Immediate need is to earn daily wages/grow subsistence crops for survival | Immediate need and motivation is to carry out basic farming activities, with access to seeds, water, fertilizers, tools, and other farming resources | Immediate need is to improve yield and quality of produce and to reduce labor | |
| **Role of women in agriculture**  | Participation of women in agricultural activities | Seasonal/contract laborer | Producer, involved actively in activities such as sowing and harvesting | Farm owner or farm manager | |
| **Access to credit**  | Presence/ absence of financial resources | Low-income segment and absence of micro-credit schemes or subsidies for agricultural inputs | Low income segment with limited availability of micro-credit schemes for women | Low income segment with presence of micro-credit schemes and subsidies specifically focused toward women | |
| **Awareness of technology**  | Awareness among women about the existing technologies | Women farmers have no source of information on the existing technology in agriculture | Women farmers receive information on new technology through local resources | Women farmers have complete access to demon-stration and training centers for technology adoption in addi-tion to receiving information from local sources | |

| FACTORS | DESCRIPTION | NEGLIGIBLE SCORE = 0 | MODERATE SCORE = 2 | HIGH SCORE = 4 | SCORE |
|---|---|---|---|---|---|
| **Access to agricultural resources**  | Physical proximity to agricultural resources | Agri-markets far from the agriculture region and absence of other sources of distribution such as depots, farmers, and extension groups | Agri-markets are located far from the region, however, there is presence of market linkages in form of extension groups or other farmers playing an active role in distribution of resources | Agri-markets present within close proximity of the area along with a strong network of distribution depots and extension agents | |
| **Ownership of technology**  | Ownership of existing tools and technology | Use machinery provided by the land owners | Rent/borrow equipment from rental markets or other farmers | Own most of their farm resources and technology | |
| **Key influencers**  | Groups/ individuals influencing the decision-making for women | Social groups and family members of the household not supportive of women acquiring new technology | Social groups and family members supportive of women occa-sionally adopting technology | Family members strongly supportive of women acquiring new technology | |
| **Risk sharing**  | Alternatives to share the financial risk | Absence of women's groups for collective purchasing | Women have options to rent equipment and tools, if purchase is not possible or desirable | Presence of strong women groups who own products collectively in order to share the financial risk | |

**MAXIMUM SCORE** 32 **SCORE**

*(Market attractiveness factors + customer readiness factors)*
*Total possible score equals 64*

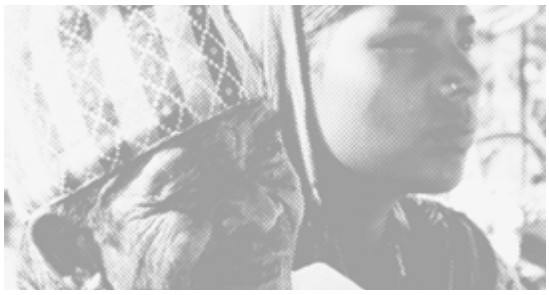
**TOTAL SCORE**

**Match the total score to the table below to access the nature of the market.**

| 0 - 20 UNPREPARED | 20 - 40 CONSERVATIVE | 40 - 64 PROGRESSIVE |
|---|---|---|

| NATURE OF THE MARKET | SUGGESTION |
|---|---|
| **Unprepared** | Venturing into this market is not advisable, due to the landscape and the consumer behaviour being adverse to adoption of agritech by women smallholder farmers.<br><br>You could choose a different market/geography and run the conditions through the Adoption Index Tool. |
| **Conservative** | This market has moderate potential for the adoption of agritech by women smallholder farmers. This market is not ready for the purchase of agritech, but with the execution of the market entry, retention, and growth strategies outlined in subsequent sections, you will be able to sell your product.<br><br>You should enter this market only on the following conditions:<br><br>● You have funding available to take up this new market, as selling to women here will require significant financial investment,<br>● You must be willing to invest time and effort to raise awareness among women smallholder farmers before marketing to them, and<br>● You have a strong local network of partners. |
| **Progressive** | This market is most suitable for selling agritech innovations to women smallholder farmers.<br><br>You can adopt the cost effective methods described in subsequent sections. |

# 2.4 Creating or adapting your innovation to be gender-relevant



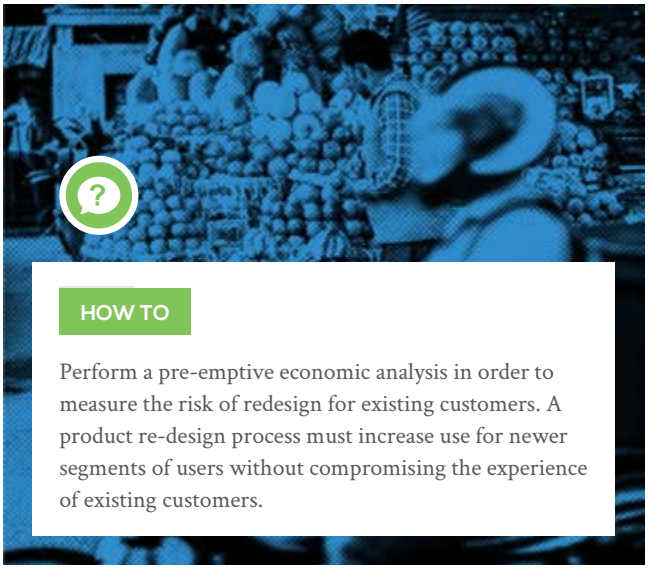
## Outcome

Through this section, you will learn:

1. How you could use **human-centered design concepts** to adapt your product, service, or technology, and
2. Steps to **prototype and test your solutions** on the ground.

Once you have analyzed the overall suitability of the market and have also identified the key critical enablers and barriers for adoption, you will need to check whether your product/service/technology tackles these challenges.

The process of reaching out to women starts with a product, service, or technology that has been designed with women farmers in mind. This section takes an innovator through the process of designing and adapting a product, service, or technology in a way that places women at the center of the thought process. The section suggests tools and approaches which can help you in designing products/services/technologies in accordance with the needs of the woman smallholder farmer.



HOW TO

Perform a pre-emptive economic analysis in order to measure the risk of redesign for existing customers. A product re-design process must increase use for newer segments of users without compromising the experience of existing customers.

## Pre-design considerations

If you take your product, service, or technology to women smallholders, you will need to verify that the existing innovation design is contextualized to and relevant for women.

Product redesign could take the form of creating a new and exclusive product line for women, modifying existing products to be gender-sensitive, or reducing technical complexity of the product, service, or technology.

## Designing for the needs of women smallholder farmers

Once you have identified the key reasons for product redesign, use the IDEO human centered-design inspired approach to adapt your innovation to the needs of women farmers.

## Inspiration phase

Place women at the center of the design process and understand their context through research (i.e., conducting surveys, focus group discussions, or interviews).

### STEP 1

Identify the motivations that support women farmers' behaviors. For example:

- Women farmers seek dignity in their work,
- Women farmers value recognition for their contributions,
- Women's decisions are motivated by the well-being of the household, and
- Women prefer tools that reduce physical labor in the field.

In your view, what are the motivations behind your target women farmers' behaviors?

### STEP 2

Immerse yourself in the lives of the community by listening to community members' voices, spend time in the community, learn about individual and community decision-making processes as they relate to technology adoption, and observe individuals and groups as they complete their daily activities.

In some communities, direct access to women farmers might not be recommended. In this case, a quicker approach would be to interview experts to get information on recent innovation adoption and their perspective of successes and failures.

---

Gender and agricultural experts recommend that when considering additional target countries for expansion that you ask the following important questions:

| Are you **empathetic** toward the problems being faced by women farmers? | Does your **product, service, or technology reduce drudgery, improve comfort, or increase ease of use** for women users? |
|---|---|
| *(List the problems/challenges faced by women farmers in their daily activities)* | *(List the issues your product, service, or technology addresses below)* |
| | |

| *(List the problems/challenges faced by women farmers in their daily activities)* | *(List the issues your product, service, or technology addresses below)* |
|---|---|
| | |

Can you provide your product **first as a complement to existing technology** being used by women farmers?

☐ Yes ☐ No

## Ideation phase

Discover patterns in the knowledge you gained from the previous stage. Key questions to ask at this stage are:

- Is there an insight you heard repeatedly?
- Is there a constant problem farmers face that your product, service, or technology tackles?
- Are there significant suggestions for you?
- What surprised you about your customers' expectations?
- Are there patterns in these interactions?

Some of the recurring themes that have emerged from the primary and secondary research undertaken for this workbook around women in agriculture:

- Most of the women in agriculture perform jobs that are **lower in the value chain,**
- Women are more economically vulnerable and typically have **low purchasing power,**
- The most pressing challenge for women is drudgery and **being overworked** between work on the field and household duties, and
- Women's work is typically **undervalued** in the ecosystem across roles.

Identify the top three ideas or themes you find and consider using that information to inform changes in your product design.

## Implementation phase

Prototype your solution and determine the next steps to create the final product.

### STEP 1

Conduct a pilot with your new prototype for a few weeks and collect feedback to iterate on the design and tweak it. Key considerations during the pilot:

- If possible, pick a location where farmers are currently aware of agricultural technology and are using it,
- Obtain regular feedback on various aspects of the product usability, benefits, and missing features,
- Carry out demonstrations in the field at convenient times for women,
- Make sure that your technical team is available during field demos, and
- Have female staff lead community interactions during the pilot.

### STEP 2

Create a decision-making matrix to determine important milestones and define success. Consider the following criteria to evaluate your solution:

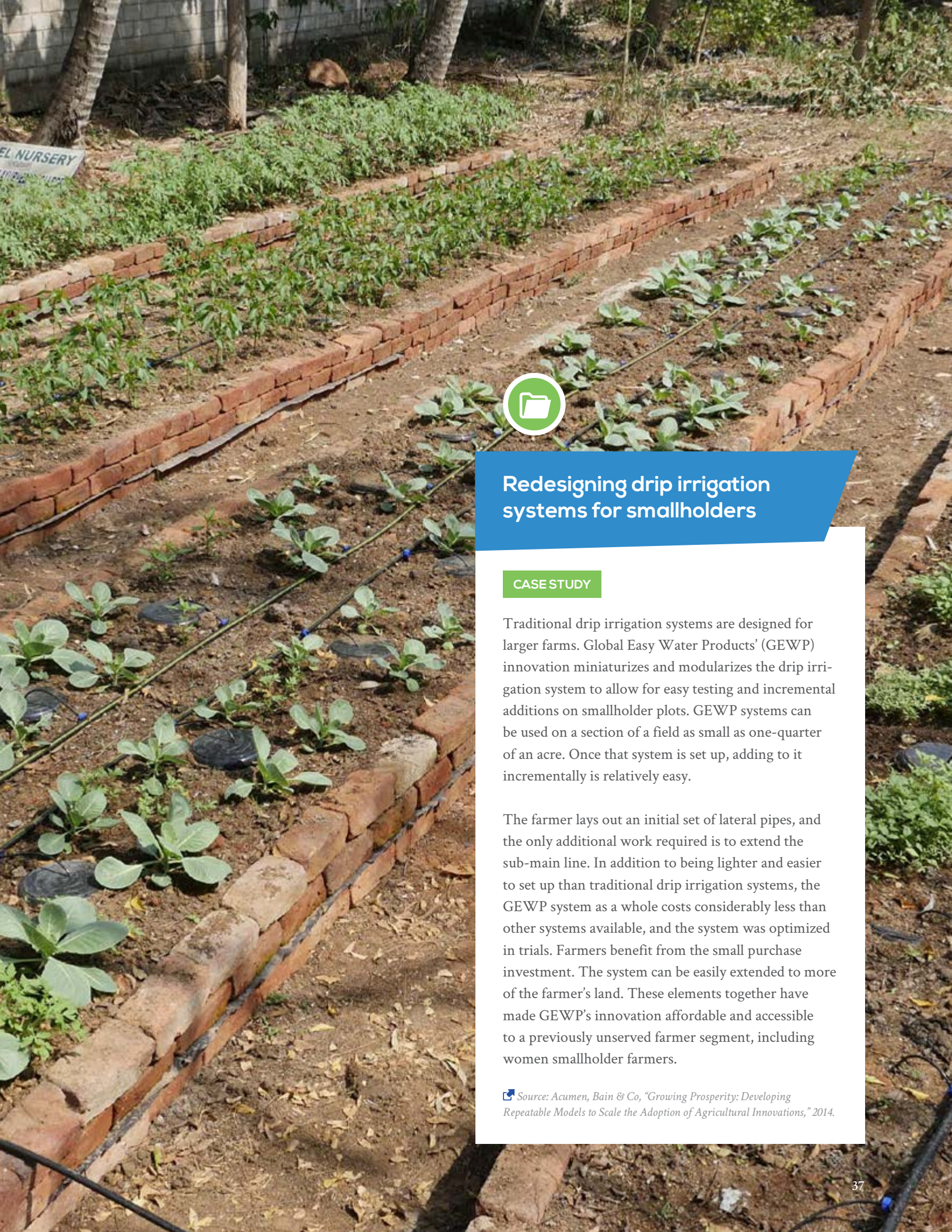
- The product is affordable for the customer segment,
- The product has a short ROI period,
- The product is easy to carry over to different farm plots,
- The product gives best results with the selected crop type and geography, and
- Technical glitches have been resolved.

**HOW TO**

- Follow the steps outlined in **IDEO's Human Centric Design Kit**[10] for your research and implementation.
- Use participatory and visual techniques of Participatory Rural Appraisal (PRA)[11] research and planning methodology, while obtaining feedback on the ground.
- Use the Pugh Matrix (see Appendix) as the decision-making and analysis tool.



*10. IDEO's Human Centric Design Kit; 11. Participatory Rural Appraisal Toolkit.*



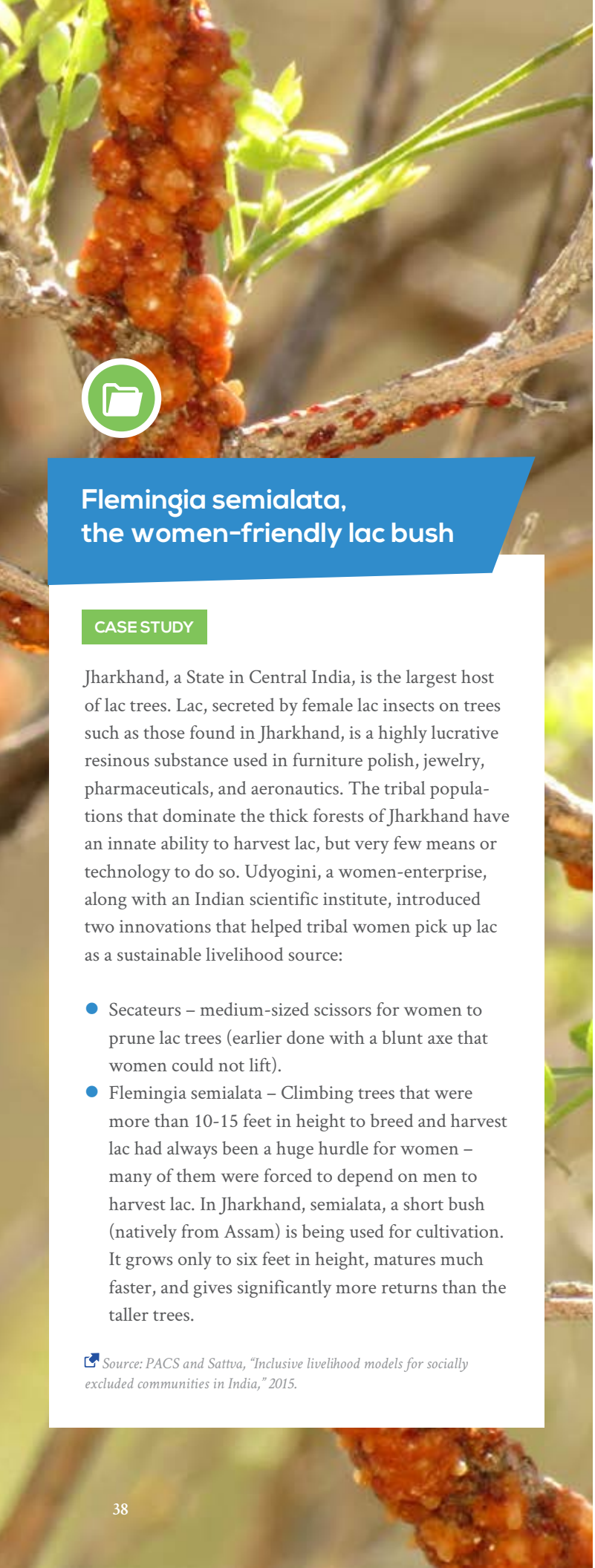

## Redesigning drip irrigation systems for smallholders

CASE STUDY

Traditional drip irrigation systems are designed for larger farms. Global Easy Water Products' (GEWP) innovation miniaturizes and modularizes the drip irrigation system to allow for easy testing and incremental additions on smallholder plots. GEWP systems can be used on a section of a field as small as one-quarter of an acre. Once that system is set up, adding to it incrementally is relatively easy.

The farmer lays out an initial set of lateral pipes, and the only additional work required is to extend the sub-main line. In addition to being lighter and easier to set up than traditional drip irrigation systems, the GEWP system as a whole costs considerably less than other systems available, and the system was optimized in trials. Farmers benefit from the small purchase investment. The system can be easily extended to more of the farmer's land. These elements together have made GEWP's innovation affordable and accessible to a previously unserved farmer segment, including women smallholder farmers.

*Source: Acumen, Bain & Co, "Growing Prosperity: Developing Repeatable Models to Scale the Adoption of Agricultural Innovations," 2014.*



## Flemingia semialata, the women-friendly lac bush

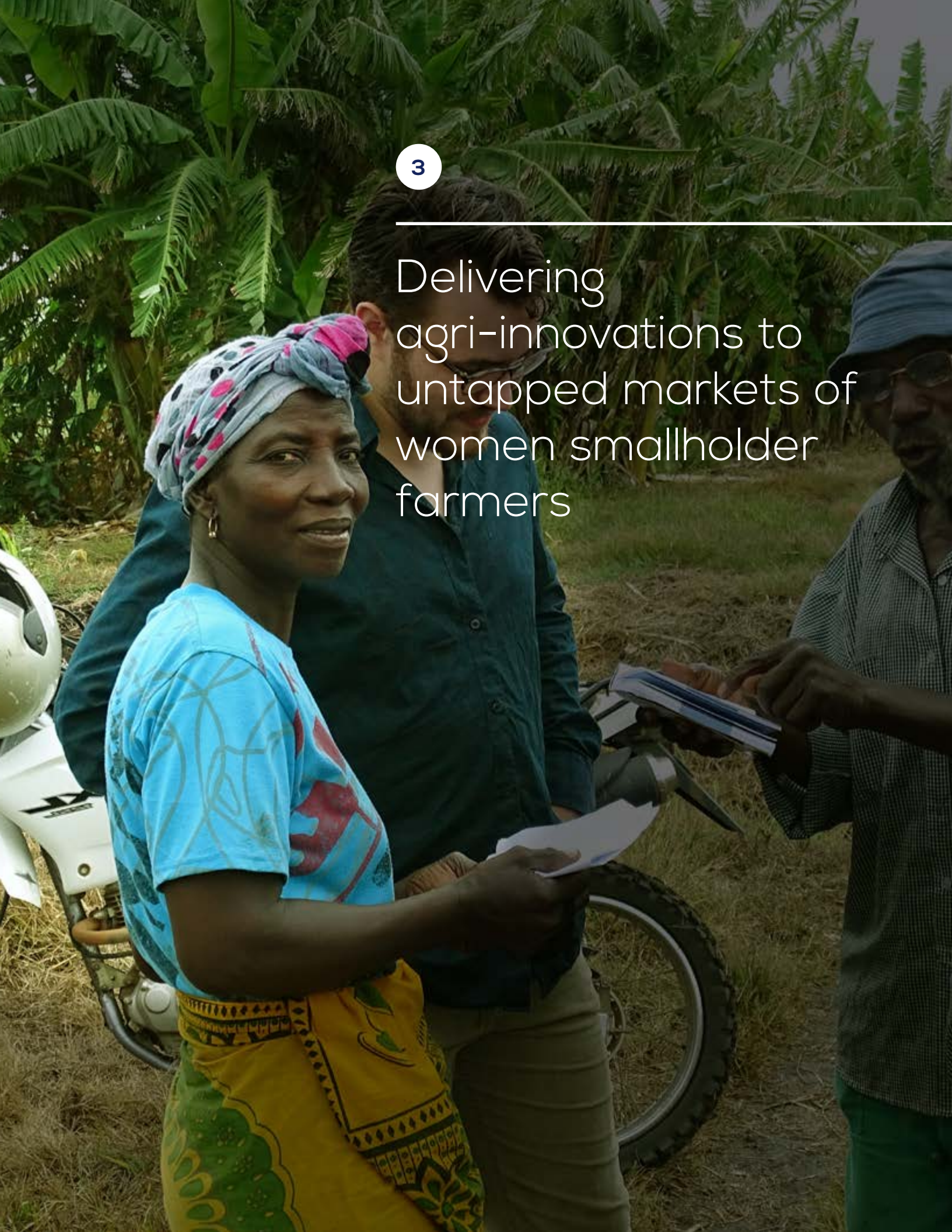
CASE STUDY

Jharkhand, a State in Central India, is the largest host of lac trees. Lac, secreted by female lac insects on trees such as those found in Jharkhand, is a highly lucrative resinous substance used in furniture polish, jewelry, pharmaceuticals, and aeronautics. The tribal populations that dominate the thick forests of Jharkhand have an innate ability to harvest lac, but very few means or technology to do so. Udyogini, a women-enterprise, along with an Indian scientific institute, introduced two innovations that helped tribal women pick up lac as a sustainable livelihood source:

- Secateurs – medium-sized scissors for women to prune lac trees (earlier done with a blunt axe that women could not lift).
- Flemingia semialata – Climbing trees that were more than 10-15 feet in height to breed and harvest lac had always been a huge hurdle for women – many of them were forced to depend on men to harvest lac. In Jharkhand, semialata, a short bush (natively from Assam) is being used for cultivation. It grows only to six feet in height, matures much faster, and gives significantly more returns than the taller trees.

*Source: PACS and Sattva, "Inclusive livelihood models for socially excluded communities in India," 2015.*

NOTES



3

# Delivering agri-innovations to untapped markets of women smallholder farmers

# 3.1 Market reach

## Outcome

In this section, you will learn how to:

1. Engage with influencers and understand **community dynamics,**
2. Create a **customized communication strategy** for your target women consumer segment,
3. **Generate awareness** among women and their communities about the market need and your innovation that will meet this need, and
4. **Perform initial demonstrations and trials** at the community level to get a sense of women's interest and motivation toward your innovation.

Once you have identified the key value proposition of your solution for women smallholder farmers, you can develop a robust approach to reach the women farmers through sustainable channel relationships.

## Channel building

Social fabric has a strong influence on women members of a community. Word-of-mouth plays a key role in brand building and driving adoption for a new product. Identifying and engaging people who have a higher standing or credibility in the community can reinforce and add emphasis to the message. These influencers could also be your primary evangelists, supporters, community influencers, and distributors.

Reaching women smallholder farmers could involve channel building with two types of partners:

1. Influencers, who influence decision-making among women, and
2. Channel partners, who have the necessary linkages to reach women.

STEP 1

## Identify key influencers in your target community

Women clusters in agriculture markets are primarily supported in decision-making by:

| 1. KEY INFLUENCERS | |
|---|---|
| **WHO** | **HOW THEY INFLUENCE** |
| **Local women leaders** | Aspirational role models for women in the community. These women are usually sought out for their opinions in the decision-making stage. |
| **Active women's collectives** | Share financial risks. Help women build social linkages and influence members outside the group. |
| **Men in the family/society** | Make the most of the financial decisions and enable and encourage women to participate. |

| 2. CHANNEL PARTNERS | |
|---|---|
| **WHO** | **HOW THEY INTERACT** |
| **Women extension agents** | Provide training, information, and access to agricultural inputs. |
| **Local community-based organizations (CBOs)** | Create inclusive programs to increase women's participation in agricultural markets. Act as linkages to deliver productive agricultural resources to the farmers. |
| **Organized wholesalers/ retailers** | Deliver existing agricultural tools and technology to women. Offer information on new tools and finance programs or available subsidies. |

STEP 2

## Choose the right channel partners and influencers

HOW TO

Define key parameters while interacting with influencers.

- Clearly identify the key reasons for the influencers to engage with you,
- Engage with the influencers on multiple occasions as building relationships takes time,
- Involve people with local language familiarity and context understanding in your interactions,
- Use these interactions to talk about the problems that farmers are facing in their day-to-day agricultural activities, and the current solutions and alternatives available to them, and
- Make sure that they see the value in your solution.

HOW TO

Define key parameters while choosing the right channel partners.

- Choose a partner/collaborator through references,
- Verify that the partner/collaborator has a strong women network or reach,
- Check their alignment with your vision through personal interactions,
- Understand the maturity level of the organization to comprehend their ability to handle complexity and channel partnerships,
- Clearly define roles and responsibilities,
- Define clear incentives,
- Provide focused training to build the capacity of the partner, if required, and
- Prioritize the interest of the collaboration over your vision and mission.

STEP 3

## Plot key stakeholders across channels

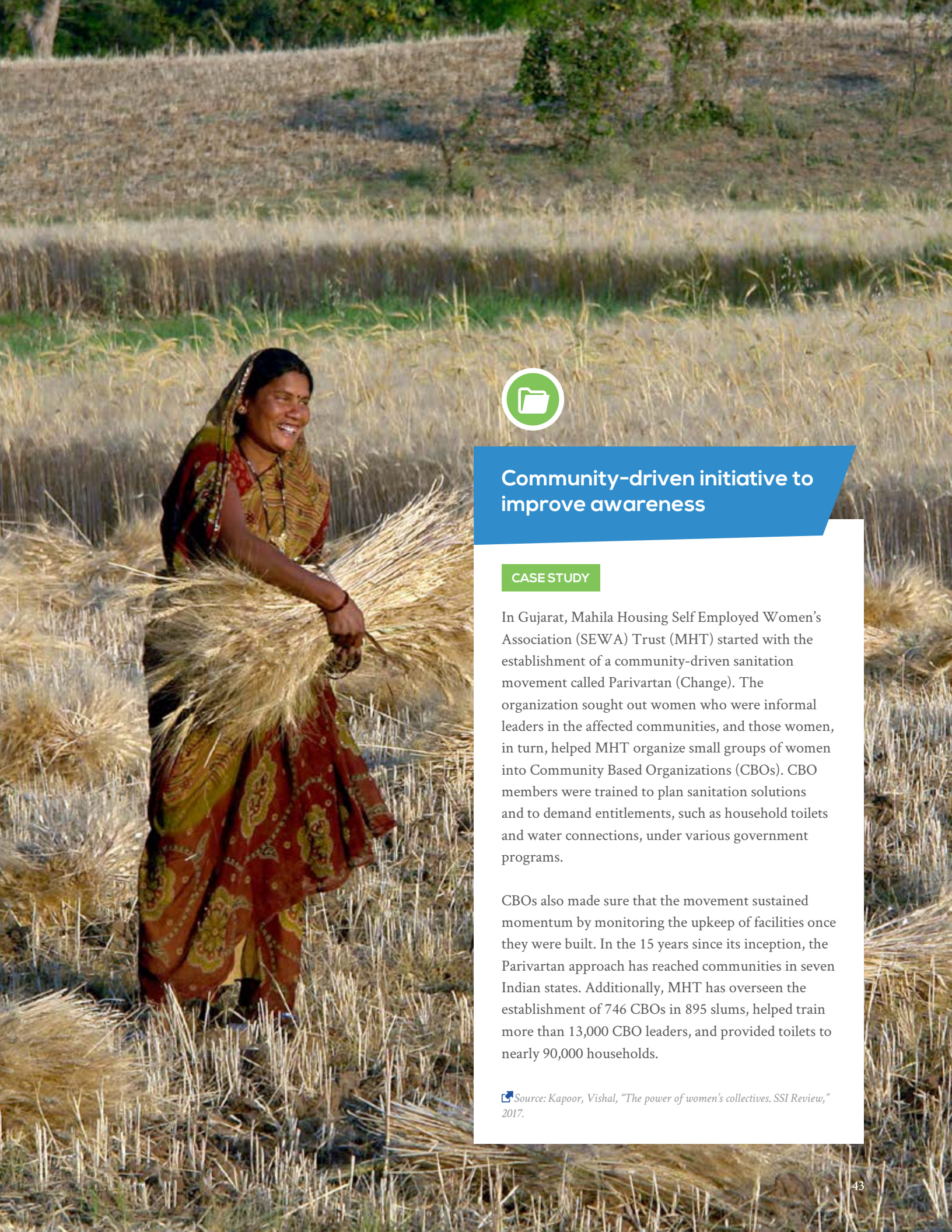
In the case of small landholding women farmers, it is most likely that the household purchasing decisions are not made individually by the woman, but often are made either in groups or by the figure of authority in the household, (e.g., the husband or the father).

In order to reach your target customers – the women farmers – you need to identify the degree of intervention required within your channel. Is it the local level partner organization, the informal leader, the influencer, or the household decision-maker who is going to drive the purchase of your product?

Use UNICEF's Writing a communication strategy for development program to learn more about plotting your key stakeholders.[12]



12. UNICEF, 2008, "Writing a communication strategy for development programmes"



## Community-driven initiative to improve awareness

CASE STUDY

In Gujarat, Mahila Housing Self Employed Women's Association (SEWA) Trust (MHT) started with the establishment of a community-driven sanitation movement called Parivartan (Change). The organization sought out women who were informal leaders in the affected communities, and those women, in turn, helped MHT organize small groups of women into Community Based Organizations (CBOs). CBO members were trained to plan sanitation solutions and to demand entitlements, such as household toilets and water connections, under various government programs.

CBOs also made sure that the movement sustained momentum by monitoring the upkeep of facilities once they were built. In the 15 years since its inception, the Parivartan approach has reached communities in seven Indian states. Additionally, MHT has overseen the establishment of 746 CBOs in 895 slums, helped train more than 13,000 CBO leaders, and provided toilets to nearly 90,000 households.

*Source: Kapoor, Vishal, "The power of women's collectives. SSI Review," 2017.*

STEP 4

## Involving men as key influencers and champions

As decision-makers and key influencers, men are essential stakeholders to consider while reaching out and delivering agritech to women farmers. So much potential for agricultural improvement is not met today, but could be met, if the roles of women, and the access and control that women need to have, are discussed with men. It is impossible to separate women's economic activities from their household and community roles and responsibilities. Given that, the gender-related constraints that women face due to power relations within the household can have a big influence over women's ability to acquire agritech. Bringing men into the process will facilitate progress toward gender equality that is broadly beneficial and sustainable.

Actively solicit male participation and help them to see that offering women greater opportunities could bring long-term benefits to the entire family and community.

HOW TO

Identify progressive men in the community who can support women in their families to take key decisions.

- Identify families in the community where girls are empowered to go to school and complete their education,
- Identify families where both men and women own the farm. In most of these cases, men might make the final decision about any purchase, but chances are that the women will have a strong influence over the decision,
- Identify influential and progressive male leaders in the community,
- Communicate the combined benefit of your innovation in a way that matters to the men. For example, emphasize that household savings are possible through the use of your product, and
- Conduct group sessions to raise awareness about your innovation and identify the most active male respondents.

Men play key roles, directly and indirectly, in enabling or hindering the acquisition of agritech by women:

- Due to male out-migration, there are more female-headed households in rural economies. Female-headed households face more severe labor constraints, because they typically have fewer members but more dependents. In some areas, male out-migration adds to the constraints already imposed by gender-specific farming tasks. In most cases, female-headed households may receive help from male relatives, but only after the men have taken care of their own plots.
- The vast majority of the literature confirms that women are just as efficient as men and would achieve the same yields if they had equal access to productive resources.
- Socio-cultural factors impede women, alone or in groups, from approaching and talking to men who deliver products and solutions.
- Men are key decision-makers in the household in many developing economies.
- Women share time between completing their household chores, taking care of the family, and working on the farm. They have little time to build their technical competencies as farmers or seek new inputs. Men who share household responsibilities can enable women to contribute more to family farms.
- Men are often the key source of information for women as they typically have more direct involvement in the community. Men deeply influence awareness levels among women, including in the area of agriculture.
- In communities where women are micro-entrepreneurs and traders, they may actively reach out to men to make purchases.
- In research covering 97 countries, only 5% of extension workers are women.
- Extension services are often directed toward farmers who are more likely to adopt modern innovations, for example, farmers with sufficient resources in well-established areas. Women get bypassed in these cases.
- Credit markets are not women-friendly. Most women are able to overcome credit constraints and avail of credit only through husbands or other male members of the family.[13]

# Demand generation

After identifying capable channel partners, opinion leaders, and individuals in the community, you can use the customer insight gathered from these sources to develop a communication strategy to generate sales for your product.

## Communication strategy

STEP 1

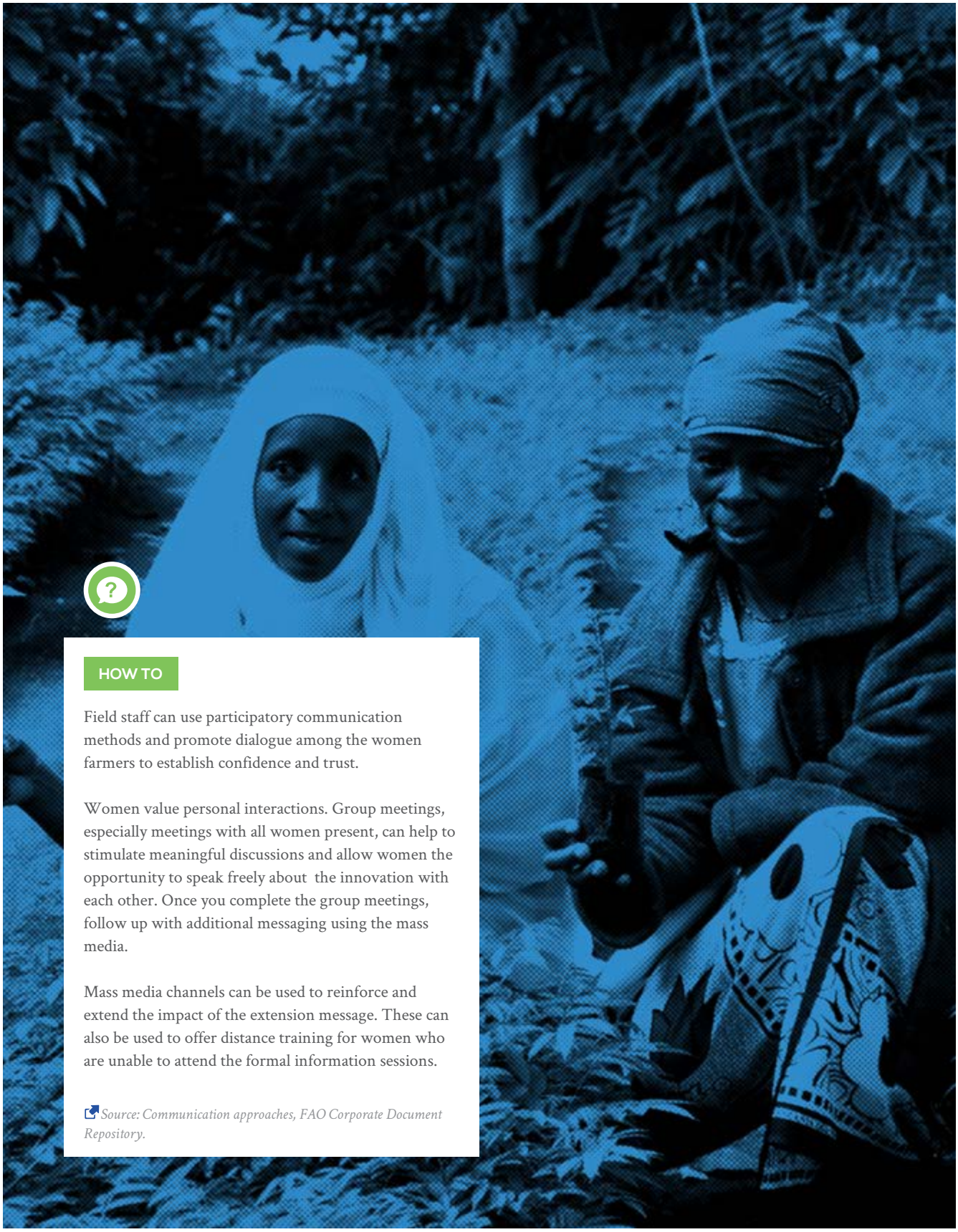
### Select the most engaging communication channels and tools

Research suggests that women smallholder farmers actively seek information on available, pervasive channels of communication. Experience in the field has established that certain channels are very engaging. Here are some examples:

- Information dissemination through female extension workers,
- Information dissemination through progressive men in the household and community,
- Audio-visual information sessions and training programs,
- Rural radio or community-based radio,
- Local festivals and community fairs,
- Mobile vans, and
- Pamphlets.

Identify the available communication channels in your region and undertake activities which enable maximum participation of the women farmers. Please keep in mind that communication should be a two-way exercise that encourages women to participate and express their views and opinions.

13. FAO, "The State of Agriculture 2014: Closing the gender gap in development," 2014.



## HOW TO

Field staff can use participatory communication methods and promote dialogue among the women farmers to establish confidence and trust.

Women value personal interactions. Group meetings, especially meetings with all women present, can help to stimulate meaningful discussions and allow women the opportunity to speak freely about the innovation with each other. Once you complete the group meetings, follow up with additional messaging using the mass media.

Mass media channels can be used to reinforce and extend the impact of the extension message. These can also be used to offer distance training for women who are unable to attend the formal information sessions.

*Source: Communication approaches, FAO Corporate Document Repository.*

STEP 2

## Offer a compelling story around your product, service, or technology for women

While communicating with women smallholder farmers, it is essential to go beyond the immediate benefits of your product, service, or technology to also provide them with narratives which they can share in their social group.

HOW TO

Create relevant communication and appropriate narratives to engage women smallholder farmers. Storytelling works. Describe how your innovation is helping other women. During your initial interactions with women's groups and potential women customers, identify and communicate the factors that are a source of pride for them, such as identity and recognition, well-being of their family, better quality food, growing higher quality crops, and obtaining higher yields.

Answer the following questions to determine the social group characteristics of the women smallholder farmers you are targeting.

- What do they want to do apart from daily work?
- What were their childhood ambitions?
- Is there anything they pursued in the past which they are no longer able to do?
- What are their aspirations for their children?

Document instances where women from similar social groups benefited from your innovation or how the integration of other agritech served to benefit a similar community.

Integrate these factors into your product story to show how it can help women achieve their desired social goals.

# Creating awareness

STEP 1

## Identify the awareness levels among women

Outreach and marketing should be built on a solid understanding of your target audience. To understand your audience, evaluate the factors that contribute to their knowledge and access to knowledge about agritech. In the table below, review each factor and score with low, medium, or high. If the bulk of the scores are in the low category, follow the action recommendations in the "unaware" box below. If mostly medium or high, follow the action recommendations in the box on the bottom right hand size of the page (aware, concerned, and knowledgeable).

| FACTOR | LOW | MEDIUM | HIGH |
|---|---|---|---|
| Average literacy rate among the women farmers | No education - never been to school ☐ | School dropout ☐ | Completed education and has degree(s) ☐ |
| Proximity to extension services | Extension workers not present ☐ | Extension workers' visits are irregular ☐ | Extension workers are active in this community ☐ |
| Frequency of training and education programs in the community | Once or twice a year ☐ | Ad hoc basis ☐ | Regular ☐ |
| Membership in rural cooperatives | Participation in cooperatives is minimal ☐ | Less than 50% participate in cooperatives ☐ | More than 50% of women are part of cooperatives ☐ |
| Information sources available to women | Information dissemination only through family and peers ☐ | Information available through local newspapers and radio ☐ | Information available through multiple channels ☐ |
| Cultural conditions | Women are prohibited from taking part in group actions ☐ | Groups are formed but no active work done ☐ | Women participate actively in groups ☐ |

Based on the existing awareness levels among the community about the problem and available solutions, you can then identify the level of intervention required prior to demonstrating your product.

| UNAWARE | AWARE, CONCERNED, AND KNOWLEDGEABLE |
|---|---|
| • Raise awareness by providing information<br>• Recommend solutions | • Identify perceived barriers for adoption<br>• Promote social norms<br>• Recommend your product |

*Adapted from "Communication for Behavior Change" - The World Bank, 1996, by Cecilia Cabanero-Verzosa, p. 4 - Figure 2.*

STEP 2

## Adopt cost effective awareness activities

| ACTIVITY | PLACE | KEY CONSIDERATIONS |
|---|---|---|
| **Educate women about benefits of agricultural technology** | | |
| Focus group discussions on agricultural best practices and the need for the product, service, or technology | Farmer field schools, religious meeting centers, agriculture fairs | Involve women leaders who could drive discussions with the women's groups |
| Key household stakeholder interactions | Household doorstep | Create a rapport with the primary decision-makers of the household |
| **Talk about your product, service, or technology** | | |
| Live demonstration of the product, service, or technology | Farms, households | Utilize the dealer network accompanied by women technical assistants<br><br>Utilize current customers to be part of the trial demo |
| Sharing past success stories | Common meeting places, farms, households | Utilize the local partner organization to share the stories in an effective manner |

## Leveraging community programs to create awareness among women farmers

CASE STUDY

As part of the LinKS project (Gender, Biodiversity and Local Knowledge Systems for Food Security in Southern and Eastern Africa), the Food and Agriculture Organization (FAO) organized community seed fairs in Tanzania to raise awareness about local crop diversity. The FAO provided learning opportunities for the rural communities (including the younger generations), researchers, extension staff, and organizations about the importance of crop diversity and local knowledge in food security. Women were the key collectors and savers of seeds. Seed fairs provided farmers with a meeting place where they could buy, sell, and barter seed, thus encouraging the conservation of crop diversity and the spreading of local seed varieties among women and men farmers. The seed fairs were organized on a local scale to make them accessible and affordable for the rural communities.

*Source: The World Bank, "Gender in Agriculture: Sourcebook," 2009.*

# 3.2 Market acquisition

## Outcome

This section will help you to:

1. Define your **unique value proposition** for the women farmers,
2. Identify **early adopters,**
3. Develop an efficient **sales and distribution model,**
4. Identify the potential **source of finance** for your customer segment,
5. Identify and share **risk mitigation solutions** with your potential customers, and
6. Sell your **product, service, or technology to early adopters.**

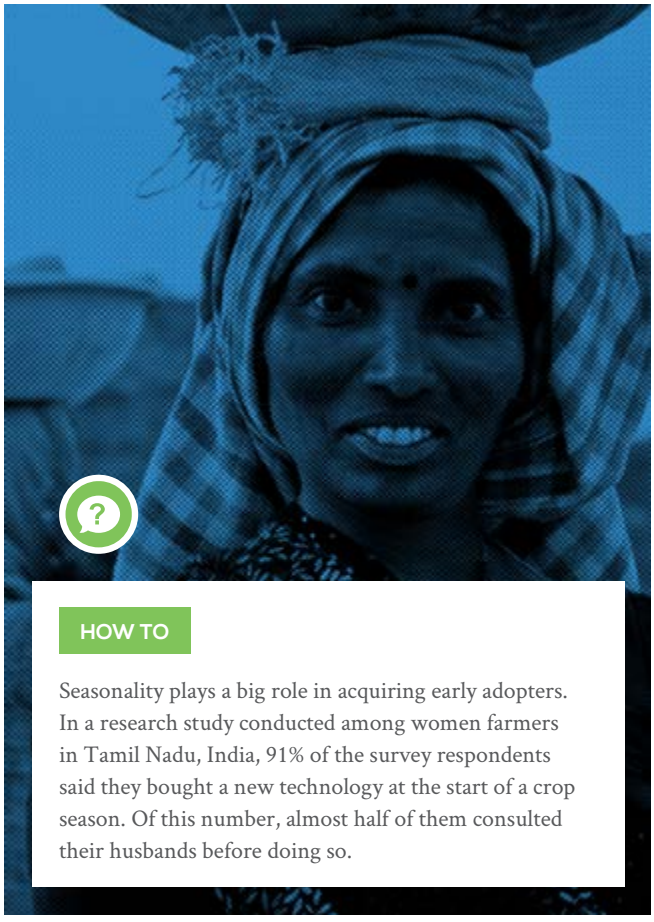
Once you are actively engaging with women in the community, the next step is to facilitate quicker adoption of your innovation and address risks associated with conversions.

## Acquire early adopters

By following the steps in the above section, you raised awareness about your product, service, or technology in the community. While raising awareness, you have identified some women farmers who seem interested in your innovation.

These women could become early adopters of your product, service, or technology, and go on to become your ambassadors, supporters, and community influencers. Identify evangelists, supporters, and community influencers.

Start by identifying women smallholder farmers who are more inclined to consider new technology and also have the disposable income to invest.



HOW TO

Seasonality plays a big role in acquiring early adopters. In a research study conducted among women farmers in Tamil Nadu, India, 91% of the survey respondents said they bought a new technology at the start of a crop season. Of this number, almost half of them consulted their husbands before doing so.

**HOW TO**

You could identify early adopters in the community by looking for the following:

- Women farmers who are already using or are interested in adopting agritech to increase their productivity,
- Women farmers who are willing to work in groups and are open to the option of collective purchase of your product, service, or technology,
- Women who are farm owners and believe in progressive farming techniques,
- Women farmers who have used microfinance services or obtained a loan in the past, and
- Women farmers who are working together on the farm with their husbands or family members.

Once you have identified the potential early adopters in your community and assessed the level of motivation for buying your product, service, or technology, use the following strategy to take the early adopters from a stage of being motivated to actually buying your innovation.

**MOTIVATED TO BUY**

- Use action messages: When, where, and how to buy
- Use community groups and key enablers to counsel and motivate women to request product demo

**READY TO BUY YOUR PRODUCT, SERVICE, OR TECHNOLOGY**

- Reduce barriers of affordability and accessibility
- Emphasize short- and long-term benefits
- Address other risks in buying by adopting a problem-solving approach

*Adapted from "Communication for Behavior Change:" - The World Bank, 1996, by Cecilia Cabanero-Verzosa, p. 4 - Figure 2.*

## Motivating women to purchase your innovation through key enablers

One of the most successful promotional activities to increase agritech adoption among women is product demonstrations (demos). Direct your sales efforts and demos to the following segment of women to maximize your results:

- Self-help groups of women farmers,
- Women leaders in the community,
- Women farmers with higher literacy levels and more disposable income, and
- Women who are farm owners and are already using agricultural technology on their farms.

## Reducing key risks and barriers to adoption

In most cases, women might not be willing to make the purchase of an innovation even if they think that it could be of value to them. As noted in several research

studies and our field experience, women might have concerns about the affordability, accessibility, and usability of the product, service, or technology. Hence, there is a need to mitigate all of these risk factors to make the final sale to the women smallholder farmers. The following section discusses ways to mitigate these risks.

## Create robust sales and distribution channels

Women smallholder farmers have several mobility constraints to accessing farm inputs and tend to participate less in male-dominated agricultural training. Creating an extended sales team is a cost-effective way of initial lead generation. However, to be more effective, employ women as extended sales agents because of the higher trust factor and ease of interaction with other women in the community. Plan your sales strategy using the following steps.

**HOW TO**

Initial demonstrations at local schools, community halls, fairs, etc. help spread the word through to the whole community. This approach can be used to indirectly target women through their kids and other household members who could play an important role in the overall decision-making process.

**STEP 1**

### Involve the right group of sales agents

The following characteristics can help you identify effective sales agents:

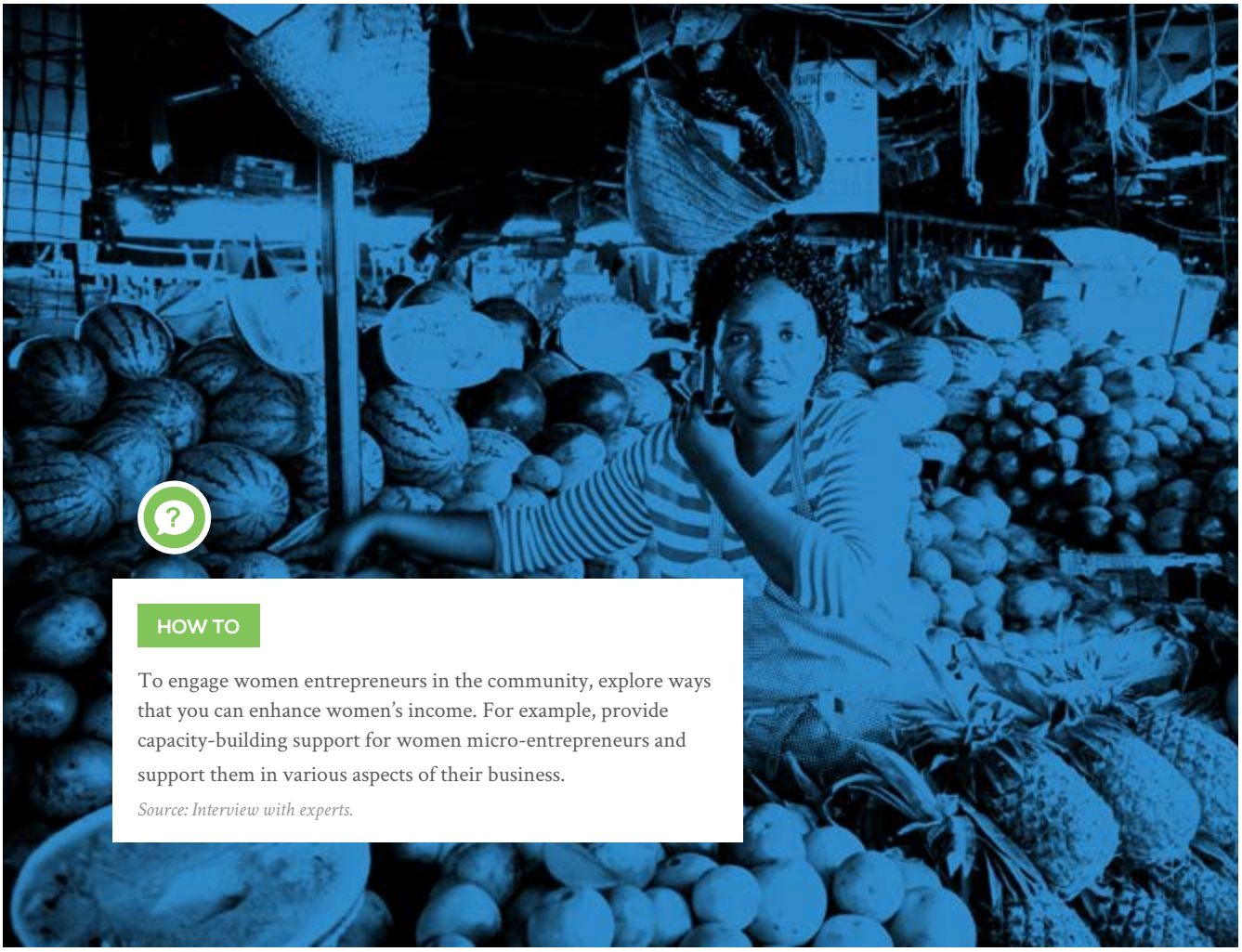
- Progressive women in the community who can influence other women,
- Local supporters, and community influencers for agricultural technology (e.g., a progressive farmer in the community), and
- Active non-profits that can help in marketing your products, services, or technologies.

**STEP 2**

### Employ women as extended sales agents

| POTENTIAL ROLE OF WOMEN | ROLE DESCRIPTION | HOW CAN THEY BE MORE EFFECTIVE |
|---|---|---|
| Promotion agents | Offer access to your product, service, or technology<br><br>Conduct detailed training programs exclusively for women farmers | Include women staff as promotion agents or train them<br><br>In case of male promotion agents, conduct group interactions with women to reduce the fear of transgressing socio-cultural norms |

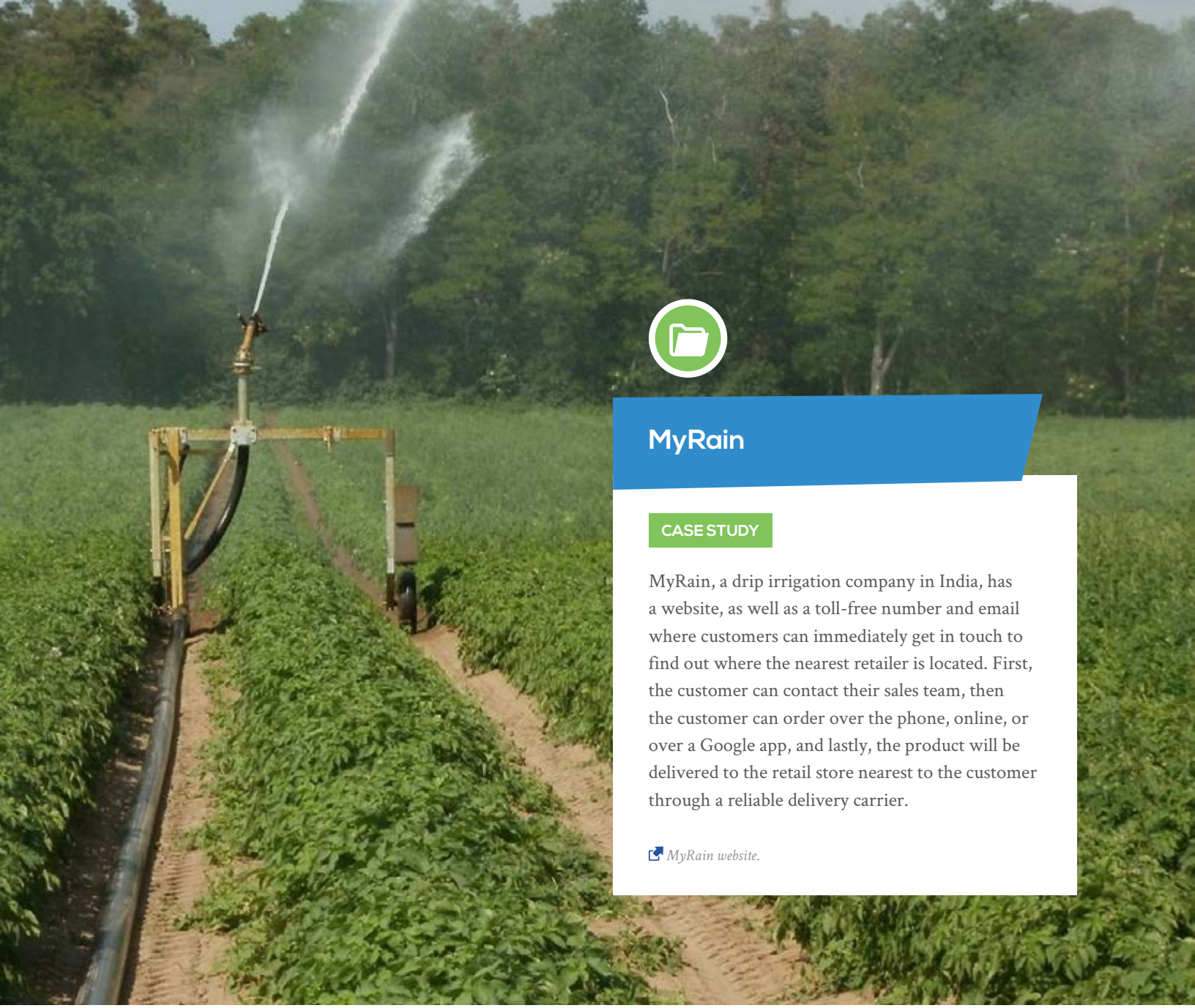
| POTENTIAL ROLE OF WOMEN | ROLE DESCRIPTION | HOW CAN THEY BE MORE EFFECTIVE |
|---|---|---|
| **Farmer liaison workers and evangelists, supporters, and community influencers** | Trusted advisors for women in the community to facilitate flow of knowledge, inputs, and technical assistance<br><br>Providing qualified leads | Equipped with mobile phones and other tools |
| **Local women entrepreneurs** | Sell directly to women micro-entrepreneurs and small retailers<br><br>Conduct product demos for the potential customer | Train women entrepreneurs to be your extended sales team and provide incentives, such as monthly rewards, recognition, bonuses, and promotions |



**HOW TO**

To engage women entrepreneurs in the community, explore ways that you can enhance women's income. For example, provide capacity-building support for women micro-entrepreneurs and support them in various aspects of their business.

*Source: Interview with experts.*



## MyRain

CASE STUDY

MyRain, a drip irrigation company in India, has a website, as well as a toll-free number and email where customers can immediately get in touch to find out where the nearest retailer is located. First, the customer can contact their sales team, then the customer can order over the phone, online, or over a Google app, and lastly, the product will be delivered to the retail store nearest to the customer through a reliable delivery carrier.

*MyRain website.*

STEP 3

## Make your product, service, or technology accessible

Most women farmers can't travel long distances to formal retail outlets. Locate your point of sale within walking distance of the farmer or bring your product/service/technology directly to the farmer and her family.

To increase accessibility of your products, services, and technologies, consider:

- **Leveraging indirect sales models** such as "Feet on Street" networks through local engagements,
- **Utilizing a network of corporate partners or small organizations** that are already delivering products, services, and technologies to the last mile in the community,
- **Training the distribution team with a customized sales pitch for women farmers** that highlights a clear value proposition,
- **Setting up kiosks that provide product/service/technology information** and facilities for transactions, and
- Sharing a **toll-free** phone number.

STEP 4

# Make your innovation affordable to women and their families

Access to finance has emerged as one of the biggest barriers for women farmers to adopt a new technology. Potential ways to create affordability for your innovation among women and their families are:

- Reduce **operating costs**, useful in high volume scenarios where broader adoption will lead to reduced unit costs in the operating model,
- **Redesign the product** to reduce the cost (refer to Chapter One on product redesign), and
- **Provide alternate financing options** to the women farmers where they share the risk, such as collective purchasing (highly recommended).

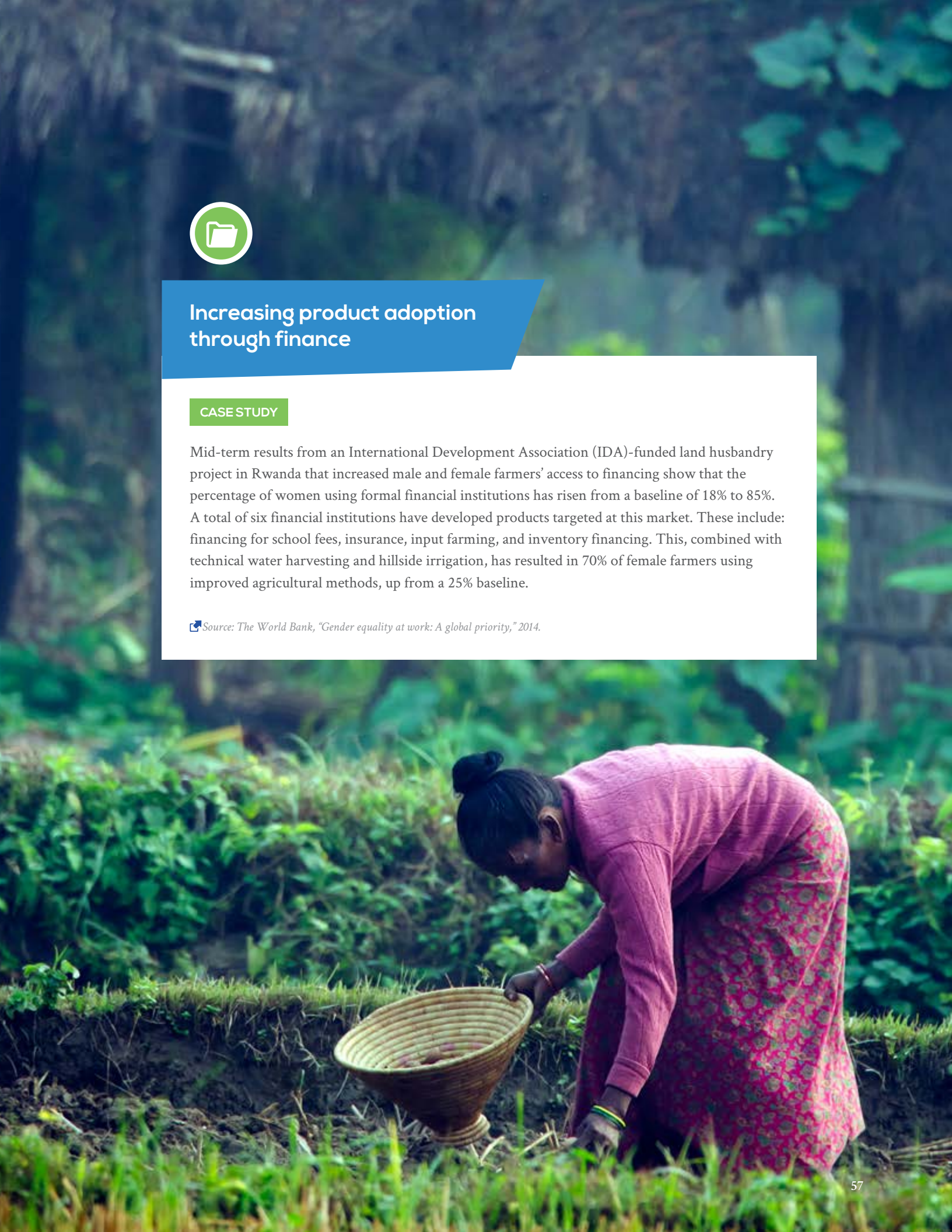
Consider the following options to create alternate financing channels to bring down the risk for your product, service, or technology:

- Create **group-based delivery options** where women's collectives can share the cost or loan repayment responsibility,
- **Offer rental options** or a pay-per-use model for high-cost, heavy technology,
- **Provide financing options** like monthly installments bundled with necessary after-sales services, such as maintenance and repair. Offer a flexible repayment plan to coincide with the cash flow cycles of the women farmers,
- Work in partnership with **microfinance institutions (MFIs) and similar intermediaries**, based on rotating systems and self-help groups to leverage loans and endorsements, and
- Partner with **government and financial programs for rural development** in the region to provide access to innovations targeted to women farmers.

HOW TO

Membership-based financial organizations (MBFOs) operate effectively in rural communities in the absence of banks and professionally-managed microfinance institutions (MFIs). Relationships can be developed with banks if they are located within a reasonable distance of the MBFO and if members are interested. This relationship may start quite modestly with the opening of a bank account. That simple step can be empowering for people, especially women, who have never had access to a bank account. MBFOs include financial cooperatives, credit unions, and self-help groups, as well as their apex organizations and federations. These MBFOs may supplement the funds available from members' savings through linkages with banks or arrangements with donor agencies.

*Source: The World Bank, "Gender in Agriculture Workbook," 2009.*



## Increasing product adoption through finance

CASE STUDY

Mid-term results from an International Development Association (IDA)-funded land husbandry project in Rwanda that increased male and female farmers' access to financing show that the percentage of women using formal financial institutions has risen from a baseline of 18% to 85%. A total of six financial institutions have developed products targeted at this market. These include: financing for school fees, insurance, input farming, and inventory financing. This, combined with technical water harvesting and hillside irrigation, has resulted in 70% of female farmers using improved agricultural methods, up from a 25% baseline.

*Source: The World Bank, "Gender equality at work: A global priority," 2014.*

HOW TO

Identify risk appetite by asking questions such as:

- Do you believe that agricultural technology can provide you with ongoing revenue and become a valuable asset for the future?
- Are financing options (e.g., savings, building assets, social capital) available to women? If yes, are they inclusive of their needs? Are the premiums within women's capacity for payment (in terms of amount and regularity)?
- Are insurance policies available that provide financial security to the women and children in the household in case of illness or calamity?

## Mitigate risks of transactions

The smallholder women farmer segment is vulnerable to several risks. These should be mitigated in order to create a secure environment for women to carry out transactions.

Following is a list of key potential risks and ways to mitigate the risks:

- Have a compelling explanation for how your products, services, or technologies will directly increase **customers' income in the short term,**
- **Reduce risk of indebtedness** by accepting women-owned assets such as jewelry and utensils as collateral,
- **Provide money back guarantees or replacement options** in case of faulty product or dissatisfied results for the woman farmer, and
- Deliver **technical assistance sessions** regularly to the women farmers. This will ensure that women are able to efficiently use the technology, thereby reducing the chances of abandoning the product, service, or technology.

NOTES

## Global Easy Water Products (GEWP)

CASE STUDY

GEWP took a direct approach in persuading farmers to try its micro-drip irrigation product. When the company was setting up demonstration plots of one-quarter acre each, company representatives would ask farmers how much money they expected to earn from the yield of that much land. Since the company representatives understood the value of the crops, as well as how drip irrigation would increase yields, the company offered to pay each farmer the amount the farmer had suggested, regardless of actual yields. This essentially guaranteed the farmer a minimum income for that plot of land, eliminating risk. The micro-drip systems worked so well that GEWP never had to pay cash to a farmer for a failed crop.

*Source: Bain Acumen Report, "Growing prosperity: Developing repeatable models to scale the adoption of agricultural innovations," 2014.*

# 3.3 Market retention and growth

## Outcome

Upon your completion of this section, you will be able to:

1. Develop an **after-sales strategy** to engage with customers,
2. Create a **feedback collection and evaluation** mechanism,
3. Develop a method to **integrate the feedback** and make iterative improvements in the product or processes,
4. Create a format of **documenting success stories** and channels to share these stories,
5. Evolve your **initial brand story and communication content,** and
6. Develop a **brand strategy** with a gender perspective.

As agritech businesses gain reach and penetration, customer retention takes center stage. Customer retention strategies in rural markets are markedly different from those used in urban markets. For early stage companies, it is necessary to sustain repeat sales by providing consistent after-sales service. This will help companies to capitalize on the initially-acquired customer base.

The framework below highlights the importance of maintaining the momentum among your women customers through repeat sales and excellent after-sales support service. Target growth in other markets on the basis of their customers' success stories.

| REPEAT BEHAVIOR IN THE SHORT TERM | USE ADAPTED BEHAVIOR FOR EXPANSION |
|---|---|
| • Strengthen trust through excellent customer service and community engagement<br>• Gather feedback to keep your products, services, and technologies relevant to your women customers<br>• Assure the women of their ability to sustain the behavior change | • Document success stories and testimonials from satisfied customers<br>• Share stories to build a brand around your core purpose |

*Adapted from "Communication for Behaviour Change" - The World Bank, 1996, by Cecilla Cabanero-Verzosa.*

Retaining customers is challenging; it demands continuous trust building and regular interactions. The next section outlines ways to retain customers.

# Strengthening the relationship

Here are several specific actions that you can take to strengthen your customer support.

- Provide on-time **after sales services**,
- **Deliver on the promise** made at the time of sales by providing a quality product, service, or technology
- **Involve their families** through other activities,
- Make them feel like they are your **company's brand ambassadors,**
- **Create women farmer clubs** in the community and engage with them through education. This can greatly strengthen the trust shared between your company and the women,
- **Train your staff to be deeply committed** in order to gain the trust of the women in the community,
- Build a cordial relationship and **keep local influencers** like school and health leaders updated about your work. A positive recommendation coming from influencers builds trust with the women,
- Invest in **frequent technical training programs,** especially for complex technology, and
- **Provide discounts/incentives/bonuses** to women or their family members for successful referrals.

# Customer satisfaction and feedback

Good after-sales support eliminates switching costs and helps retain customers. At the same time, building a robust after-sales service system has been seen as the biggest challenge for early stage small market enterprises (SMEs), as the cost of retaining the customer is normally very high. Hence, there is a need to devise a cost-effective after-sales service system. This can be done in the following ways:

STEP 1

## Communicate regularly

Identify the best medium to regularly communicate with women. For example, provide a phone number specifically for women customers where the phone is answered by a woman after-sales specialist. A woman customer is more comfortable in calling after-sales support if she is aware that there is a woman at the other end.

STEP 2

## Make the after-sales process easy to use and cost-effective

- **Partner with local agri-retailers** who can take support to the doorstep of customers,
- Provide customers with **free after-sales service** for a limited number of times,
- **Use vans and vehicles** to provide mobile support in a cost-effective way,
- Give customers a **single point of contact** that she is able to reach every time, and
- **Drive awareness around maintenance and upkeep** so women continue to be satisfied with the product, service, or technology.

# Measuring customer satisfaction levels

As an agri-innovator, your goal is to keep your customers happy in order to grow your business. From surveys to informal calls, there are various affordable ways in which you can gather feedback on current customer satisfaction levels and tweak your product, service, or technology. For your benefit, we have listed some commonly used methods, the optimum frequency of use, as well as the most effective way to gather feedback.

| TOOL | PURPOSE | FREQUENCY | MODE |
|---|---|---|---|
| **After-sales support feedback**  | To gather feedback about support services | After every support engagement | Can be done over a call<br><br>A quality assurance person should be involved in this process |
| **Net promoter Score**  | To measure and forecast new sales<br><br>Assess word-of-mouth publicity | Once every quarter with a focused sample size | Run the survey face to face with help of local women groups/partners |
| **Product feedback survey**  | To assess the needs of the customer and validate your solution's desirability | Once every quarter with diverse customers | Via phone call to at least 20% of women customers |
| **Brand perception survey**  | To assess overall brand perception<br><br>Feedback on your product, service, or technology, sales process, and after-sales service quality | Once a year with a representative sample set of women | Face to face and by phone |

STEP 3

## Design and conduct customer satisfaction surveys

- Design the survey in the local language,
- Run the survey with the help of staff/partners who are fluent in the local language,
- Include women surveyors,
- Approach women at a time when they are free of their daily chores to assure maximum participation,
- Nominate one or more of your women customers to run the survey in their village. This serves two purposes: builds trust among your women customers and also reduces cost of running physical surveys, and
- Incentivize women for responding to your survey. Small gifts for them and their families go a long way in strengthening your relationship and their participation in the overall feedback process.

HOW TO

To measure your impact and success, carry out a survey with two sample populations, one that are your customers and use your product, service, or technology, and the other, who do not use your product, service, or technology. Carry out a comparative analysis between customers and non-customers to show the impact of your solutions. This might trigger greater adoption if the impact is positive.

## Iterative feedback

The surveys explained above can give you a fair amount of data and insights toward improving products and processes.

Analyze data gathered through surveys and filter the insights into three buckets: product, after-sales support, and need alignment.

| FEEDBACK PARAMETER | WHO TO GATHER FROM | WHOM TO INVOLVE IN INTERNAL ANALYSIS | OUTCOME |
|---|---|---|---|
| **Product improvement** | Women customers, experts in the field, retailers | Product development team | New product features and product redesign considerations |
| **After-sales support** | Individual women customers | Sales team and after-sales support team | Improving customer service for women |
| **Need alignment** | Women customers, extension groups, key influencers, and decision-makers | Leadership and product development team | Iterating and upgrading the product offering |

STEP 4

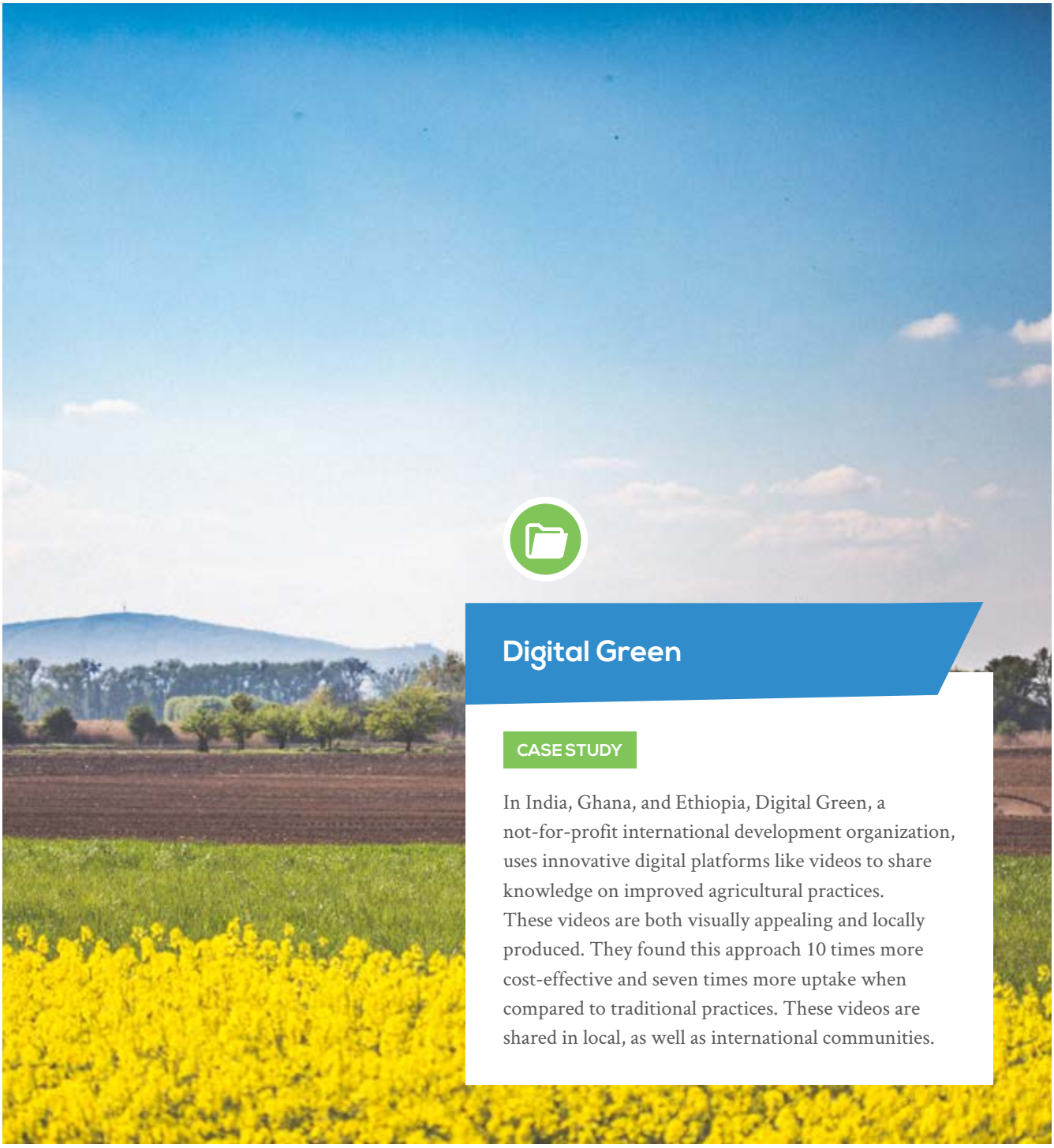
## Documentation of success stories

Documentation of customer success is an area often missing in early stage companies. Documenting and promoting customer stories is one of the easiest ways of building a brand. Here are some recommendations toward building a documentation process.

| WHAT TO DOCUMENT | METHOD | FREQUENCY | USAGE |
|---|---|---|---|
| **After sales service support** | Video interviews | Regular | Website, online marketing |
| **Positive impact due to adoption of your product** | Case studies with photos | Quarterly | Newsletter |
| **Women's group success stories** | Focus group discussion videos | Quarterly | Website, online marketing |
| **Feedback from evangelists, supporters, community influencers, and experts** | Interviews | Bi-annual | Agricultural magazines and conferences |

# Replicating success to build your brand

Once there are success stories around your product, service, or technology, do share them by disseminating widely in your ecosystem. Pick the appropriate medium to communicate and spread the message. The voice of your satisfied women customers becomes a significant and cost-effective way to build brand. When selecting mediums to communicate your message, select online/mass media/radio/conferences/local fairs with care.



## Digital Green

CASE STUDY

In India, Ghana, and Ethiopia, Digital Green, a not-for-profit international development organization, uses innovative digital platforms like videos to share knowledge on improved agricultural practices. These videos are both visually appealing and locally produced. They found this approach 10 times more cost-effective and seven times more uptake when compared to traditional practices. These videos are shared in local, as well as international communities.

4

# Appendix

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## References


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## Tools


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IDEO's Human-centered design approach is a practical, repeatable approach to arriving at innovative solutions. These methods are a step-by-step guide to unleashing your creativity, and putting the people you serve at the center of your design process to come up with new answers to difficult problems.


Knowledge Sharing Toolkit. (2015). Participatory rural appraisal (PRA). Available: http://www.kstoolkit.org/Participatory+Rural+Appraisal+%28PRA%29


Participatory rural appraisal (PRA) is an approach used by non-governmental organizations (NGOs) and other agencies involved in international development. The approach aims to incorporate the knowledge and opinions of rural people in the planning and management of development projects and programs.


Six Sigma. (2015). Pugh Matrix. Available: https://www.isixsigma.com/tools-templates/pugh-matrix-tools-templates/


The Pugh Matrix is a tool used to facilitate a disciplined, team-based process for concept generation and selection. Several concepts are evaluated according to their strengths and weaknesses against a reference concept called the datum (base concept). The datum is the best current concept at each iteration of the matrix.

**PUGH MATRIX**

| CRITERIA | CURRENT SOLUTION | REDESIGNED SOLUTION #1 | REDESIGNED SOLUTION #2 |
|---|---|---|---|
| Ease of use | | | |
| Affordability | | | |
| Risk sharing | | | |
| Increase in income | | | |

Graeff, J.A., editor. UNICEF. (2008). Writing a communication strategy for development programmes. pp. 7-66.

The UNICEF Bangladesh Programme Communication Coordination Team has prepared this Guideline, Writing a Communication Strategy for Development Programmes, as a practical manual for development professionals. The Team has developed this tool to guide the actual writing of a communication strategy for a programme or a project — a strategy that supports a programme to achieve its development goals, especially its social and behavioural objectives. This tool guides the writer on the strategy and how to incorporate research and analysis into a communication strategy document.

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## List of abbreviations

| | |
|---|---|
| **ADP** | World Bank Agriculture Development Project |
| **CBO** | Community-based organization |
| **FAO** | Food and Agriculture Organization |
| **GDP** | Gross domestic product |
| **GEWP** | Global Easy Water Products |
| **MBFO** | Membership-based financial organizations |
| **MFI** | Microfinance institution |
| **MHT** | Mahila Housing Trust, located in Gujarat, India |
| **MIT** | Massachusetts Institute of Technology |
| **NGO** | Non-governmental organization |
| **PRA** | Participatory rural appraisal |
| **ROI** | Return on investment |
| **SEWA** | Self Employed Women's Association, India |
| **Sida** | Swedish International Development |
| **SME** | Small-to-medium enterprise |
| **SWFF** | Securing Water for Food |
| **U.S.** | United States |
| **UN** | United Nations |
| **UNICEF** | United Nations Children's Fund |
| **USAID** | U.S. Agency for International Development |
| **WB** | World Bank |
| **WOCAN** | Women Organising for Change in Agriculture and Natural Resource Management |
| **HDI** | Human Development Index |

*IMAGE CREDITS*

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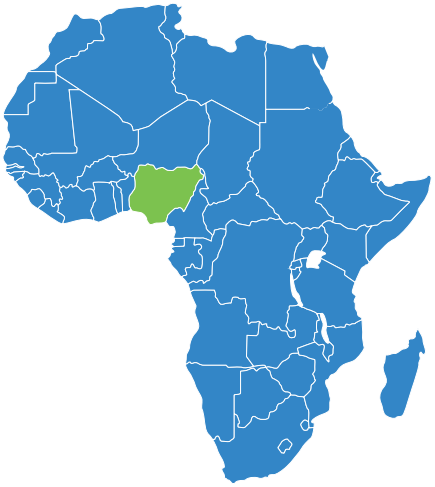
# NIGERIA



## Agriculture: The New 'Oil' in Nigeria

Nigeria is the most populous country in Africa and one with the youngest demographic. Sixty-two percent of the country's 186 million people live in extreme poverty.

Nigeria has vastly underutilized agricultural resources — **84 million hectares** of arable land, **two of Africa's largest rivers**, and **a large and young workforce** to support agricultural intensification. Plus, the country has 186 million customers to support increased food production and processing.

Agriculture is positioned as key for the present and future of the Nigerian economy: Over US$5 billion private investment has occurred in agriculture over the last five years. Widespread opportunities now exist across all key value chains and especially in mechanization, mid/large scale farming, and agro processing. **Over 70% of the country's agricultural output comes from smallholders, mostly rural women.**

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 24.18%
Land use: 78% agriculture, average farm size = 1.5 hectares
Irrigated land: 2,930 sq km

Harvest: Cocoa, peanuts, cotton, palm oil, corn, rice, sorghum, millet, cassava (manioc, tapioca), yams, timber, rubber

Livestock: Cattle, sheep, goats, pigs

## WOMEN PARTICIPATION IN FARMING

Women are heavily involved in Nigeria's agriculture. However, they have smaller and less secure plots of land, less access to physical inputs, such as fertilizer and herbicides, less use of labor, and less extension services, leading to less value.[1]

Extension worker ratio: 1:10,000 farmers. 70% of smallholders are women.

Important Roles:

- Labor force: 60-79%[2]
- Husbandry: 90%
- Landowners: 10%

## ECONOMY

Nigeria's **economic growth** over the last five years has been driven by growth in agriculture, telecommunications, and services.

Because of lower oil prices, GDP growth in 2015 fell to around 3%, and government revenues declined, while the non-oil sector also contracted. The Government has introduced plans toward transparency, diversifying the economy away from oil, and improving fiscal management. The government is working to develop stronger public-private partnerships for roads, agriculture, and power.

*Source: CIA World Factbook (2017), Nigeria National Statistics Bureau (2016) (Data obtained February 2017).*

*1. Policy brief on gender dimensions in Africa, The World Bank; 2. www.mcser.org/journal/index.php/mjss/article/download/5269/5086.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** Average income levels of women are 1/3 of men's for the same work.[3]

**Access to credit:** Women farmers receive less than 10% of the credit offered to small-scale farmers.

**Access to extension services:** 15% of male-headed farmer households receive extension services, whereas only 8% of women-headed farmer households do.

Only 15% of women are beneficiaries of government programs.

### GOVERNMENT PROGRAMS

**Agri-program:** The ADP system has enabled remarkable success in the agricultural and rural landscape of Nigeria. ADPs have led to revitalized extension services, local capacity building, rural infrastructural development, input distribution, technology development, transfer and adoption, as well as improved rural livelihood and food security.[4]

### PARTNERSHIPS

**Extension services:** The Goverment is training more than 100,000 workers as agriculture extension workers, drawn from over 500,000 teachers (2016).

**Financial services:** Microfinance is still at a developing stage, with 46% of the population excluded from access to financial services. There is a strong presence and development of MFIs and lending institutions.[5]

### SOCIO-CULTURAL FACTORS

**Restrictions:** Technologies such as bicycle mounted rice thresher are considered culturally inappropriate.[6] Cultural norms restrict women from accessing ICT.

### TECHNOLOGY FOR WOMEN FARMERS

**Technologies:** Women farmers lack access to information on new technologies.[7] There is a strong need for post harvest technologies for women.[8] Mobile phones are ubiquitous: there is 94% penetration.[9]

### LEGAL FACTORS

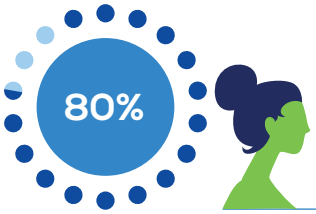
**Land titles:** 90% of agricultural land is registered in the names of male farmers. Less than 14% of women farmers own the land they work on.

**Legal structures:** limit women owning land. Inheritance law applies but only those who are married under statutory law.

*3. News article; 4. ADP program; 5. Microfinance transparency article; 6. IAAE gender paper; 7. MPRA paper; 8. News article; 9. News article; 10. FAO land rights database.*

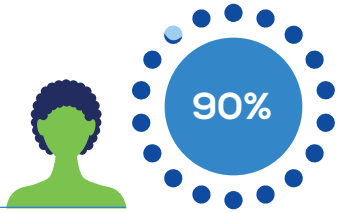
# WOMEN CUSTOMERS

(1-1 survey conducted among 30 women farmers in Nigeria in February 2017)




80% of the respondents said that they are aware of the govt. support they are supposed to receive.

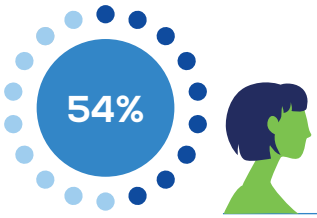
90% of the respondents felt happy with the level of support they had received so far.




This shows that the government in Nigeria is pro-farming and supportive in progressive agricultural reforms.


Over 50% of the women confirmed that no matter who made the decision, the final consultation was always done with the husband, clearly indicating he is the key decision-maker.

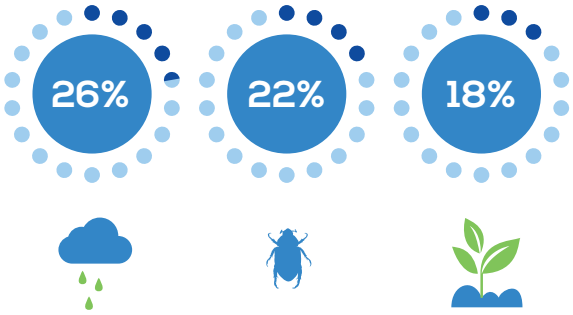
Inclusion of local men while creating the product design, marketing, and implementation strategy might be a key factor.




Almost 54% of the women respondents said that they make an average monthly income of US$150-500 from agriculture.

This indicates that agriculture might be the primary source of income for a majority of families in this region.

The top priorities for women to adopt technology in Nigeria are: saving time, cost efficiency, and high productivity/yield, while the top three challenges they face are:




Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.


20% of the women said that they would prefer taking money from cooperatives.


Almost 40% of the women said that they would prefer to opt for loans from agricultural development banks in order to avail of technology and related services.

Inclusion of agricultural development banks while marketing might be a key factor.

# Agritech resources in Nigeria

## Verdant

**Information Resource:**
Verdant offers personalized scientific agricultural information and market intelligence to crop farmers through a mobile app.

http://verdantapp.com

## NaanDanJain

**Industry Competitor:**
Has tailor-made irrigation solutions to increase yields, save water, and support a sustainable future.

http://www.naandanjain.com/Company/Irrigation-Solutions/

## Farmcrowdy

**Potential Partner:**
Farmcrowdy, described as Nigeria's first digital agriculture platform, enables Nigerians across the world to commit a sum to starting and completing a farming cycle. Farmcrowdy uses the money to sponsor farmers.

https://www.farmcrowdy.com/

# KEY FACTORS FOR ADOPTION OF TECH

- Women farmers in Nigeria are overworked, between managing the home, land, and other duties. Anything that saves time is important.
- Twenty-five to 30% of households are managed by women as men have migrated or divorced, making women the decision-makers even though they may not have access to information, especially in Northern Nigeria.
- Access to labour for agriculture is a key gap area for women farmers in Nigeria.
- Women lack mobility and hence depend on others to market their produce, leading to poor prices.
- Women don't have time or access to new technologies or new ways of doing things. Innovators interested in reaching women need to bring their technologies to their doorstep and work to create efficiencies in the use of the technology.
- Technology is never associated with women culturally, and therefore, innovators need to adapt every aspect, from design to sales, for women
- The form factor of agritech products need to take into account women's height and body structures so they can use it.
- Linkages between farmers and entrepreneurs could ease adoption of tech.

# KEY ENABLERS

- Although inadequately unrecognized, there is high participation of women across roles in agriculture over a decade, making them experienced farmers.
- Nigeria is the first country in Africa to develop and use mobile phones to reach farmers with subsidized farm inputs.
- Cooperatives serve as an important leverage to get equal footing, as well as gain access to credit, inputs, and other useful elements.

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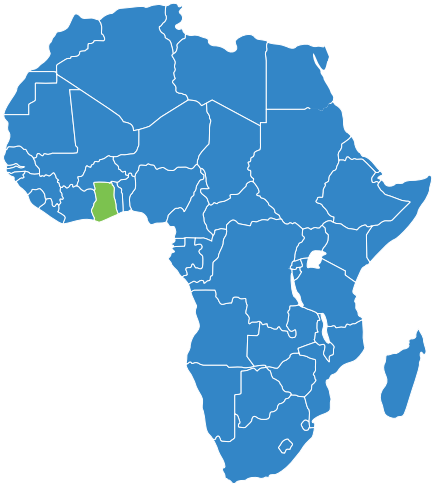
- *The Guardian Nigeria, article on women farmers and entrepreneurs, July 2016.*
- *Journal of Agriculture Extension, "Implications of feminization of agriculture on women farmers in Anambra State, Nigeria," 2013.*

# GHANA



## Agriculture: Opportunities for sustainable development

Situated on the coast of West Africa, Ghana's population of over 26 million is young, with 57% below the age of 25. Ghana has decreased its poverty rate from 52% in the early 1990's to 21% in 2012.

Agriculture accounts for nearly 25% of the GDP and employs more than half the workforce, who are mainly small landholders. Ghana is the second largest cocoa growing country in the world. Rapid urbanization has led to a number of sustainable development challenges, particularly regarding sanitation and transportation infrastructure.

In West Africa, women have leadership roles in the fishing sector, supported in part by the World Bank-sponsored West Africa Regional Fisheries Program (WARFP).

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 19.5%
Land use: 69.1% agriculture, average farm size = 1.2 Hectares
Irrigated land: 340 sq km (2012)

Harvest: Cocoa, rice, cassava, peanuts, corn, shea nuts, bananas, timber, fish

## WOMEN PARTICIPATION IN FARMING

30.5% of women in the workforce are in the agricultural sector.
Female led-farms, especially those that are of medium or large size, are more likely to be market-oriented than farms of similar size held by men.

- Extension worker ratio: 1:1,500 (2003 data)
- Women primarily grow food, while men grow cash crops.

## ECONOMY

In Ghana, the GDP growth is 3.3% (2016). The services sector in Ghana accounts for more than half of the GDP. Cocoa exports and individual remittances are a major source of foreign exchange. Expansion of the oil industry has helped in boosting economic growth, but the recent oil crash reduced Ghana's 2015 oil revenue by half.

*Source: CIA World Factbook (2017), UNICEF statistics (2017), FAO statistics on Ghana (2017), The World Bank (2017) (Data obtained April 2017).*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** Female farmers earn 0.51 Ghanaian Cedi per hour.[1]

**Access to credit:** Main source of credit for women is informal circles like relatives and friends. Only 41% of women access credit from banks.[2]

**Access to extension services:** Access to extension services by female farmers is less than 5%.[3]

### GOVERNMENT PROGRAMS

**The Women in Agriculture Development Directorate (WIAD):** Develops and implements policies that are beneficial to women farmers and works on gender mainstreaming of agricultural policy, programs, and projects.[4]

**Gender and Agriculture Development Strategy (GADS):** Provides a framework for achieving a gender-sensitive agricultural sector.

### PARTNERSHIPS

**Public/private partnerships:** Promotes the development of large scale commercial farms, access to financial services, and inter-sectoral linkages to rural agriculture.[5]

**Ghana Agriculture Technology Transfer:** The project is developing and promoting new agricultural technologies for improved seed, soil fertility, management, and labor-saving machines.

### SOCIO-CULTURAL FACTORS

**Empowerment:** Women's leadership in the household and income production determines their involvement in cash crop production.

**Marital ties:** The stability of marriage determines women's access to agricultural resources.[3]

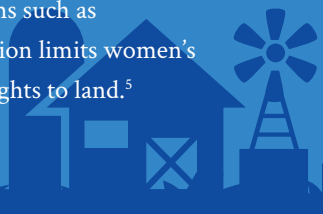
### TECHNOLOGY FOR WOMEN FARMERS

Women farmers are leveraging mobile phone services for weather updates, market prices of crops, and for the latest farming techniques.

### LEGAL FACTORS

**Land titles:** 10% of women farmers own land; women seldom own the land that they cultivate.[4]

**Legal structures limit:** Customary inheritance systems such as patrilineal succession limits women's legal succession rights to land.[5]



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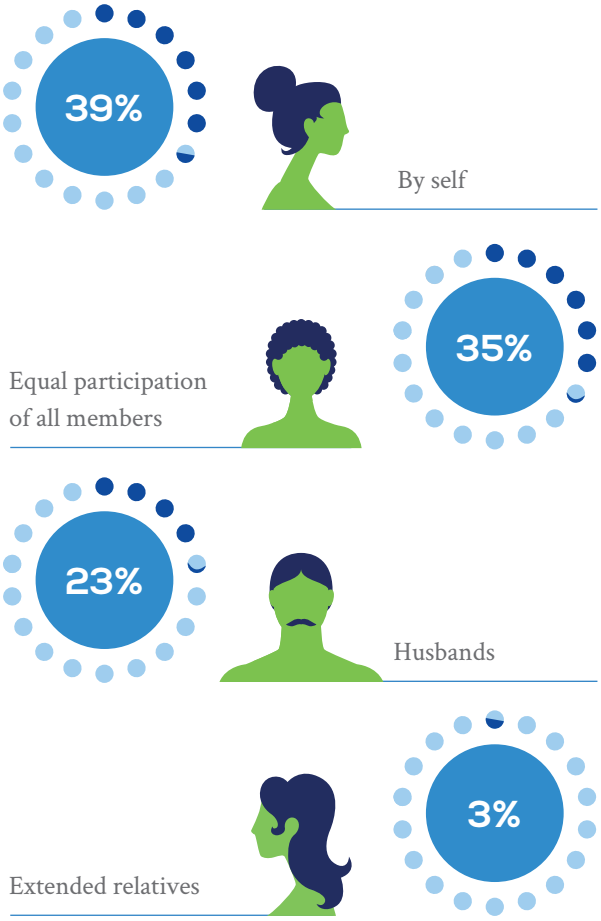
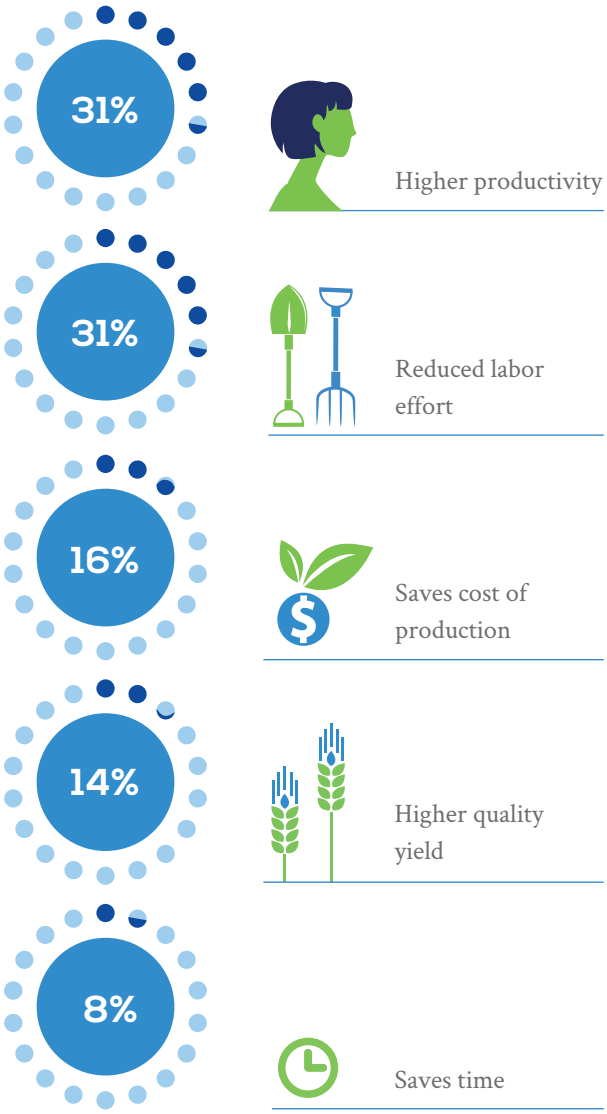
# WOMEN CUSTOMERS

(1-1 survey conducted among 50 women farmers in Ghana in February 2017)

65% of the women confirmed that no matter who made the final decision, the final consultation was always done with the husband, clearly indicating he is the key decision-maker.




Inclusion of local men while creating the product design, marketing, and implementation strategy might be a key factor.

The top priorities for women to adopt technology in Ghana are: reducing labor effort, increasing productivity, and saving money.

Top three challenges they face are:


Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

## Agritech resources in Ghana

### Farmerline Ltd

Mobile-based service provides critical agriculture information in the farmer's local language. The service includes a helpline for questions.

http://farmerline.co/

### TroTro Tracto

Provides a GPS enabled mobile platform that connects farmers to owners of mechanized farming equipment within their vicinity.

http://www.trotrotractor.com/

### Ghalani

A mobile and web-based system to manage and integrate agribusiness operations.

https://www.ghalani.com/

## KEY FACTORS FOR ADOPTION OF TECH

- Women divide time between managing their households and working on the farm. Labor- and money-saving technology could ease the burden for women.

## KEY ENABLERS

- Compared to men, women own less land and livestock, and have less access to farm inputs, such as seeds, fertilizer, equipment, and finance. Promoting gender equity for women smallholder farmers will increase women's productivity, yield, and income.

FURTHER READING


- *Gender, Equity and Rural Employment Division, FAO, "Gender Inequalities in Rural Employment in Ghana: An Overview," 2012.*
- *USAID, "Integrating gender into market systems analysis: women farmers in Northern Ghana "Gender Inequalities in Rural Employment in Ghana: An Overview."*
- *The World Bank,"Gender and governance in agriculture extension services: Insights from India, Ghana and Ethiopia.," Ghana Journal of Development Studies, 2013.*

# KENYA

## Agriculture: The backbone of Kenya's strong economy

Kenya, geologically and ecologically diverse, is a lower middle-income country with a population of approximately 46 million people. It is the economic and transport hub of East Africa. Kenya's real GDP growth has averaged over 5% for the last seven years, with a goal of 8-10% growth in order to impact poverty and unemployment rates.The poverty rate in Kenya was about 33% in 2005, up from 21% in 1997.

Agriculture remains the backbone of the Kenyan economy, contributing to 25% of the GDP. About 80% of Kenya's population of roughly 42 million work at least part-time in the agricultural sector, including livestock and pastoral activities. Over 75% of agricultural output is from small-scale, rain-fed farming or livestock production.

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 32.7%
Land use: 48.1% agriculture
Irrigated land: 1,030 sq km

Harvest: Tea, coffee, corn, wheat, sugar cane, fruit, vegetables, dairy, eggs

Livestock: Cattle, pork, poultry, fish

## WOMEN PARTICIPATION IN FARMING

Women make up a large proportion of the agricultural sector. However, women struggle with inequity - few own property or have collateral for loans. Transportation is problematic, as is the expense of inputs coupled with a small profit margins.

Important Roles:

- Labor force - 60-79%
- Husbandry - 90%
- Landowners - 10%

## ECONOMY

Infrastructure investment will improve Kenya's economic growth, such as the completion of a railway connecting Mombasa, the largest port in East Africa, and Nairobi, the capital of Kenya. However, the current drought and resultant food insecurity, along with an increase in energy production costs due to decreased hydropower output, is expected to slow Kenya's economic growth. Fostering competitiveness in agricultural input and output markets will contribute to economic growth.

*Source: CIA World Factbook(2017), The World Bank (Data obtained April 2017).*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

Women provide 75% of the labor to manage 40% of small scale farms. Up to two-third of women in rural areas are engaged in subsistence farming. Women face a number of constraints which limit their productivity, e.g., restricted access to resources like improved inputs, extension services, and marketing facilities.[1]

### GOVERNMENT PROGRAMS

**Kenya National Agricultural Insurance Program:** This program aims to improve farmers' financial resilience and enable them to adopt improved production processes to help break the poverty cycle of low investment and low returns.[2]

70% of the Ministry of Agriculture's budget is spent on extension services.[3]

### PARTNERSHIPS

**Rooted in Hope:** Works toward the empowerment of Kenyan women through microcredit schemes and sustainable development.

**Partners Worldwide:** Promotes women entrepreneurship in the agriculture sector.

**Frontline SMS:** Frontline has partnered with the Ministry of Agriculture to create an avenue for direct communication between rural farmers and experts.[4]

### SOCIO-CULTURAL FACTORS

In 2010, Kenya ratified a new constitution guaranteeing equal rights for women: They can now inherit property and own land. However, awareness of the new law is not widespread.

### TECHNOLOGY FOR WOMEN FARMERS

Mobile penetration in Kenya is 77.2%. Increased access to mobile phones among women farmers has helped to increase agricultural information services delivered by mobile technology.[5, 6]
Radio stations, in collaboration with local agriculture-focused organizations, provide platforms for rural women and extension service providers to discuss issues affecting women farmers.[7]

### LEGAL FACTORS

**Land titles:** Only 3% of the land is owned by women.

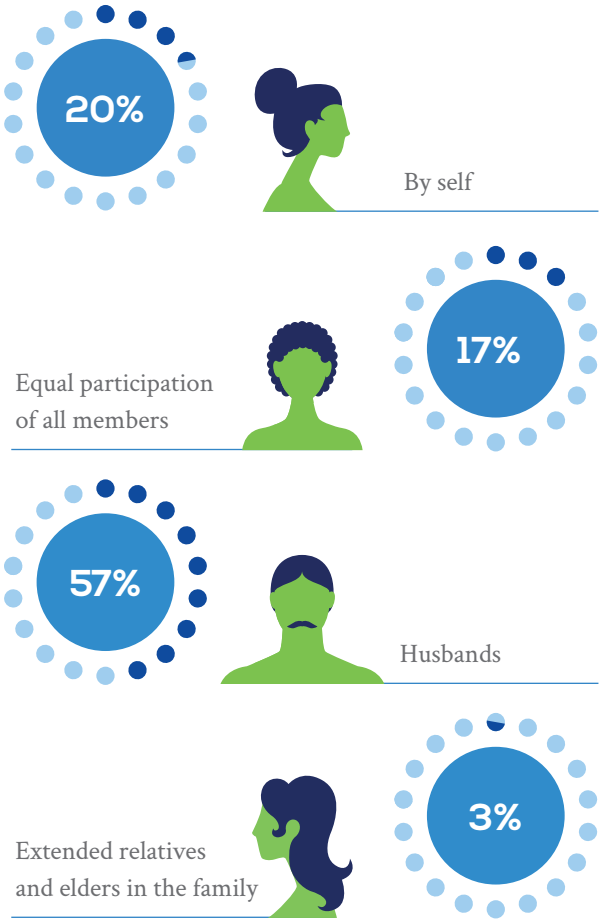
**Legal structures:** In 2010, Kenya ratified a provision to allow women to own land and inherit property. However, awareness of this is low.

*1. Alila, P.O. and Atieno, R., "Agricultural policy in Kenya: Issues and processes," Future Agricultures Consortium Workshop, Institute of Development Studies, March 20-22, 2006. Accessed April 2017; 2. The World Bank, "Kenyan farmers to benefit from innovative insurance program," March 12, 2016. Accessed April 2017; 3. Muyanga, M. and Jayne, T.S., "Agricultural extension in Kenya: Practice and policy lessons," Tegemeo Working Paper 26/2006. Accessed April 2017; 4. Demartis, E. and Bozzolo, S., "Digital technology transforms women's lives in Western Kenya," Talk Africa, May 16, 2016. Accessed April 2017; 5. Manfre, C. and Nordehn, C., "Exploring the promise of information and communication," MEAS, USAID, 2013; 6. Mbo'o-Tchouawou, M. and Colverson, K., "Increasing access to agricultural extension and advisory services: How effective are new approaches in reaching women farmers in rural areas?" International Livestock Research Institute, 2014. Accessed April 2017; 7. Mbugua, S., "Technology helps Africa's women farmers close the gap," Thomson Reuters Foundation News, October 23, 2014. Accessed April 2017.*

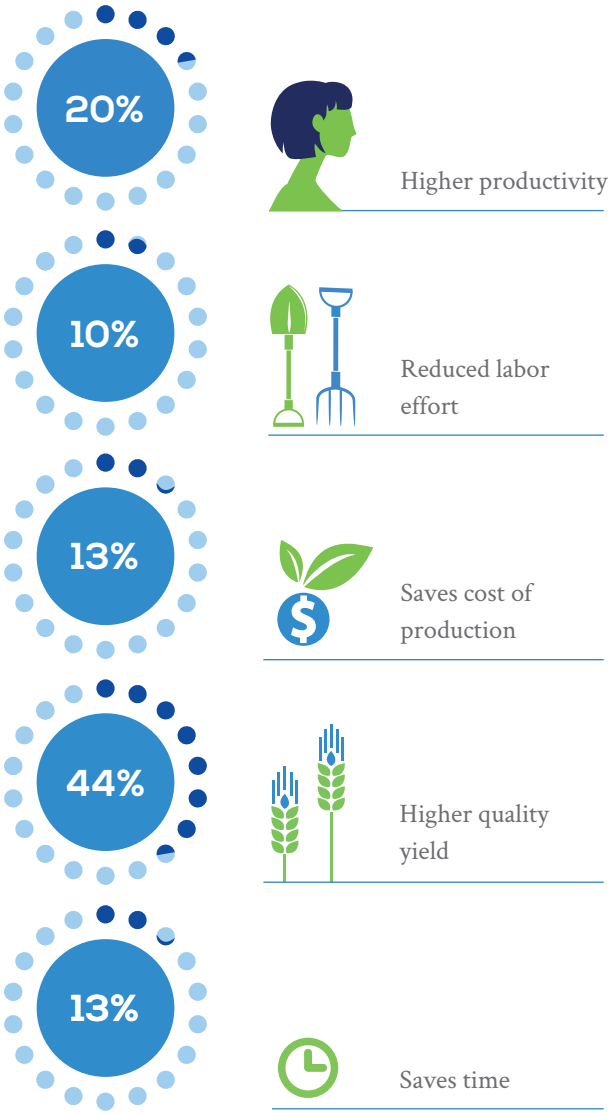
# WOMEN CUSTOMERS

(1-1 survey conducted among 50 women farmers in Kenya)

67% of the women confirmed that no matter who makes the decision, the final consultation was always done with the husband, clearly indicating he is the key decision-maker.

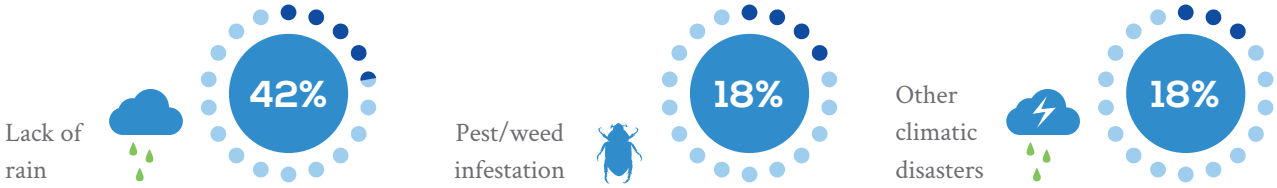



Inclusion of local men while creating the product design, marketing, and implementation strategy might be a key factor.




The top priorities for women to adopt technology in Kenya are: increasing their quality of yield, increasing the productivity of their farm, and saving time and money.

Top three challenges they face are:




Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

# Agritech resources in Kenya

## Agritech

A subsidiary of the Eclectics International Group, Agritech undertakes vast financial inclusion projects in 25 countries in Africa, supports over 200 banks and over 500 microfinance institutions on the continent with cutting edge software, hardware, and consultancy services, targeted towards making agricultural operations more efficient and effective.

http://agriculturetechnologies.org/

## LifeFilta

LifeFilta has developed a unique filtration system - the LFIM-AGRI - to ensure potable water for agriculture, domestic, and semi-industrial applications and industries requiring up to 20M3 per module per day. The filtration system does not require a power source.

https://www.environmental-expert.com/products/lifefilta-model-lfim-agri-eco-green-high-tech-filter-519036

## M-Farm

A Kenya-based web and SMS application that periodically sends farmers the prices of goods on the market, allowing them to communicate directly with consumers, which reduces the power of middlemen.

https://www.mfarm.co.ke/

# KEY FACTORS FOR ADOPTION OF TECH

- Women smallholder farmers in Kenya are looking for agritech to increase their efficiency and productivity.
- Dissemination about women's legal right to hold title to land will promote self-efficacy.
- Drought is currently an issue; low-cost irrigation systems will increase productivity and promote food security.

# KEY ENABLERS

- In 2015, the World Bank undertook a project to train both men and women on the use of new agritech and agri-business development. The majority of women who took part in the project saw an increase of 35% in their earnings from agricultural production.
- Agriculture is an integral part of the Kenyan economy. The Kenyan government, with the assistance of public and private sectors, are committed to economic growth in agriculture.

FURTHER READING


- *The World Bank, "Kenya-agricultural productivity and agribusiness project," 2009.*
- *Inclusive Business Accelerator (IBA), van Vugt, B.,"15 seed winners ready to raise funds at Nairobi investor forum," 2015.*
- *Talk Africa, Bozzolo, S., and Demartis, E.,"Digital technology transforms women's lives in Western Kenya," 2016.*

# UGANDA

## Agriculture: Women as the key to economic prosperity and food security

Uganda lies to the west of Kenya and to the east of the Democratic Republic of the Congo, with its southeastern border on Lake Victoria. Home to approximately 38 million people, its population is young and growing.

Uganda has made significant strides in reducing its poverty rate, from 31% in 2006 to 19.7% in 2013. The greatest poverty reduction occurred in agriculture households, accounting for 79% of poverty reduction from 2006-2013.

Uganda's fertile soil and regular rainfall help to make agriculture a dominant activity that employs at least 1/3 of the workforce and contributes 23.7% to the GDP. Women constitute 76% of the agricultural labor force; subsistence farming is the most common type of agricultural practice.

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 24.5%
Land use: 71.2% agriculture, average farm size= 1.12 hectares
Irrigated land: 140 sq km (2012)

Harvest: Coffee, tea, cotton, tobacco, cassava, potatoes, corn, millet, pulses, cut flowers, milk, fish

Livestock: Cattle, sheep, goats, pigs

## WOMEN PARTICIPATION IN FARMING

While women farmers outnumber men farmers, their productivity is 30% less, attributed to their childcare responsibilities and unequal access to the market. Women's literacy rate is 71.5%.[1]

Important roles:

- Planting: 85%
- Weeding: 85%
- Land preparation: 55%
- Food processing: 98%

## ECONOMY

Uganda's GDP growth is 4.9%. The budget for FY 2015/16 was dominated by energy and road infrastructure spending. The government relied on donor support for long-term economic drivers of growth, including agriculture, health, and education. The World Bank emphasizes that Uganda's current and projected birth rate makes food security a priority issue.

*Source: CIA World Factbook (2017), The World Bank (Data obtained April 2017).*

*1. Bowen, D.H., Ali, D.A., Deininger, K., Duponchel, M., "Levelling the field for women farmers in Uganda," The World Bank, June 17, 2015. Accessed April 2017.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** 48% of women in agriculture are unpaid as they mainly work on their family farms.

**Access to credit:** 10% of women farmers have access to grants offered by the government.

**Access to extension services:** 18.6% of women have access to extension services compared to 81.4% of men.

### GOVERNMENT PROGRAMS

**Agriculture Technology and Agro-business Advisory Services (ATAAS) Program:** Partnership between the International Fund for Agriculture Development (IFAD) and the Ministry of Agriculture to support smallholder farming.[2]

### SOCIO-CULTURAL FACTORS

**Gender equity:** Similar to other African countries, women do not have equal access to inputs and markets, and must balance farm responsibilities with childcare.

**Limited access:** Only 1% of land is owned by women.
Men tend to dominate the more remunerative activities in agriculture.

### PARTNERSHIPS

**Agriculture Cluster Development Project:** Sponsored by the World Bank, the goal is to increase on-farm productivity, production, and marketable volumes of selected agricultural commodities in specified geographic clusters.[3]

### TECHNOLOGY FOR WOMEN FARMERS

**WOUGNET:** Works with women farmers by using channels like mobiles phones, radio, and the internet to disseminate information around agriculture and access to important resources.[4]

### LEGAL FACTORS

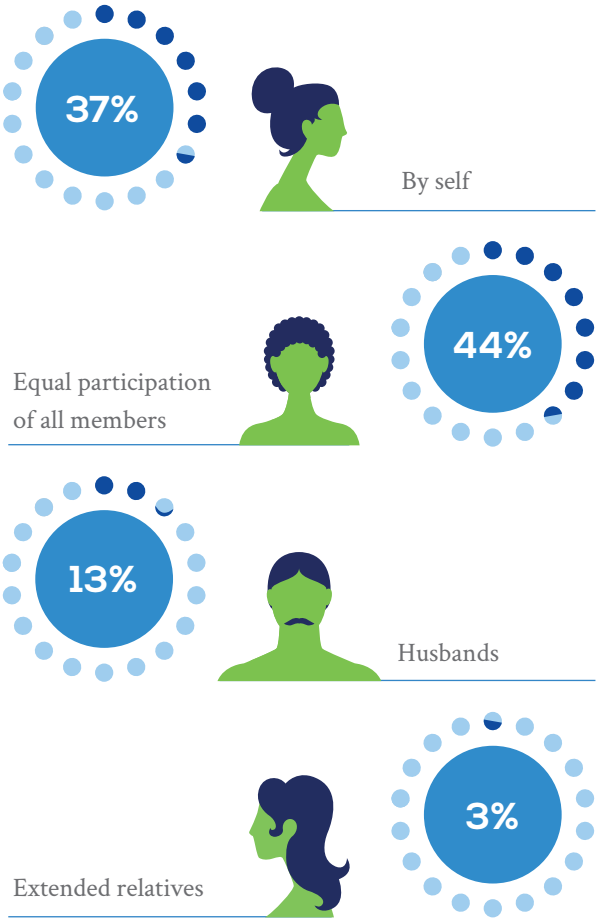
**Land titles:** A man is three times as likely to be the head of a smallholder farming household as is a woman (77% men vs 23% women).[5, 6]

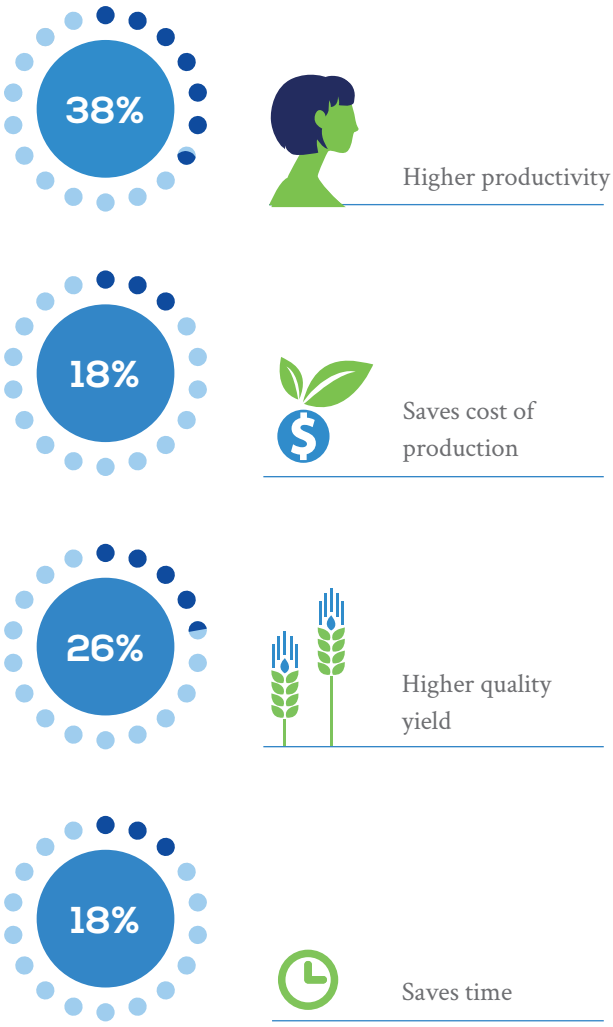
*2. International Fund for Agriculture Development, "IFAD in Uganda." Accessed April 2017; 3. The World Bank, "Uganda – Agriculture cluster development project," The World Bank Group, Washington, D.C., 2015; 4. Agriculture, "Female farmers and the use of ICTs for agriculture in Uganda: Experiences from WOUGNET." Accessed April 2017; 5. Hannay, L., "Women's land rights in Uganda," Landesa Rural Development Institute, Center for Women's Land Rights, July 23, 2014; 6. Anderson, J., Learch, C., Gardner, S., "National survey and segmentation of smallholder households in Uganda," Consultative Group to Assist the Poor (CGAP), April 19, 2016. Accessed April 2017.*

# WOMEN CUSTOMERS

(1-1 survey conducted among 50 women farmers in Uganda in February 2017)

30% of the women confirmed that no matter who makes the decision, the final consultation was always done with the husband.

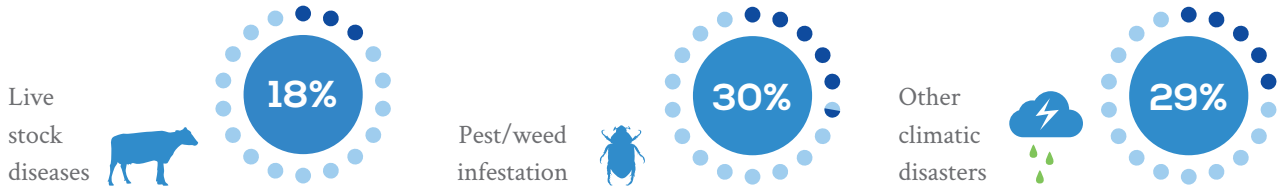



Inclusion of both men and women while creating the product design, marketing, and implementation strategy is hence a key factor.

The top priorities for women to adopt technology in Uganda are high productivity/ yield and cost efficiency.

Top three challenges they face are:




Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

# Agritech resources in Uganda

### Tetra Tech

Strengthens the agricultural inputs supply chain to increase the availability of high-quality fertilizers, agro-chemicals, and light equipment by farmers.

http://www.tetratech.com/en

### Agronomy Technology Ltd (ATL)

Helps identify and address specific issues that hinder the farmers' ability to be productive while adhering to sustainable practices.

http://www.agrotechltd.com/home/about-atl

## KEY FACTORS FOR ADOPTION OF TECH

- Women smallholder farmers balance childcare responsibilities with their agricultural work. Agritech that saves time and money while increasing yield might have a high adoption level among women.
- Agritech that increases women's market access might have a high level of adoption among women.
- Climatic disasters, pest/weed infestation, and livestock diseases are of high concern. Insurance products, pest/weed control, and modern husbandry practices might have a high level of adoption among women.

## KEY ENABLERS

- Rainfall and soil fertility are not issues in Uganda. A focus on sustainable farming will assure continued arability of farm plots.
- While women have low access to farmland titles, they have a higher level of decision-making opportunity, when compared to women in other African countries. When culturally appropriate, marketing directly to women as well as men might be effective.

FURTHER READING


- *UNDP, "Uganda country gender assessment," 2015.*
- *The World Bank, "Levelling the field: Improving opportunities for women farmers in Africa," 2014.*
- *CGAP, Anderson, J., Learch, C., and Gardner, S., "National survey and segmentation of smallholder households in Uganda," 2016.*

# SOUTH AFRICA

## Agriculture: Increasing the potential for agriculture

South Africa is the southernmost country on the African continent, linking the East and West African coasts. It is home to approximately 54 million people. The poverty level is 16.6% (2011).

South Africa is a middle-income emerging market, rich in natural resources. The economy is largely based on services, manufacturing, and mining. In 2014, the gross domestic product (GDP) was US$350 billion, with an annual growth of 1.5%, down from over 5% in 2005. Unemployment is high, at 25%. Agriculture contributed 2.5% to the GDP in 2014, but if the entire value chain is taken into account, the agricultural sector contributes up to 12% to the GDP.

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 2.2%
Land use: 79.4% agriculture, average farm size = 1.5 hectares
Irrigated land: 16,700 sq km

Harvest: Corn, wheat, sugar cane, fruits, vegetables, dairy products, wool

Livestock: Cattle, sheep, poultry

## WOMEN PARTICIPATION IN FARMING

The Government of South Africa promotes women's equity in the economy.

Important roles:

- Labor force: 3.5%
- Farm management: 53%
- Skilled agriculture: 0.3%

## ECONOMY

Agriculture as a percentage of the GDP has decreased over the past four decades, currently contributing around 2%. This implies that the economy is maturing, moving towards the secondary and tertiary sectors. In 2016, there were 2.33 million households involved in agriculture, down from 2.88 million in 2011. However, farming remains vitally important to the economy.

*Source: CIA World Factbook (2017), The World Bank, Republic of South Africa Department of Agriculture, Forestry & Fisheries, Republic of South Africa Department of Women, Statistics South Africa (Data obtained April 2017).*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** Women earn 11% less than men.[2]

**Access to credit:** Women in African countries generally have less access to credit than men.

**Access to extension services:** The Directorate of Education, Training and Extension Services (DETES) works to ensure that farmers have access to agricultural knowledge and skills training.

### GOVERNMENT PROGRAMS

**Micro-Agricultural Financial Institutions of South Africa (MAFISA):** Provides loans to agriculture, forestry, and fishing small holders.[1]

**Comprehensive Agricultural Support Program:** Provides grants to support land reform, value adding enterprises, and produce export.[1]

**Agricultural Policy Action Plan:** Promotes agricultural value chains for priority commodities.[1]

15% of women are beneficiaries of government programs.

### SOCIO-CULTURAL FACTORS

Women have less access to assets and markets than men, which leads to disparate participation in cash crop markets.

Access to finance for women farmers increases with their level of education.

Limited participation of women in local and traditional administrative structures, leads to low ownership of land.[3]

### PARTNERSHIPS

**Isivande Women's Fund:** Government's partnership with Old Mutual's Masisizane Fund to directly invest in women enterprises by offering them loans at lower interest rates.

### TECHNOLOGY FOR WOMEN FARMERS

Women farmers lack access to information on the new technologies, when compared to their male counterparts. A growing number of professions and professional support services are needed in the sector for women.

### LEGAL FACTORS

**Land titles:** Less than 14% of women have land in their name.[4]

**Legal structures:** Customary law may restrict women's access to land ownership in rural areas.

*2. Visser, M. and Ferrer, S., "Farm workers' living and working conditions in South Africa: Key trends, emerging issues, and underlying structural problems," The Pretoria Office of the International Labour Organization, February 2015; 3. Republic of South Africa Department: Women, "The status of women in the South African economy,", August 2015; 4. Chapter 10: "Women, patriarchy and land reform in South Africa." Accessed April 2017.*

# WOMEN CUSTOMERS

(1-1 survey conducted among 50 women farmers)

67% of the women confirmed that no matter who makes the decision, the final consultation was always done with the husband, clearly indicating he is the key decision maker.


Inclusion of local men while creating the product design, marketing, and implementation strategy might be a key factor.

Challenges they face are:


Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

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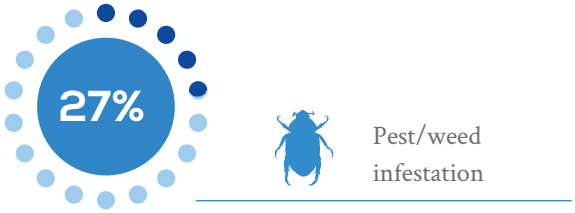


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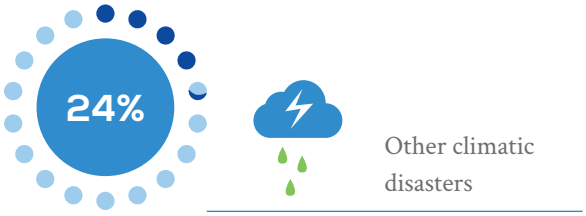



Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

# Agritech resources in South Africa

## Agri Apps

Agri Apps, a South African company, provides innovative Internet-based software and hardware to help farmers improve their profitability.

https://www.agriapps.com/about/

## Agri-hub farming app

The Agri-hub farming app gives farmers basic information on matching crops with farming and harvesting seasons.

https://bizconnect.standardbank.co.za/sector-news/agriculturearticles/4-game-changing-agriculture-apps.aspx

## KEY FACTORS FOR ADOPTION OF TECH

- Periodic drought affects farming households, forcing some farmers to leave agriculture. Agritech that solves irrigation issues could be an effective tool for smallholder women farmers.
- While the Government of South Africa has a policy of promoting gender equity, men are still the primary decision-makers.

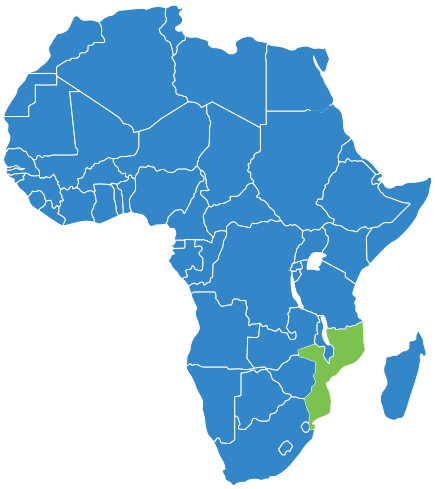
## KEY ENABLERS

- While drought and urbanization reduce the number of farmers, agriculture is an important contributor to the South African economy.
- South Africa is geographically positioned to be a key exporter to both East and West Africa.

FURTHER READING

- *The Pretoria Office of the International Labour Organization, Visser, M. and Freer, S., "Farm workers' living and working conditions in South Africa: key trends, emerging issues and underlying structural problems," 2015.*

# MOZAMBIQUE



## Agriculture: Food security through smallholder farmers

Mozambique is a coastal Southeastern African country with a population of approximately 26 million people. About half of Mozambique's population lives in poverty.

Agriculture in Mozambique contributes between 20%-25% of the GDP and provides livelihood to more than 80% of the population. The production of food is dominated by smallholders (average 1.2 hectares of cultivated land). With only 16% of its arable land cultivated, Mozambique is the second largest exporter of food to southern Africa; it has the potential to increase food production, thereby strengthening its economy and contributing to food security within and without its borders.

In 2011, The Bill and Melinda Gates Foundation and USAID sponsored 11 women scientists in Mozambique to strengthen agricultural research and development.

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 25.3%
Land use: 56.3% agriculture, average farm size = 1.5 hectares
Irrigated land: 1,180 sq km

Harvest: Cotton, cashew nuts, sugar cane, tea, cassava, corn, coconuts, sisal, citrus and tropical fruits, potatoes, sunflowers

Livestock: Cattle, poultry

## WOMEN PARTICIPATION IN FARMING

Mozambique fellows of the African Women in Agricultural Research and Development Project have worked closely with women farmers to find practical agritech solutions.[1]

- 90% of women work in agriculture;
- 40% of farming households are managed by women.[2]

## ECONOMY

Mozambique's GDP growth dropped from 6.6% in 2015 to 3.3% in 2015, but it is expected to increase to 4.8% in 2017. Several public and private entities are investing in Mozambique's development, which includes a focus on strengthening the infrastructure, private access to finance, and supporting industry, including agribusiness. One focus of the government's Poverty Reduction Action Plan (2011-2014) is to improve lives by increasing productivity in agriculture and fishing.

*Source: CIA World Factbook (2017), The World Bank (2017), USAID (Data obtained April 2017).*

*1. Pereira, C., "Mozambique scientists out to prove women can set a new course for agriculture in their country and beyond," USAID Frontlines, February/March 2011; 2. Danish Trade Union Council for International Development Cooperation, "Mozambique labour market profile," 2014.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** The minimum wage for agricultural workers is US$59 per month.[3]

**Access to credit:** The International Financial Corporation (IFC) recognizes that private access to credit is a key to strengthening the economy in Mozambique.

**Access to extension services:** In 2009, Mozambique had 693 extension agents; 11% female.

### GOVERNMENT PROGRAMS

**Second Agriculture Development Policy Operation:** Works to improve agricultural technology, enhance access to productive assets and financial services, and improve the monitoring of sector performance.[3]

### PARTNERSHIPS

**UNAC and ORAM:** Partnerships with União Nacional de Camponeses (UNAC) and the Rural Association for Mutual Aid - Oram promote livelihoods and secure land rights for small-scale farmers.

**Women Can Do It (WCDI):** Trains women to become leaders in the community.

**Norwegian People's Aids:** Promotes environmentally sustainable methods in agriculture.

### SOCIO-CULTURAL FACTORS

43.5% of women are illiterate.[4] Cultural barriers tend to limit women's control of and access to household resources, such as cash, land, and cattle.

### TECHNOLOGY FOR WOMEN FARMERS

Women farmers lack access to information on the new technologies as compared to their male counterparts.[5]

There is a strong need for post- harvest technologies for women, including access to markets.

### LEGAL FACTORS

**Land titles:** Women's access to and control over land on average is less than half of men's.[6]

**Legal structures:** Inheritance law applies to women but only those who are married under statutory law.

*3. The World Bank, "Mozambique — second agricultural development policy operation project," 2015; 4. WageIndicator, "Minimum wages in Mozambique," 2016; 5. UNICEF Statistics, 2013; 6. FAO, "The state of food and agriculture: Women in agriculture – Closing the gender gap for development," 2010-2011; 7. United Nations Economic Commission for Africa, "Women and access to land and credit: Discussions and key findings of he African gender development index in selected African countries," June 2007.*

# Agritech resources in Mozambique

## Flying Sensors by Future Water

Flying sensors provide information about agricultural inputs and detect crop stress up to two weeks before it becomes visible.

http://www.futurewater.nl/

## KEY FACTORS FOR ADOPTION OF TECH

- Close to half of the population of Mozambique, both men and women, are illiterate. Product design should assure that farmers can easily operate the technology.
- The government of Mozambique, along with public and private organizations, are invested in strengthening agribusiness. Affordable technology that can increase yield while decreasing input will benefit smallholder farmers, who are the majority of farmers in the country.

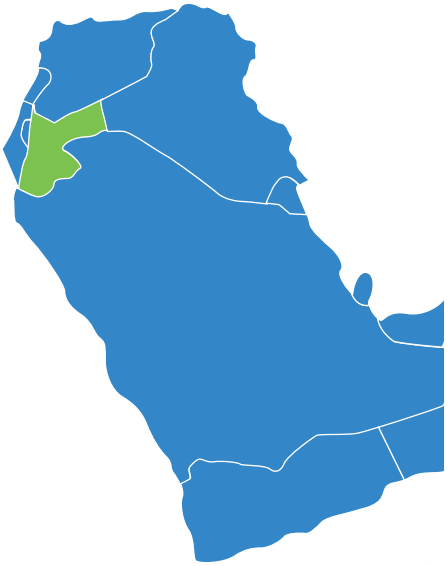
## KEY ENABLERS

- Women are a highly visible component of smallholder farmers.
- Mozambique is the second largest exporter of food to southeastern Africa. With only 16% of arable land farmed, there is an opportunity to increase agricultural production.
- Smallholder farmers constitute the largest group of agriculture workers in Mozambique.

FURTHER READING


- *The World Bank, "Mozambique: Overview," 2016.*
- *The Bureau for Food and Agricultural Policy, Kapuya, T., Kalaba, M., "Mozambique Profile Report," The Joint Department of Agriculture Forum for Africa, 2011.*
- *The World Bank, "Gender in agriculture sourcebook," Library of Congress Cataloging-in-Publication Data, 2009.*

# JORDAN



## Realizing the potential of agriculture

Jordan is a coastal country located in the heart of the Middle East, sharing borders with Syria, Saudi Arabia, Iraq, Israel, and Palestine. Jordan's population of 7.87 million primarily reside in urban areas.[1] Over the last 10 years, Jordan has pursued several reforms in education, health, privatization, and liberalization in order to improve the quality of people's lives.[2]

The current contribution of agriculture to Jordan's GDP is only 4% — agriculture in the 1960s contributed substantially to the country's income, but this has steadily declined, resulting in Jordan becoming a net importer of food. With the help of the FAO, Jordan is working on increasing arable land, humanitarian relief interventions to support the agricultural sector, capacity building for fighting pests and diseases, and intensifying climate smart cultivation.[3]

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 4%
Land use: 11.4%
Irrigated land: 9.5% of the total agriculture land in 2014

Harvest: Wheat, barley, tobacco, tomato, eggplant, cucumbers, cauliflower, cabbage, citrus fruits, olives, bananas, grapes

Livestock: Sheep, poultry, cattle

## WOMEN PARTICIPATION IN FARMING

48.7% of Jordanian farmers are women.[4] Women's involvement in agriculture varies widely across the country. A survey in the Al-Azraq area in the Zarqa governorate found that women's agricultural work was restricted to home gardening only.[5]

Roles played by women farmers:

- Labor force: 29.5%
- Husbandry: 75%

## ECONOMY

With a GDP per capita (PPP) of US$5, 900 in 2011, Jordan is an upper middle-income country. Key economic reforms launched in the 1990s enabled Jordan to achieve important economic and social development objectives. HDIs have improved over time and real GDP growth averaged 6% from 2000 to 2011.

However, structural economic reforms still need to address the persistently high unemployment rate (13%), especially among the young and graduates (more than 30%), the large share of population just above the poverty line, and fiscal and external vulnerability. Jordan remains dependent on foreign aid and remittances which counter-balance external pressures from rising oil and food imports.

*1. http://data.worldbank.org/indicator/SP.POP.TOTL; 2. http://www.worldbank.org/en/country/jordan/overview; 3. http://www.fao.org/countryprofiles/index/en/?iso3=JOR; 4. http://www.fao.org/docrep/013/i2050e/i2050e.pdf; 5. FAO, Augustin, E., Assad, R., and Jaziri, D., "Women empowerment for improved research in agricultural development, innovation and knowledge transfer in the West Asia/North Africa Region," 2012.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** There is an 11.7% pay gap between male and female workers in Jordan.[6]

**Access to credit:** 20% of women obtain credit from commercial banks, which are used by their husbands.[7]

**Access to extension services:** Women have limited access to extension services.

### GOVERNMENT PROGRAMS

**National Agricultural Information System (NAIS):** This is a national platform for information, knowledge sharing, and exchange for agricultural research and development for target groups and stakeholders in Jordan.[8]

### PARTNERSHIPS

**Financial services:** The cooperative movement has made progress in the agricultural sector, with the Central Cooperative Union providing seasonal loans and advice to local cooperatives.[9]

### SOCIO-CULTURAL FACTORS

**Restrictions:** Men are the decision-makers for crop production. Norms and traditions prevent women from working outside the family farm.

### TECHNOLOGY FOR WOMEN FARMERS

**Technologies:** The fertigation technique — where nutrients are injected through irrigation water in concentrations that meet plant requirements — is widely used in Jordan.[10]

### LEGAL FACTORS

**Land titles:** A man's land is equally divided among his inheritors – both men and women.[11]

*6. United Nations, "Equal pay for equal work? A look at the pay gap between men and women in Jordan," 2014; 7. IDOSI Publications, Rousan, L.,"Factors influencing adoption of improved farm practises among women farmers in Northern Jordan", ISSN 1818-6769, 2007; 8. United Nations Conference on Trade and Development, "Measuring the impact of information and communications technologies for development," 2010; 9. National Encyclopedia," Jordan - Agriculture," 2014; 10. Modernising extension and advisory services, "Jordan - Adoption of Fertigation Techniques"; 11. Iowa State University, Sheraab, H.M., "Agricultural development policy in Jordan with full utilization of resources,"1972.*

# Agritech resources in Jordan

## Nestrom

Nestrom focuses on enabling agri-business to optimize and efficiently manage on-field operations through its products.

http://www.nestrom.com/

## AgriJordan

AgriJordan is a pioneer company promoting sustainable agricultural practices. The company employs the most updated technologies and strategies in water management, packing, export, and marketing, with the aim of creating a paradigm shift in Jordan agriculture.

http://agrijordan.com/

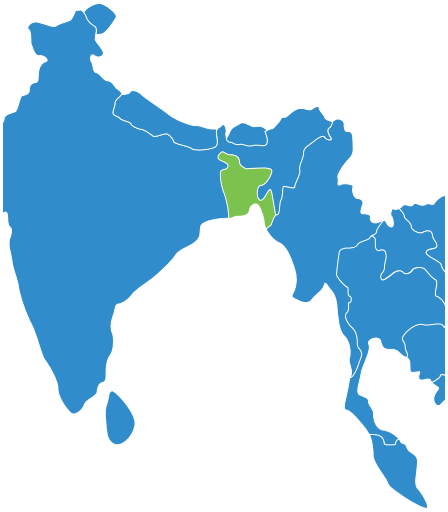
## KEY FACTORS FOR ADOPTION OF TECH

- Innovations, which are costly or complex for the farmers to apply, will not receive the goodwill of the farmers; therefore, the agricultural agents should ensure that innovations taken to farmers are affordable.
- Adequate training should be offered.
- Innovators must take into account the existing cultural restrictions when designing innovations for development.

## KEY ENABLERS

- Almost half of Jordan's farmers are women; this could be a key market for innovators.
- The FAO's involvement in Jordan could lead to partnerships with innovators.

# BANGLADESH



## Agriculture: A key driver of poverty reduction

Bangladesh is a lower-middle income, densely inhabited country in South Asia, with a population of 156 million. Since independence from Pakistan in 1971, Bangladesh has experienced significant economic and social development, halving its poverty levels. Enabled by policy reforms and investments, agriculture has played a key role in reducing Bangladesh's poverty. Over 87% of rural people attribute part of their annual incomes to agriculture. However, 25% of Bangladeshis are undernourished, largely because of rapid population growth and dwindling land resources.[1]

Job creation is Bangladesh's most critical need. Irrigation, high-yield crops, efficient markets, and mechanization, support the growth of agriculture. A shift toward high-value agriculture, including horticulture, livestock, poultry, and fisheries, will foster growth and further reduce poverty.[1]

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 15.9% (2014)
Land use: 70.1% for agriculture, average farm size = Less than 1 hectare
Irrigated land: 355,000 sq km

Harvest: Rice, jute, tea, wheat, sugar cane, potatoes, tobacco, pulses, oilseeds, spices, fruit

Livestock: Cattle, poultry

## WOMEN PARTICIPATION IN FARMING

Approximately 50% of women are involved in agriculture. Equity in agriculture is an issue. USAID has been involved in training women farmers to use fertilizer deep placement, which increases yield while using less fertilizer. USAID has also taught women farmers how to culture fish and shrimp for local market sale.[2,3]

Important Roles:

- Husbandry: 68.93%

## ECONOMY

Bangladesh is among the eleven emerging market economies and is a frontier market. According to the International Monetary Fund (IMF), Bangladesh's economy is the second fastest growing major economy of 2016, with a growth rate of 7.1%.

The agri-sector has an overwhelming impact on macroeconomic objectives like employment generation, poverty alleviation, human resources development, nutrition, and food security.

*Source: CIA World Factbook (2017), The World Bank (2017), Ministry of Agriculture, Government of the People's Republic of Bangladesh (Data obtained April 2017).*

*1.The World Bank, "Agriculture growth reduces poverty in Bangladesh," May 17, 2016. Retrieved April 2017; 2. SOFA Team and Doss, C., "The role of women in agriculture," ESA Working Paper No. 11-02, March 2011; 3. Hasan, W., "Gender equality and women's empowerment," USAID. Retrieved April 2017.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** Female labor force participation is 20% lower than male participation, concentrated in lower-level jobs and paid one third less than men.[4] Nearly half the women working in agriculture are unpaid.

**Access to extension services:** 20% of female-headed households are using fertilizers as compared to 53% of male headed households.[5] Only 1% of female-headed households are using mechanized equipment.[5]

**Access to finance:** Bangladesh is a success story in women's financial inclusion - 35% own bank accounts and 90% of 21 million loan clients are women.[6]

### GOVERNMENT PROGRAMS

**Agri program:** Vision 2021 and the National Perspective Plan (2010-2021) prioritize the attainment of self-sufficiency in food grain production and achievement of nutritional requirements by 2021.[7]

The **Seventh Five Year Plan** (7FYP 2016-20) focuses on the crop sub-sector to raise rural incomes and generate employment opportunities.[8]

The **National Agriculture Policy** aims to improve food and nutrition security.

### LEGAL FACTORS

**Land titles:** Women own less than 2% of agri land. Property inheritance is based on what is called personal law, which varies according to an individual's or family's religion. Muslim women are allowed to buy or be gifted property or access to government land, with the main route being inheritance. Following Hindu custom, Hindu and Buddhist women inherit nothing.

### SOCIO-CULTURAL FACTORS

**A huge expansion of girls' education** in Bangladesh is vital to development. 64.9% of girls are **married by age 18**, hindering their access to education and right to earn money.[9]

### TECHNOLOGY FOR WOMEN FARMERS

Bangladesh has **more than 90% penetration of cellphones,** one of the highest in the developing world.[10]

### PARTNERSHIPS

**SHGs:** The Grameen group model is highly successful and has wide penetration in rural areas by disbursing collateral free loans of US$18 billion to around 9 million borrowers.[11]

*4. The World Bank, International Labour Organization,"Labour force participation rate," 2014; 5. Food and Agriculture Organization, RIGA team, and Anríquez, 2010; 6. Consultative Group to Assist the Poor, Shrader, Leesa,"Digital Finance in Bangladesh: Where are all the Women?," 2015; 7. Government of the People's Republic of Bangladesh, Planning Commission,"Perspective Plan of Bangladesh 2010-2021," 2012; 8. FAOLEX, 2015; 9. The United Nations Children's Fund,"Bangladesh Statistics," 2013; 10. Practical Action, Bhuiyan Islam, Mohammad Kamrul,"Empowering women for access to agriculture extension services",2015; 11. Grameen,"Annual Report," 2015.*

# Agritech Resources in Bangladesh

### Krishi Gobeshana Foundation

Krishi Gobeshana Foundation (KGF) is a Common Interest Group among farmers (http://www.kgf.org.bd/)

Katalyst increases competitiveness of farmers and small enterprises by facilitating changes in services, inputs, and product markets. (http://katalyst.com.bd/)

### Swosti

Swosti creates a bridge between mobile banking and micro-loans offering a "mobile credit card" for emergency loans to existing MFI clients. (https://swosti.net/)

### BRAC

BRAC works with farmers to develop better crop varieties and improved production technologies. (http://www.brac.net/)

## KEY FACTORS FOR ADOPTION OF TECH

- While 50% of women work in agriculture, they do not have equal access to resources. Include men in marketing and agritech demonstrations.
- Women farmers have been trained in fish and shrimp farming for sale at local markets. Focus on small-scale, local enterprises in which women are the predominant producers.
- Labor-, time-, and money-saving technologies will appeal to women smallholders, who balance family care with farm work.
- Ninety percent of minor irrigation is operated by diesel fuel, and the cost of irrigation is high. Converting to electrically-operated pumps could reduce cost of irrigation by 30-50%.[13]

## KEY ENABLERS

- **Modernization of agricultural sector**
  There is increased use of power tillers, irrigation equipment, threshers, drum seeders, maize shellers, rice milling machines, improved storage, cool-chain, and transportation. Farm machinery such as weeders, threshers, winnowers, and centrifugal pumps, are developed and manufactured locally with local materials, when available.

- **Embracing mobile technology and internet services**
  There are close to 10 million plus smartphones in Bangladesh and the 3G growth rate has been 232%, with an approximate 133 million mobile network subscription. mPower, a startup in Bangladesh, has already started leveraging farmers to create accessible agriculture extension services.[14, 15, 16]

- **Increasing Human Development Index (HDI) indicators**
  Between 1980 and 2014, Bangladesh's HDI value increased from 0.338 to 0.570, an increase of 68.7% or an average annual increase of about 1.55%. Twenty years of targeted financial support in Bangladesh, for example, to encourage high school attendance by girls, as opposed to early marriage, has helped to dramatically shift the needle upward on human development indicators. The mean years of education has increased from two in 1980 to 5.1 in 2014.[17]

*13. Food and Agriculture Organization of the United Nations, "Towards sustainable agriculture and improved food security and nutrition," Bangladesh Country Programming Framework, CPF 2014-2018; 14. Workshop Proceedings, Food and Agriculture Organization of the United Nations, "Mobile technologies for food security, agriculture, and rural development," RAP Publication 2012/19, 2012; 15. "The mobile phone industry in Bangladesh," Lightcastle Partners. Accessed April 2017; 16. Hasan, M. "Mobile phone: An instrument of disseminating requisite agricultural information for the agricultural development of Bangladesh: A case study," International Journal of Research in Engineering and Technology, 4 (4), pp. 523-534, April 2015; 17. The United Nations Development Programme, "Human Development Report: Human Development for Everyone," 2016.*

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- *SOFA Team and Doss, C., "The role of women in agriculture," ESA Working Paper No. 11-02, March 2011.*
- *General Economics Division Planning Commission Government of the People's Republic of Bangladesh, "Perspective Plan of Bangladesh 2010-2021," April 2012.*

# NEPAL

## Agriculture: Women farmers in Nepal contribute to over 80% of agriculture

Locked between India and China, at the feet of the Himalayas, Nepal has historically been among the poorest and most remote countries in the world. Twenty-five percent of Nepal's 29 million people live in poverty.

Agriculture is the mainstay of Nepal's economy — it constitutes over a third of Nepal's GDP, and over 80% of the population is involved in agriculture.[1] Agricultural production accounts for 26% of total exports, mostly to India, although a majority of Nepalese farmers are subsistence farmers.

FAO's assistance priorities in Nepal include technical cooperation for: 1) food and nutrition security and safety, 2) institutional and policy support to strengthen analytical and technical capabilities, 3) market orientation, production, and competitiveness, and 4) natural resource conservation and utilization.[2]

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 29.4%
Land use: 28.8% agriculture, average landholding = 0.8 hectares
Irrigated land: 13,320 sq km

Harvest: Rice, corn, wheat, sugar cane, jute, root crops, milk

Livestock: Buffalo

## WOMEN PARTICIPATION IN FARMING

98% of Nepal's total female labor force were engaged in agriculture in 2010.

Women perform six times the agricultural work that men do.[3] Nepal is characterized by the "feminization of agriculture" — women play a substantial role.

Important roles for women:

- Crops
- Spices, including ginger
- Livestock

## ECONOMY

Since 2003, the Nepalese economy achieved remarkable results in terms of poverty reduction, growth, and competitiveness. From 2003-2004 to 2010-2011, the poverty rate dropped from 53% to 25%. After the 2015 earthquake, the 2016 economic growth was the slowest in 14 years. A focus on infrastructure and public and private investment could lead to an even further reduction in poverty.

*Source: CIA World Factbook (2017), The World Bank 2017 (Data obtained April 2017).*

*1. The Global Agriculture and Food Security, "Nepal agriculture and food security country investment plan," 2010; 2. FAO Priorities in Nepal. Accessed April 2017; 3. Integrated Regional Information Networks (IRIN), "Tailoring technology for female farmers," 2012. Accessed April 2017.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Access to credit**: 26% of Nepalese have bank accounts; 38% have loans.

**Access to extension services:** Women have limited access.[4]

**Access to inputs:** Female-managed farms produce less value per hectara than male-managed farms, but this difference is accounted for by lower input.[4]

### GOVERNMENT PROGRAMS

**Crop Development Program:** Promotes mechanisms for coordination and linkage between research and extension.[1]

**Inclusive Agricultural Development:** Increases the participation of women in agriculture through skill development training, participatory research, and participatory development related activities.[1]

### PARTNERSHIPS

**Financial services:** The SmallFarmer Development Project of the Agriculture Development Bank initiated a "Women's Development" component, expanding microcredit options for women.

The Production Credit for Rural Women was launched in the Ministry of Panchayat and Local Development.[5]

### SOCIO-CULTURAL FACTORS

Rural women in Nepal are less educated than men, with only about one year of formal schooling each on average.

### TECHNOLOGY FOR WOMEN FARMERS

3% of households headed by women use mechanical equipment, compared to 8% of households headed by men.[3]

Women do not have access to tech or decision-making on technology, as their work is undervalued.[6]

### LEGAL FACTORS

**Legal structures:** Property is inherited only through the male line.[7] A daughter is denied equal inheritance rights.[8]

*4. FAO, "Women in agriculture – closing the gender gap for development," Rome, 2011. Accessed April 2017; 5. Bhadra, C., Shah, M.T., "Nepal: Country gender profile," Japan International Cooperation Agency, March 2007; 6. National Planning Commission Central Bureau of Statistics, "Nepal thematic report on food security and nutrition," 2013; 7. Asian Development Bank, "Women in Nepal, 1999. Accessed 2017; 8. Mala, SP., "Property right of Nepalese women," Democracy Nepal, 2000. Accessed April 2017.*

# Agritech resources in Nepal

## Smart Krishi

Information Resource: An android app which provides farmers with agricultural information in Nepali.

https://play.google.com/store/apps/details?id=com.itgamut.ictfa&hl=en

## KEY FACTORS FOR ADOPTION OF TECH

- Women engage in agriculture more than men do, but they have less access to and control over productive resources such as land, forest, and water.
- Women have little role in crop production/decision making. A specialized gender unit could train and encourage extension agents to take a broader, rural livelihoods approach.
- The effectiveness of training in agriculture could be increased by combining it with training in other life skills such as entrepreneurship, literacy, numeracy, and basic health and nutrition.
- Recognizing the needs of women could result in a greater use of technology, with benefits to the entire family.

## KEY ENABLERS

- A 2011 census found that approximately one in 10 Nepali men is employed abroad. This demographic shift has created new opportunities and challenges for the women left behind, including stepping into leadership roles. Nepali women have always played an important and often unrecognized role in agriculture that sustains nearly 80% of the population.
- In Nepal, research shows that when women are given access to new techniques and productive resources, they adopt them effectively (e.g., drip irrigation technology, hybrid seeds, and integrated pest management methods).

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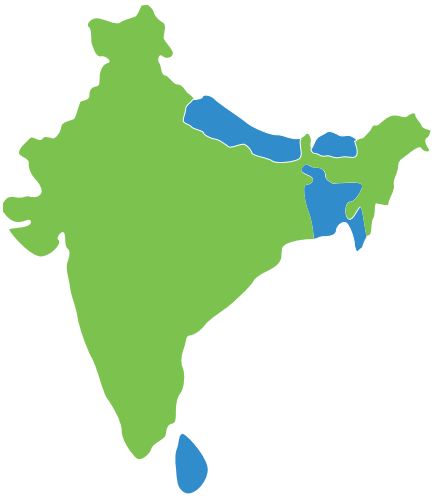
- *The World Bank, "Nepal: Irrigation and Water Resource Management," 2014.*
- *Food and Agricultural Organization, "Gender dimensions of agricultural and rural employment: Differentiated pathways out of poverty," ISBN 978-92-5-106583-9, 2010.*
- *The Guardian, "Nepal's female farmers need research and technology aimed at them," 2012.*

# INDIA



## Agriculture: Second worldwide

India, the second most populous country on earth, is also second worldwide in farm output. Half of India's workforce are in agriculture and allied sectors. The contribution of agriculture to India's GDP is steadily declining as the country experiences broad-based economic growth. However, agriculture plays a significant role in the overall socio-economic fabric of India.

India exported US$39 billion worth of agricultural products in 2013, making it the seventh largest agricultural exporter worldwide and the sixth largest net exporter. Most of its agricultural exports serve developing and least developed nations.[1]

The poverty rate in India is estimated to be 20%, however, the rural poverty rate is 25%. Poverty affects 82% of rural, marginal land owners (<1 hectare).

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 16.5%
Land use: 60.5% agriculture
Irrigated land: 667,000 sq km (2012)

Harvest: Rice, wheat, oilseed, cotton, jute, tea, sugar cane, lentils, onions, potatoes, dairy products

Livestock: Sheep, goats, poultry, fish

## WOMEN PARTICIPATION IN FARMING

Women farmers play multiple roles in agriculture, but their contribution is not adequately recognized and qualified. Most of the work that women carry out on farms is unrecorded in the census data of India. Equity is an issue.[2, 3, 4]

Extension worker ratio: 1:1,000 (2012)[5]
The number of women smallholder farmers in India is unknown. Their farm work is varied.

## ECONOMY

India's economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of services. Half of the workforce is in agriculture, but services are the major source of economic growth, at nearly two-thirds of India's output.

In spite of the magnitude of India's agricultural output, poverty in rural areas, at 80%, is prevalent. Affordability is a barrier to purchasing agritech.

*Source: CIA World Factbook (2017), The World Bank, UN FAO (Data obtained February 2017).*

*1. United States Department of Foreign Agricultural Service, "India's agricultural exports climb to record high," August 29, 2014. Retrieved 4/26/17; 2. Slathia, N., "Participation of women in agricultural production," Agriculture: Towards a New Paradigm of Sustainability, pp. 150-157, 2014; 3. Nair, T.S., Joseph, A., and Dubey, N., "Agricultural loans and women: Issues in access and provision in the context of microfinance," Friends of Women's World Banking (India), Ahmedabad, 2014; 4. Green Foundation, "Women in Agriculture," accessed April 2017; 5. Chitra, B.M., "ICT initiatives in Indian agriculture,"Information Technology in Developing Countries 22 (3), p. 28-30, 2012; 6. Extension Education Institute,"Programmes and Schemes of Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India."*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Income levels:** Female agricultural laborers earn 30% less than their male counterparts.[7]

**Access to credit:** 58% of women in India find it difficult to access credit.[8]

**Access to extension services:** The lack of access to land and control over resources have limited women from availing themselves of extension services.[3]

### GOVERNMENT PROGRAMS

**National Agricultural Insurance Scheme:** Provides insurance coverage to farmers as protection for crop failure.[6]

**National Horticultural Mission:** Supports growth of the horticulture sector, with a focus on nutritional security, and provides income support to farmers.[6]

**National e-Governance Plan in Agriculture:** Promotes agriculture through use of Information and Communication Technology (ICT).[6]

### SOCIO-CULTURAL FACTORS

**Restrictions:** Compared to men, women possess far less land and livestock holdings.[4]

Women's contribution to agriculture labor is suppressed under the status of family labor; women work on the farm in addition to performing regular household chores.[10]

Decision-making of the household lies in the hands of the man.[9]

### PARTNERSHIPS

**Sustainable Land and Ecosystem Management:** Joint initiative of the Government of India and Global Environment Facility (GEF), with the objective to promote sustainable land management.[9]

### TECHNOLOGY FOR WOMEN FARMERS

**Kisan Call Center:** Promotes rapid development of agriculture through use of ICT for ensuring timely access to agriculture-related information for farmers of the country.

### LEGAL FACTORS

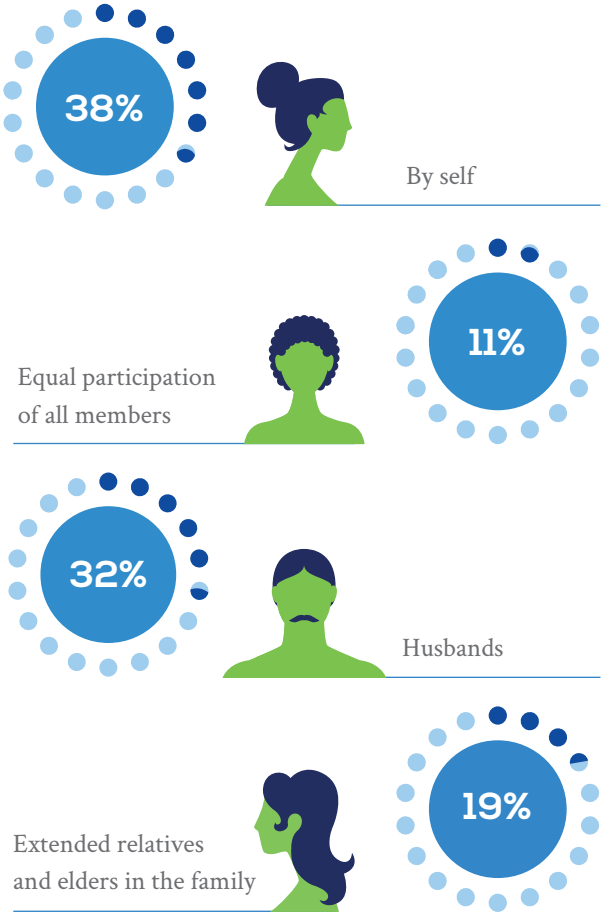
**Land titles:** Female landholdings have increased by 36% and the area under their control has increased by 24%. 13% of the farmland is owned by women.[11]

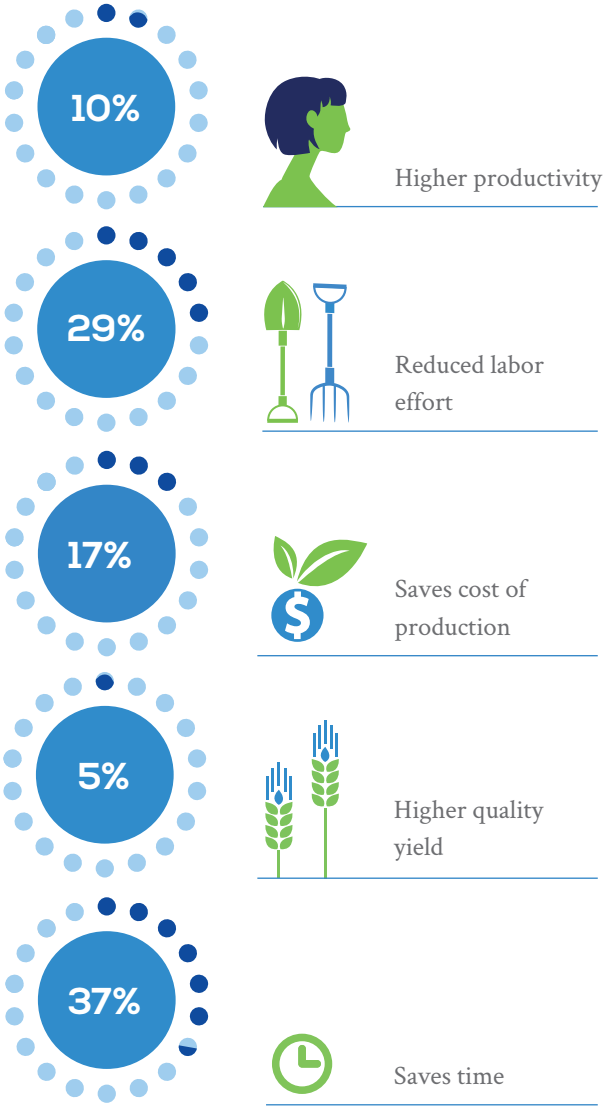
*7. Oxfam India Policy Brief, "When women farm India's land: How to increase ownership?," No. 8, October 2013; 8. Center for Financial Inclusion Blog, "Fifty-eight percent of women in India report difficulty accessing credit, savings, or jobs because of their gender," May 22, 2015. Accessed April 2017; 9. Patel, A. "Empowering women in agriculture," YOJANA pp. 19-22, June 2012; 10. Ghosh, M.M. and Ghosh A., "Analysis of women participation in Indian agriculture," IOSR Journal of Humanities and Social Science, 19 (5) pp. 1-6, 2014; 11. Goldsmith, B., "Female farmers gaining ground in rural India," Livemint, February 23, 2017. Accessed April 2017.*

# WOMEN CUSTOMERS

(1-1 survey conducted among 50 women farmers in Southern India)

55% of all women confirmed that the final consultation before making any decision took place with their husbands, which makes him the key influencer in household decision-making.




Hence, it might be important to consider the role played by the husband in household decision-making while creating the product design, and marketing and implementation strategies of agriculture-related technology tools.

38% of women said they would prefer using technology-enabled products that help them save time, while 29% would want tech support in helping them reduce labor efforts on the farm.

Top three challenges they face are:


Products designed keeping these factors in mind might be highly beneficial in terms of customer outreach.

## Agritech resources in India

### Farming as a Service (FaaS):

EM3 Agri Services offers farming services and machinery rentals to farmers on a pay-for-use basis.

https://yourstory.com/2015/06/faas-to-indian-agriculture/

### Information Resource:

Cropin Technology Solutions offers an android app called Smart Farms, which allows farmers and food companies to monitor crops.

http://cropin.co.in/

### Potential Partner

Janani Agri Service provides personalized agriculture advisory services via mobile phone about soil, water, seeds, crops, and pests.

http://www.jananiagriserve.com/

## KEY FACTORS FOR ADOPTION OF TECH

- Technologies for women in agriculture should be woman friendly, gender compatible, easy to maintain, and safe to use.
- To increase the effective use of technology by women, entrepreneurial skill should be fostered through economically-viable projects and activities, such as Anand Milk Dairy Cooperative and Mahila Girh Udyog.

## KEY ENABLERS

- Introduce drudgery reducing technologies for decreasing physical stress and increasing work efficiency.
- Without land titles, women have very little access to credit and are often barred from government schemes to support farmers or extension programs. The government's 12th Five Year Plan's new focus on single titles is a step in the right direction.
- Strategies used for the empowerment of women include development of technology kits and dissemination of knowledge through the media.

FURTHER READING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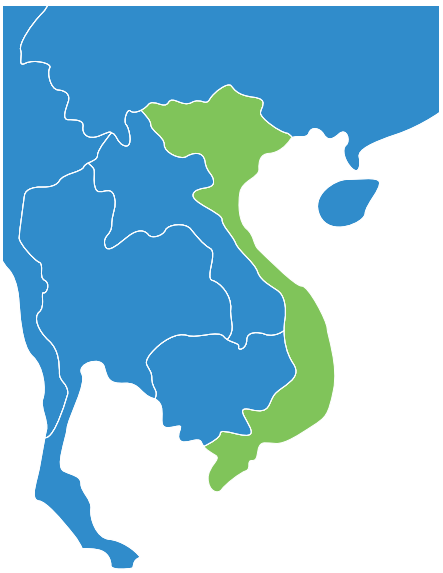
- *Slathia, N., "Participation of women in agricultural production," Agriculture: Towards a New Paradigm of Sustainability, pp. 150-157, 2014.*

# VIETNAM



## Agriculture: A sector at a crossroad

Vietnam, located in the center of Southeast Asia, has a population of over 90 million. Vietnam is an agricultural country, with 70% of its population living in rural areas. About two-thirds of the Vietnamese population depends on the agricultural sector as a main source of employment and livelihood.[1]

Vietnam's agricultural sector has made enormous progress — the country has emerged as one of the world's leading exporters of agro-food commodities. However, the sector is experiencing a low quality of growth, considerable under-employment among agricultural workers, unreliable product quality, food safety, and limited technological or institutional innovation. There is a need to improve supply, quality, and food safety.[2]

# FACT FILE

## AGRICULTURAL PROFILE

Contribution to GDP: 17% (2015)
Land use: 34.8% agriculture, average farm size: 0.2 hectare
Irrigated land: 2,930 sq km

Harvest: Rice, coffee, rubber, tea, pepper, soybeans, cashews, sugar cane, peanuts, bananas

Livestock: Poultry

## WOMEN PARTICIPATION IN FARMING

80% of women take part in agriculture.[3] Women undertake almost all activities related to cultivation and livestock.

*Source: CIA World Factbook (2017), Vietnam National Statistics Bureau (2016).*

## ECONOMY

Vietnam is a densely-populated developing country that has been transitioning from the rigidities of a centrally-planned economy since 1986. Agriculture's share of economic output has shrunk from about 25% in 2000 to 18% in 2014, while industry's share increased from 36% to 38% in the same period.

*1. http://www.fao.org/docrep/012/k8499e/k8499e00.pdf; 2. The World Bank, "Transforming Vietnam's agriculture sector will stimulate higher growth," 2016; 3. Food and Agriculture Organization, Thinh, H.B. and Wiegers, E., "National gender profile for agricultural households," 2010.*

# MARKET BACKGROUND

## Factors influencing the agritech market

### ACCESS TO RESOURCES

**Access to credit:** 24% of women heads of households have access to loans.[4]

**Access to extension services:** 35.4% of women have access to agriculture extension services.[4]

### GOVERNMENT PROGRAMS

**Agri-program:** This comprehensive program works towards a modern, sustainable, large-scale commodity production on the basis of comparative advantage, applying science and technology to increase productivity, quality, and efficiency to ensure food security. This program includes a comprehensive irrigation plan in the Mekong Delta in order to serve agricultural production.

### PARTNERSHIPS

**Financial services:** An International Development Association (IDA) credit of US$59.8 million was complemented by other funds to facilitate strong partnerships among farmers' organizations and agri-based companies in 2014. As part of this partnership, the International Rice Research Institute (IRRI) and Can Tho University provide technical support for farmers.[5]

### SOCIO-CULTURAL FACTORS

**Ethnic minority women** face multiple barriers to social and economic development that prevent them from benefitting from the economic changes in Vietnam as it moves towards a market-based economy.

### TECHNOLOGY FOR WOMEN FARMERS

**Technologies:** 2% of women-led agricultural households own small tractors, however, only 0.5% of women-led households own machinery for agro-processing purposes.[4]

### LEGAL FACTORS

**Land titles:** Women's names can be included on property titles, by law.

**Legal structures:** A World Bank Land Administration project helped rework 4.3 million land titles to include women. 88% of people who participated in the World Bank impact assessment agreed that joint-titles ensure greater equality between husband and wife and help women's economic empowerment.

*4. Food and Agriculture Organization, Thinh, H.B. and Wiegers, E.,"National gender profile for agricultural households," 2010; 5.The World Bank, "Vietnam: Sustainable farming increases productivity and improves the environment," 2016.*

# Agritech resources in Vietnam

## Agr Hub

AgriHub is a farm-to-table agricultural supply chain management platform.

http://agrhub.com/

## Spark

Spark worked in Vietnam to improve potato production with seeds from Germany and The Netherlands, utilizing cold storage technology and the BIOVAC method for processing agricultural waste.[6]

http://spark.org.vn/en/

## MimosaTek

MimosaTek helps farmers better manage their crops by providing useful harvesting information and knowledge, as well as predictions to minimize risks.

https://mimosatek.com/

# KEY FACTORS FOR ADOPTION OF TECH

- Rural women in their dual roles as producers on the farm and caregivers in the home need appropriate technologies to ease their work stress and to improve productivity.
- In Vietnam, women are now in charge of tasks formerly performed only by men (e.g., spraying of chemicals, broadcasting fertilizer, irrigating the fields, hauling and marketing products) due to major out-migration of men.[7] Time-and labor-saving devices can be of huge help to these women farmers.

# KEY ENABLERS

- Abiotic stress in rice-growing areas has led to a real need for tech in increasing drought-resistance varieties, cutting production losses, and managing water.[6]
- Reaching out to women can help in the revival of disappearing indigenous crops.
- Access to credit has improved for rural women. By 2010, the rate of poor households headed by women who got credit loans from the Vietnam Social Policy Bank were 83.73% of the total number of households that received credit loans.[7]
- At the national level, 75% of male and 62% of female headed households in rural areas have access to agricultural land.[8]

*6. Food and Fertiliser Technology Centre for the Asian and Pacific Region,Thang, T. C.,"Overview of Agricultural Policies in Vietnam," 2013; 7. United Nations, "The Socialist Republic of Vietnam," 2012; 8. Food and Agriculture Organization, Thinh, H.B. and Wiegers, E.,"National gender profile for agricultural households," 2010.*