

The Case for Customer-Centric Financing to Drive Female Ownership of the Agsol MicroMill

In partnership with [ClimaFI](#)

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INTRODUCTION

Pay-as-you-earn

Agsol, in collaboration with ClimaFI, has taken the first strides in revolutionising financing for customers of the Agsol MicroMill - the most efficient small milling machine ever developed. A [Power Africa grant](#) helped Agsol design and pilot a financing mechanism that prioritises female entrepreneurs and structures payments based on customer success. This groundbreaking approach goes beyond the conventional 'PayGo' payment options by linking payments to product utilisation, in a transformative 'pay-as-you-earn' model. To make this vision a reality, we focused intently on understanding the customer profiles that are most likely to excel as millers. By leveraging comprehensive data and insights, we are crafting persona driven financing solutions that align financing terms with risk and ability to pay, with the ultimate objective that the mill helps to generate income to be able to pay for itself.

Challenges in Africa's milling industry

Outdated, decades old diesel milling technology poses significant challenges for off-grid areas. The inefficiency of large batch milling^[1], dependence on fossil fuel prices, environmental impact, and complex maintenance requirements make milling services time-consuming and costly for women to access. CLASP estimates that women in Africa spend an astonishing 40 billion hours annually seeking vital milling services. With nearly half a billion people in Sub-Saharan Africa depending on milling as a service for food security, solar milling emerges as an important catalyst for achieving sustainable development.

THE CASE FOR WOMEN-CENTRIC FINANCING

Establishing demand for financing

In 2022, Agsol embarked on an ambitious journey, assembling 100 MicroMills in Kenya as a proof-of-concept commercialisation pilot. The response was overwhelmingly positive. Within five months, every single mill was distributed across 10 African countries, showcasing the enormous latent demand in the market. Moreover, independent market study confirms that 83% of mill owners strongly agree that the MicroMill is a good investment while 61% say their income has increased ([60 Decibel](#), *Agsol Mill Owner Survey 2023*). Nevertheless, in the midst of this success, we came to the realisation that a customised financial solution is crucial to effectively reach our priority market of rural female micro-entrepreneurs. As 9 out of 10 customers expressed their need for credit access, our motivation became to design a pioneering strategy that not only addresses the financial requirements of women entrepreneurs, but also considers their unique customer profiles.

The case for women-centric financing

In most communities in Africa, women are responsible for household food processing and preparation. Despite women being primarily involved in food processing like milling, gender bias in mill ownership persists due to the technical skills required and cultural perceptions of diesel mills as male-dominated. Women also face disproportionate challenges when it comes to securing financing for their ventures. As they very often have limited fixed or valuable assets, they struggle to offer collateral to traditional financing providers. Agsol's MicroMill has been designed with a female operator in mind. With its automated and lightweight features, the mill simplifies operations and enables small batch milling, resulting in time, cost, and labour savings. Additionally, the mill eliminates demanding maintenance and physical labour, promoting equal participation of men and women. Being at a similar price point to diesel mills, the MicroMill needs a financing solution that is data and risk-driven to penetrate the female market.

DISRUPTING THE MARKET

Driving the clean energy transition

Based on extensive qualitative interviews, we developed 5 customer personas and analysed their economic characteristics using mill usage and revenue data. These personas were assessed based on their experience in the value chain, milling expertise, and proximity to end users. Among these profiles, the 'hardcore posho miller' profile stands out as the most viable customer for financing, representing the majority market potential for Agsol. This persona comprises traditional diesel millers seeking to transition to clean energy solutions.

A recent Cross Boundary publication estimates that across Sub-Saharan Africa there are 1.5 million diesel mills consuming about 2 billion litres of diesel a year and releasing over 5 million tonnes of CO₂. The problem is immense, poorly recognised, and until now a viable solution has not existed. With an estimated 1.5 million hardcore posho millers in Africa, converting this customer profile to electric milling will revolutionise the milling industry. By replacing incumbent diesel mills, this profile alone represents a \$2 billion + market opportunity.

Financing the Hardcore Posho Miller

Ann is a 32-year-old entrepreneurial woman, who is the breadwinner of her rural household in Laikipia County, Kenya. As a farmer, shop owner, and Agsol solar miller, Ann exemplifies the successful off-grid business owner who utilises the solar MicroMill for various income-generating activities.

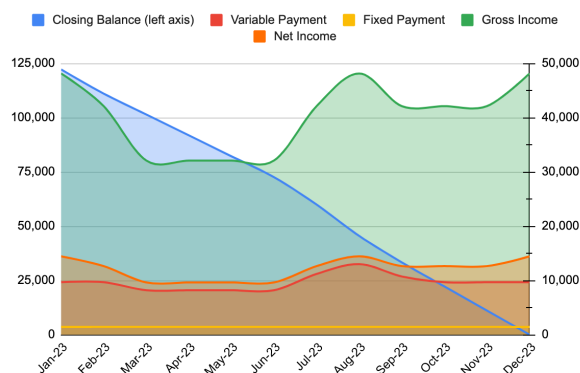
Ann's mill business model includes milling services, flour sales, and recently, the production of her own nutritional porridge mix in response to specific requests from mothers. Alongside her milling expertise, her established customer base brings additional foot traffic to her shop, contributing to her success.

For the past 8 months, Ann has operated the MicroMill, transitioning from a costly and high-maintenance diesel mill. The solar mill benefits bring her personal satisfaction, as she retains the business revenue instead of spending it on fuel ("*this is my money, and the sun is free!*"). Additionally, her customers appreciate the improved quality of flour produced by the solar mill, free from diesel flavor.



Customised 'pay-as-you-earn' payment plan^[2]

Indicative pay as you earn payment plan (Kenyan Shilling)



To make the 'pay-as-you-earn' model work, IoT devices will track Ann's mill utilisation by measuring power consumption, providing insights into productivity and income generation. This innovative approach ensures that payment amounts are tied to mill usage, with higher usage leading to increased payments up to a cap of 30% of gross income. In months with lower income, payments can be carried forward to future months when revenues are higher, aligning with seasonal patterns and promoting financial flexibility.

Ann's Fixed Payment, similar to a monthly rental fee, covers the cost of financing and is due irrespective of production levels. The Variable Payment is set according to utilisation, based on her Net Income.

Looking at Ann's monthly revenue, it is sufficient to pay the capital cost of the product over a one-year timeframe. With such financial stability and efficient operations, Ann's decision to embrace solar power has proven to be a profitable choice!

IMPACT

The projected impact of the MicroMill is poised to revolutionise the milling industry by replacing traditional diesel-powered mills with an inclusive, empowering, and eco-friendly solution. Through the implementation of a tailored financing solution, it is anticipated that the ownership of MicroMills by women will increase significantly from less than 10% to approximately 50% within the next planned 1,000 MicroMill batch in early 2024. With each MicroMill serving 57 households on average, we hold the potential to enhance access to milling and energy services for up to 250,000 individuals by the end of 2024.

^[1]Due to high start-up costs, traditional diesel mills require a minimum batch size of 20kg, causing long waiting times at the mill. The Agsol MicroMill can mill a batch as small as 500g.

^[2]Key data inputs: IoT data on mill power consumption (20-30 days) and self-reported sales and volume data from each miller (up to 30 days). Monthly averages per mill were estimated for April-May and extrapolated for the year based on survey data on high and low seasons and a related +/-20% adjustment factor. The product price was set at KES 145,000, assuming a 20% down payment and 10% annual financing cost. Repayment period was calculated based on an assumption of 30% of mill revenues being available for repayment.