

# REVOLUTIONIZING MILLING INDUSTRY AND ADDRESSING AFFORDABILITY CONSTRAINTS THROUGH SOLAR MILLS IN EAST AFRICA

**CASE STUDY: AGSOL**





# ABOUT THIS CASE STUDY

Women experience energy-poverty differently to men, and the roles they play in the agricultural and food-systems value chains are unique. These differences drive how individuals use Productive Use of Renewable Energy (PURE) technologies, what they need and aspire to, and how the technology can affect their life. Currently, there is limited understanding of the distinct characteristics of women's roles in PURE value chains - yet companies who do so are better placed to serve the needs of women, reach new customers and grow their business. In 2024, GOGLA set out to examine how PURE companies can improve their performance by building gender-inclusive businesses that meet women's energy needs.

This case study demonstrates how detailed customer insights can transform business models to better serve women customers in the PURE sector. It describes the business models deployed by Agsol and the opportunities they create for women consumers in the solar milling ecosystem. With support and research carried out by Distill Inclusion, data collected from Agsol's customers has informed the development of two customer persona profiles that capture the diverse needs, challenges and aspirations of their women customers.

Agsol's customers can be farmers, micro-entrepreneurs or agro-processors. By better understanding the diversity of needs, the role their products play and how impact differs in different value chains, Agsol have been able to identify critical pain points for women and find opportunities to improve their product offerings, financing models, and support services. What was learned from their women customers is now also being used to inform strategic decisions and product development across all customer segments.

The customer personas can be used as an inspiration for other companies offering similar product ranges or serving similar customer segments, to better understand and serve their existing or prospecting customer base.

This case study includes:

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- Customer persona: The enthusiast (page 3)
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- Conclusion (page 9)







## INTRODUCTION

Agsol is revolutionizing the milling industry in East Africa with its innovative solar-powered MicroMill, addressing critical issues of environmental impact, gender inequality, and economic inefficiency in rural milling practices. Founded in 2016, this social enterprise is transforming lives and businesses by providing sustainable agricultural and energy solutions for off-grid farming communities. The company's flagship product, the Agsol MicroMill, offers a clean, efficient, and cost-effective alternative to traditional diesel-powered mills. Designed with female operators in mind, the MicroMill is user-friendly, lightweight, and capable of processing smaller batches of grain, saving time and improving accessibility for smallholder farmers. This innovation is proving crucial for women entrepreneurs, allowing them to reduce operational costs, improve profit margins, and diversify their services.

Agsol's customer-centric approach, combined with innovative financing models like "pay-as-you-earn," is breaking down barriers to affordable milling technology. This model enables women to start or expand micro-enterprises without the burden of high upfront costs or collateral requirements. The impact extends beyond individual businesses, fostering community development by improving access to essential food processing services.

As of 2024, Agsol is scaling up production and distribution, with the potential to significantly transform the milling landscape in Sub-Saharan Africa. Their efforts contribute to several sustainable development goals, including gender equality, affordable clean energy, and economic growth in rural areas. By empowering women entrepreneurs and energizing local economies, Agsol is catalyzing positive change in rural communities across East Africa.

**Getting to know your customers is critical to creating products and services that meet their needs and getting paid. With Agsol, we asked who are they, how do they benefit, what are their challenges and how can Agsol serve them better.**

**Agsol's solar milling machines cater to two key female customer personas:** The enthusiast and the pragmatist. Each of these personas is described in detail in the following pages.



# HOW AGSOL'S SOLAR MILL HELPS WOMEN STRIVE

## THE ENTHUSIAST

Sex	Female
Age	32- 38 years old
Location	Rural Kenya
Family	Married, with 2-3 children
Education	Primary Education

## BACKGROUND

The enthusiast's business journey was born from necessity and a desire to provide better for her family. Frustrated by limited opportunities, she joined a women's group to access the solar mill. Energized by initial success, her dream is owning her mill outright and expanding into value-added products, aspiring to become a respected businesswoman in her community.

## BUSINESS JOURNEY AND IMPACT OF SOLAR MILL

The Enthusiast's life changed significantly when her women's group acquired a PURE solar mill. Previously reliant on subsistence farming and occasional manual grain processing, the mill opened new opportunities. She was an early adopter of the mill, and its use reduced her workload and increased productivity. Her journey with the mill began with learning its operation, quickly mastering the technology. She likely started by offering milling services to her immediate neighbors, then expanded her customer base as word spread about the efficiency and quality of her

service. Her income grew steadily, enabling her to better provide for her family and reinvest in her business.

The mill's success has elevated her status in the community and has given her more decision-making power within her household.

The use of mobile financial services, introduced alongside the mill, has improved her money management skills. The enthusiast can now save more consistently and has better control over her finances. The reduced time spent on manual labor has allowed her to diversify her income by focusing more on her small farm, creating a more stable financial situation for her family.







## ■ KEY JOURNEY ELEMENTS

- **Awareness:** Hears about solar mills from radio advertisements or local markets
- **Consideration:** Attends demonstrations, calculates potential savings
- **Purchase Decision:** Secures a SACCO loan, convinces husband of investment's worth
- **Usage:** Adapts quickly, offers milling services to neighbors
- **Challenges:** Time management, technical issues, limited business skills

## ■ CHALLENGES & PAIN POINTS

- **Capital / Financing :** “Lack of capital” for business expansion or individual mill ownership
- **Balancing responsibilities:** “Overburdened by household duties”; increased business responsibilities with household duties
- **Market access:** “Lack of cold storage services for perishables for grocery owners who access the items from far to reach markets” - While this refers to a different product, it suggests challenges in reaching broader markets, which could apply to milled products as well.
- **Technical Issues:** Occasional technical issues with the mill that she struggles to resolve independently
- **Business management skills:** Given her limited education, she might struggle with more complex aspects of managing the mill business, such as financial planning and growth strategies.



Livelihoods / Income sources	Details
Primary Income	Solar mill operation; selling milled products and excess crop in local market
Secondary Income	Small scale farming

Assets / Resources	Details
Technology	Solar mill; Smart phone
Other assets	Small plot of land

Financial Services Use
Uses Mobile Wallets and Cash In / Cash Out agents
Is member of a SACCO and a Savings Group

Networks and Information Sources
Women's Group meeting as well as SACCO and Saving Groups
Smart Phone
Radio and community announcement

## OPPORTUNITIES FOR AGSOL AND PARTNERS TO SUPPORT THE ENTHUSIAST

- **Targeted Training:** Advanced user workshops for technical and business skills that accommodate women's schedules and responsibilities, including childcare support during sessions.
- **Diversification Support:** Guidance on expanding into value-added products
- **Financial Partnerships:** Strengthen SACCO relationships for easier loan access
- **Family Engagement Workshops:** Organize sessions that include husbands and family members to promote shared decision-making and support for women's entrepreneurship.
- **Women's Business Mentorship:** Establish a mentorship program pairing experienced women mill operators with new enthusiasts to provide guidance and support.







## HOW AGSOL'S SOLAR MILL HELPS WOMEN STABILIZE

### THE PRAGMATIST

Sex	Female
Age	40 – 52 years
Location	Remote Rural Kenya
Family	Widowed, with more than 3 children
Education	Partial Primary Education

### BACKGROUND

The Pragmatist reluctantly embarked on her entrepreneurial path when traditional livelihoods became insufficient. Encouraged by other women, she cautiously joined the mill group. Despite initial skepticism, the steady income has ignited a spark of ambition. She now hopes to gain more skills, dreaming of a future where she can confidently manage the business and secure her family's stability.

### BUSINESS JOURNEY AND IMPACT OF SOLAR MILL

The Pragmatist's journey into the milling business was more of a collective experience. Prior to the mill operation business, she was engaged in small-scale traditional crafts and farm labor, struggling to make ends meet as a widow.

The introduction of the group-owned solar mill represented a significant change in her livelihood. She joined the group reluctantly more out of necessity than enthusiasm. Her

initial involvement was cautious, learning alongside other group members how to operate and manage the mill.

The Pragmatist took time to warm up to the new technology. She started by assisting other group members before gradually taking on more responsibility in operating the mill. Her journey has involved a steep learning curve, not just in using the technology but also in basic business operations.

The solar mill transformed the Pragmatist's life from subsistence to stability. As part of a women's group, she gained a steady income and basic financial inclusion. While grappling with knowledge gaps and cultural expectations, she experienced improved community status and collective empowerment. The mill opened new possibilities, gradually expanding her skills and economic outlook.





## KEY JOURNEY ELEMENTS

- **Awareness:** Learns from NGO workers or women's group meetings
- **Consideration:** Participates in group discussions, slowly warms to the idea
- **Purchase Decision:** Agrees to group purchase, contributes from Rotating Savings and Credit Association (ROSCA) savings
- **Usage:** Initially defers to others, gradually starts using the mill herself
- **Challenges:** Limited technical knowledge, group dynamics, confidence issues

## CHALLENGES & PAIN POINTS

- **Technical knowledge:** "Knowledge gap" so she struggles with understanding and operating the solar mill technology.
- **Maintenance and troubleshooting:** Given her limited technical skills, she faces challenges in maintaining the mill and addressing any technical issues.
- **Business skills:** "We don't have connections to people who can advise us on business skills" - This indicates she struggles with the business aspect of running the mill.
- **Transportation:** "Lack of means of transport especially for those with young children and have to travel long distances" - This could affect her ability to reach the mill or transport milled products.
- **Group dynamics:** As part of a group-owned mill, she faces challenges in decision-making and profit-sharing within the group.



Livelihoods / Income sources	Details
Primary Income	Group owned solar mill
Secondary Income	Traditional crafts or local labor

Assets / Resources	Details
Technology	Share in group owned solar mill; Basic phone
Other assets	None

Financial Services Use
Uses mobile wallets and cash in / Cash out agents
ROSCA

Networks and Information Sources
Word of mouth
Women's group meeting
Local Community gathering

## OPPORTUNITIES FOR AGSOL AND PARTNERS TO SUPPORT THE PRAGMATIST

- **Literacy-Friendly Resources:** Develop visual, audio, and hands-on training materials that don't rely on written text, ensuring accessibility for women with limited formal education.
- **Flexible Financing Options:** Partner with local savings groups or microfinance institutions to create women-friendly financial products that accommodate irregular incomes and limited collateral.
- **Gradual Skill Building:** Step-by-step learning program to provide training on efficient mill management techniques that help women balance their business with household responsibilities
- **Peer support:** Facilitate regular meetings for women mill operators to share experiences, build confidence, and collectively problem-solve.





## CONCLUSION

As Agsol continues to expand its presence in East Africa, they're not just providing milling services – they're fostering a new generation of rural women entrepreneurs. Their solar-powered MicroMill technology, combined with inclusive financing models and women-centric support programs, demonstrates how technological innovation, when paired with gender-sensitive business models, can drive both rural economic development and women's empowerment in the agricultural sector.

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