



AgriFI Kenya Challenge Fund Gender Learning Case Study: PAEM Company Limited (PCL)



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1. INTRODUCTION

The macadamia value chain in Kenya holds significant potential for the economic empowerment of smallholder farmers, offering prospects for improved nutrition, education, and societal benefits. However, the sector is currently affected by challenges such as low production rates and the production of low-quality nuts, which have limited the positive outcomes for smallholder farmers. These conditions exist in a context of existing crop regulations. Macadamia nuts production and trading in Kenya is regulated by the Nut and Oil Crops Regulations, 2020, under the directorate of Agriculture and Food Authority (AFA). The mandate of AFA is to promote best practices and regulate the production, processing, marketing, grading, storage, collection, transportation and warehousing of agricultural products. Part of the laws that limited farmers' prospects was Section 43 of the Crops Act, 2013, which prohibited the trading of unprocessed nuts by producers. A recent suspension of this regulation by the Ministry of Agriculture has led to improved incomes for farmers and more open opportunities to sell their unprocessed nuts to registered traders.

In the social context, cultural norms, particularly those related to gender, exacerbate inequalities, relegating some smallholder farmers to a cycle of hard labour with little hope of fully capitalising on the opportunities macadamia farming can offer. This gendered context is characterised by an unequal division of labour between men and women, restricted mobility for women due to domestic responsibilities, and limited access to crucial information, extension services, and the financial benefits derived from the sale of macadamia.

In addition to these gender-specific barriers, the productivity, quality, and incomes from macadamia farming are further compromised by several factors: the low adoption of improved macadamia varieties, a scarcity of necessary inputs, suboptimal agricultural practices, the impacts of climate change, pest and disease outbreaks, restricted access to credit, significant post-harvest losses, and exploitative market practices. A study conducted in 2019 among macadamia smallholder farmers in Embu revealed telling statistics: only 23.7% of farmers had access to extension services, a mere 6.8% could access credit, and just 21.1% were informed about market trends.¹ These elements—extension services, credit access, and market information—are pivotal to the economic and social sustainability of the sector. They have profound implications, particularly for female macadamia farmers, who encounter additional layers of disadvantage beyond the challenges faced by their male counterparts.

It is in this context that PAEM Limited Company (PCL) operates. Founded in 2012, PCL engages in the processing and export of macadamia nuts. Working with smallholder farmers, PCL offers market linkages and promotes improved quality and quantity production of macadamia nuts. PCL aimed to achieve the following through the AgriFi Challenge Fund grant:

1. Integrate 10,000 macadamia farmers into PCL's farmer development scheme, which will involve guaranteed market access, access to extension support, and high-quality seedlings.

¹ Njiru et.al 2021 <https://www.ajol.info/index.php/jae/article/view/217383>

2. Train 10,000 smallholder macadamia farmers in good agricultural and climate-smart practices, which will lead to higher-quality nuts, higher productivity, and increased sustainability.
3. Digitise the procurement process and farmer database, collect data, and present dashboards to different users for strategic decision-making, especially in field extension service.
4. Guarantee farmers price premiums through sustainability certifications (organic & fair-trade) and market access.
5. Integrate solar energy in the new facility as a climate-smart practice in the company and a measure to ensure project continuity through cost savings beyond the project.
6. Create job opportunities for women and youth in the field extension and post-harvest section.
7. Distribute 10,000 seedlings to smallholder farmers.
8. Implement traceability software integrated in the website design so that customers, both local and international, can get information about the product, including its source, date of harvest, and crop protection history.
9. Revive the input store, nursery, and demo plot at the packhouse site.

This study aimed at assessing the gender impact of PCL's initiatives among macadamia smallholder farmers. 2 focus group discussions composed of female macadamia farmers, 1 key informant interview with PCL staff and 2 with female factory workers were conducted. The respondents had been producing macadamia for a period of between 6-20 years and owned between 25-80 trees.

2. FINDINGS

2.1 Collective Bargaining Power through Farmer Groups



"In these groups, we learn together and share experiences and learnings, especially between experienced and younger farmers. A lot of information is shared through groups."

PCL adopted a farmer development model which involves working with farmer groups and affinity clusters based on gender or location. The company had noted that the farmers were not organised in a way that would enhance pulling resources together to commercialise their macadamia nuts. PCL services to the farmers have largely been through farmer groups that are forums for training, mentorship, and access to information. Organising in unions or self-help groups has been lauded as an effective means of ensuring participation and inclusion of marginalised groups. For macadamia farmers from Embu, joining farmer groups has opened opportunities for peer support and learning. To qualify as a member of a farmer group, one must be a farmer irrespective of the size and number of macadamia trees. Other requirements include:

- Willingness to practise organic farming, including a commitment not to use synthetic fertilisers and pesticides
- Participation in meetings
- Must be a woman if joining a women-only farmer group
- Must be willing to fill out farmer diaries

Collective Benefits and Market Access

Organising themselves in groups has enabled farmers to access training collectively and purchase inputs in bulk at reduced prices. This collective action facilitates a unified voice in negotiations concerning critical issues like pricing and extension services. Notably, this arrangement has empowered female farmers to overcome significant market barriers, such as the high costs tied to individual selling and transportation. A sentiment shared among women during focus group discussions underscores the value of this collective strength: *"We do not worry, as we know our group leaders know what we want. They speak on our behalf because pricing is very important to us; we want to benefit from our labour."* The empowerment and economic resilience fostered by collective bargaining are further complemented by the social solidarity and networking opportunities that arise within these groups, offering business advantages, mental health benefits, and enhanced social sustainability.

Extension Services and Women's Leadership

Farmer groups have also played a critical role in facilitating access to extension services for women who might be sidelined due to domestic commitments. Adjusting these services to accommodate the unique circumstances of women—such as conducting training sessions closer to their homes—has significantly increased their access to valuable agricultural knowledge and skills.

Promoting women's leadership within these groups is another key achievement, empowering them to take on decision-making roles. This shift has enhanced their confidence and agency, encouraging broader community engagement. The impact of female leadership within these groups is profound, offering advantages like approachability and a deeper understanding of women's needs, which leads to tailored solutions. One respondent highlighted the importance of women's leadership, noting, *"Women leaders are easier to talk to, and they understand the needs and interests of other women to drive tailored solutions..."* Moreover, the diversity and inclusivity by women's leadership have fostered a broader array of ideas and a stronger representation of women's voices within the community.

Advantages of female leadership

- Approachability and tailored solutions: Female leaders are noted for being more accessible and attuned to the challenges women face in farming. They are adept at crafting solutions that directly address these challenges. This ensures that *"resources and information reach women in a timely manner and in the form they best understand"*, enhancing efficiency and understanding within the group.
- Inclusive decision-making: The presence of women in leadership positions ensures a broader range of ideas and perspectives in decision-making processes. This inclusivity has not only empowered women within the groups but also ensured that their voices are heard in broader agricultural and community discussions.
- Mentorship and breaking norms: Female leaders serve as vital role models, offering guidance to younger women and challenging traditional norms restricting women's economic participation. The principle that *"seeing another woman leading is good because even if people still don't believe in equality, we can see anyone can lead"* highlights the inspirational role of women leaders in changing perceptions.

Challenges affecting participation in PCL Groups

While the benefits of participation in farming groups are clear, several challenges limit their attractiveness to some farmers:

- Immediate financial needs: The necessity for immediate cash to cover household expenses leads some women to prefer selling their produce to brokers, who pay instantly, over participation in PCL groups, which offer delayed payments.
- Delayed payments from PCL: When payments from PCL are not prompt, it poses significant challenges for women who shoulder most of their families' financial responsibilities. This delay can strain their ability to meet household needs in a timely manner.
- Limited marketing opportunities: Participating in PCL groups can sometimes restrict farmers' ability to negotiate better prices with other buyers, making participation less appealing for those seeking maximum flexibility and profitability.
- Restrictions on farming practices: Specific to PCL's guidelines, there are restrictions on intercropping that can deter farmers from joining these groups. PCL mandates that "all the intercrops in the macadamia nut farm shall comply with organic production rules or be at least 2 metres from the macadamia drip line." This rule aims to maintain organic certification standards but can limit farmers' ability to fully utilise their land, especially those who rely on intercropping for additional income or crop diversity.

2.2 Gender Sensitive Extension Services and Transformative Training



PCL initiatives to ensure the inclusive provision of extension services include hiring female extension officers. According to the respondents, a female officer makes them more comfortable because of cultural sensitivity. Additionally, providing training services on the farms to encourage the participation of women due to the suitability of locations and ensure suitable time to fit women's household responsibilities. With gendered barriers mitigated, advisory services, on-farm demonstrations, planting procedures, harvest and post-harvest management, pest and diseases management, diagnostic services and provision of information about suitable inputs reach all farmers. Extension training includes crop management procedures such as managing mature trees, personal protection, pest control training, harvesting timings, safe storage, and soil testing. PCL extension officers, according to the women, are approachable and friendly.

A farmer's testimonial demonstrating the impact of training: *"Nimesaidika sana [I have been helped a lot]. Before, my husband was drinking all the macadamia money. Now, after training, I learnt and taught him. Now we manage farms well and have better yields. We harvested 400kg last season, and now we harvest 600kg."*

Gender-sensitive and inclusive extension services provision has played a crucial role in empowering macadamia farmers with the information, skills, and support they need to enhance their agricultural practices, improve productivity, increase income, and broaden their aspirations. In addition, through extension services, women have been exposed to opportunities for decision-making that empower them to take control of their farms.

2.3 Economic and Environmental Sustainability



“PCL people showed us how to manage pests and diseases without chemicals so our macadamia can meet standards. Before this, organic farming did not make sense, but now I see the value.”

To promote economic and environmental sustainability, PCL introduced Global GAP training that has led to the promotion of climate-smart practices, resulting in quality yields and access to premium export markets for macadamia. PCL trains on Fair for Life and Fairtrade standards. Fair for Life and Fairtrade standards demand that the farmers get fair prices for their produce and that farm workers’ rights are prioritised. These standards also advance environmental sustainability in farming practices. Female macadamia farmers affiliated with PCL have guaranteed fair prices and freedom for collective bargaining processes through the groups. Group accountability to ensure non-discriminatory and non-exploitative practices are promoted both at the farmer group level and by the company.

Fairtrade standards promote sustainable production practices such as GAP, which macadamia nut farmers receive through PCL’s extension services. Fairtrade premium prices are invested back in the community, leading to diversified income-generating activities such as livestock keeping, as was reported by female farmers: *“I want to buy more goats and dairy cows and build myself a better house.”* Diversification of incomes builds resilience, particularly in the context of climate change. Due to capacity building on GAP practices and consequent improved quality of nuts, farmers have managed to secure long-term off-taking commitments from PCL, thereby avoiding exploitative brokers.

According to the female farmers, GAP training has had the following outcomes:

- i. Improved yields of macadamia nuts per tree.
- ii. Improved quality of nuts to match export market and consumer preferences.
- iii. Improved competitiveness and farmer incomes from macadamia nut sales.
- iv. Improved capacity and skills in farming practices with positive effects on other crops.

Improved yields, quality, prices, and farmer skills are core to women’s empowerment as they enable female farmers to access a reliable source of livelihood; besides these, GAP training has promoted the use of locally available manure, hence reducing the cost of production. The supply of climate-smart macadamia seedlings by PCL has ensured that the farmers get certified seeds that guarantee good yields and quality, further improving prospects for income.

PCL's promotion of organic farming as part of its Good Agricultural Practices (GAP) aims to enhance sustainability and improve the quality and market value of macadamia nuts. However, this initiative faces several challenges, particularly in the transition process and the practical implementation of organic farming standards.

In Embu, the transition to organic farming is underway, with varying degrees of adoption among the farming community:

- 1,190 farmers have fully transitioned to organic practices.
- 2,046 farmers are currently under conversion review.

- 5,046 farmers continue with conventional farming methods, totalling 7,282 farmers engaged in the macadamia nut farming project.

While organic products command higher prices, the transition is challenging, especially for those practising intercropping. The need to integrate seasonal crops with perennial ones is significant in Embu, but organic standards restrict this practice. Female farmers face limitations that prevent them from planting vegetables—a critical component of their role in food preparation and household nutrition.

There are challenges to organic certification. Organic farming presents difficulties in pest and disease management, with few available organic pest control options that are both costly and labour-intensive. Achieving alignment with organic farming standards can take up to three years, a period during which farmers may earn less while their investment in the farm increases. Women farmers find this especially demanding, as organic farming requires additional time on top of their domestic responsibilities. The high cost of organic fertilisers and the need for new technologies to expedite the organic manure-making process were also highlighted as significant barriers.

Areas for PCL to improve

Feedback from female farmers suggests several areas where PCL could make improvements to support their transition to organic farming better and enhance their overall productivity and income:

- Increasing the number of collection centres to facilitate easier access to markets.
- Raising the price of macadamia nuts from the current 105 KES to at least 120 KES per kilogram to reflect the quality and effort of organic farming.
- Improving communication about training opportunities currently relies on farmer groups and may not reach all intended participants. Suggestions include disseminating information through alternative venues, such as religious gatherings, which are more accessible to all farmers, including young women.

To further sustainability goals, PCL has proposed integrating solar energy into its factory operations as a climate-smart practice. This initiative aims to reduce electricity costs by about 30%, with savings redirected to support field operations. The intention is to minimise utility costs, thereby allowing more resources to be allocated to training and outreach for farmers, including women and youth. However, this solar energy project is still in the planning stages and has not been fully implemented.

2.4 Traceability and Digital Management System



Transparency and traceability are pivotal in adhering to global GAP standards, which are crucial for building market credibility for products like macadamia nuts. PCL aims to bolster these aspects by implementing traceability software that records detailed information about the macadamia nuts, including their source, harvest date, and crop protection history. This has been made possible through:

Traceability through farmer diaries

Farmers contribute to the traceability system by maintaining a 'farm diary,' a practice that has become instrumental in achieving traceability. These diaries document various agricultural activities

and records, such as: field activities, seed verification, input usage, compost production, equipment utilisation, crop harvest and training participation.

PCL integrates the data from these farm diaries into a digital management system, enabling a comprehensive overview of each product's journey from farm to market. Farmers have found the farm diary particularly useful, noting, *"The farm diary has helped us to track our investments of time in the farms in relation to the harvest yields. This has helped us to know what works and what does not work."* This method facilitates compliance with GAP standards and empowers farmers with insights into their practices, enhancing productivity and sustainability.

Empowering women farmers with formality and self-esteem

The introduction of farm diaries within the PCL framework has significantly enhanced the formal recognition and esteem of women farmers. Most female respondents have a primary level of education that enables them to fill in farm diary information. This tool organises farming activities and instils a sense of importance and professionalism in their work. One woman farmer shared, *"I feel good to have my diary, to manage everything and makes me see my farm as important work like any other."* This sentiment, resonating among many women, underscores the diary's role in elevating the perception and respectability of farming as a profession.

Enhanced data entry and product information

The system also employs QR codes for accurate data entry and easy access to product information. QR codes contain detailed product data, such as expiry date, production date, net weight and slot number. This helps to streamline the information flow and improves the efficiency of the supply chain from farmer to consumer.

In summary, PCL's integration of farm diaries and a digital management system has transformed the operational landscape for macadamia nut farming. This approach not only empowers women farmers with a greater sense of pride and professionalism but also facilitates targeted support, improved financial control, and enhanced traceability and transparency throughout the production process.

At the organisational level, PCL's digitised procurement processes and farmer databases enhance data collection and present dashboards for strategic decision-making, especially for the field extension service. This affects the services farmers receive because PCL is able to offer specific services and track farmers' progress. Other outcomes of using a digital management system include:

- i. Helps to track Fairtrade standards so specific support is provided
- ii. Provides records for credibility for the certification process.
- iii. Traceability of the product to specific farmers is possible - this improves the visibility of farmers' efforts.
- iv. Helps track the performance and effectiveness of training
- v. The digital management system also captures farmers' mobile phones to facilitate payment. To the women farmers, payment through the mobile phone has improved their access to the macadamia income as the money is paid directly to their phones through M-Pesa.

- vi. The system also facilitates accurate entry of data and information through QR codes, which provide product information.²

2.5 Women's Empowerment and Outcomes from Macadamia Nuts

Collective bargaining power in farmer groups, gender-sensitive extension services, GAP training, and digital management systems have led to positive outcomes for women. This includes improved macadamia yields of better quality, increasing women's incomes. Notably, opportunities to diversify income-generating activities and achieve goals and aspirations such as education for children were echoed as illustrated below:

Improved domestic dynamics

- *"Before my husband was drinking all the macadamia money. Now after training he listens to me and I taught him. Now we have better yield from 400kg to 600kg."*

Agency to pursue goals

- *"I aspire to achieve about 1200kg from 600kg."*

Diversified income activities

- *"Sikuwa na ng'ombe [I didn't have a dairy cow] now I can sell milk. I have built a better house from macadamia."*
- *"I have planted more trees and want to expand my grocery business"*
- *"I want to buy more goats and dairy cows and build myself a better house."*

Education outcomes

- *"Macadamia imenitoa [has brought me] far. watoto wako shule [children are now in school]. Life iko [is] comfortable"*
- *"Before I couldn't pay school fees, I can now clear school fees, I pay my chama [merry go round] without a problem."*

Broadened aspirations

- *"In future I want to see my farm give me money to buy more land so I can [afford] to educate my children to university"*
- *"I aspire to get a piece of land elsewhere to plant more macadamia so when my children need more money in college, I will be able to pay."*

Financial literacy, decision making and self reliance

- *"I have learnt a lot like how to budget, I pay school fees, I have bought goats. I am in a women group."*
- *"Kitambo nilikuwa naomba mzazi [before I would borrow from parents]. But now I have my own money."*

Components of women's economic empowerment include the ability to enjoy returns to their labour and time, access to skills and resources such as land, the ability to participate in diverse economic activities, the ability to make decisions and to be viewed as economic actors just as men are noted. Women who farm macadamia echoed these components of empowerment, citing a change in gender dynamics as follows: *"My husband saw the efforts and appreciates it and lets me manage*

² Expiry date 5/7/25 production date 04/01/24 net weight 25lb slot number 6600135878

the farm. There was a time I never got anything, but I was patient, now it's okay. Now I have decided what to do with the money."

Part of the coping strategies for women farmers in cases where it has been difficult to have full access to income from macadamia includes what the women referred to as 'ujaja'. *Ujaja* loosely translated as being shrewd connotes actions that women take to ensure they live in harmony with their spouses while also benefiting from their labour. *Ujaja* includes:

- Making the man feel appreciated as the farm owner so as not to provoke any conflicts. For example, as one woman asserted, *"don't keep saying you have money or you are the one who works to make them feel respected and keep peace. Use the language of ours not mine."*
- Under-reporting the nut harvest means only giving the money worth of the reported yield when the husband demands it.
- Transferring some macadamia trees to children's names but managing them on their behalf. This way, the husband does not lay claim to all the income proceeds from the wife and children's macadamia trees.
- Diversifying with other income activities to prevent violence that may arise when macadamia money is paid.
- Accommodating gender roles according to the community's norms to prevent couple acrimony. For example, when women receive money, they attribute what they have done with it to their husbands. *"Even if I build a house, I say it is him who has built it to avoid problems."*
- Joining chamas [merry go round] to build savings. *"When you save money in chamas it is hard for the husband to ask for it whenever he wants."*

There are opportunities away from the farm at the nuts factory, where the majority of the workers are women. The choice for women workers is twofold: On one hand, PCL aims to provide these opportunities for young women and on the other hand, women are preferred for their quality processing and packaging skills. PCL has also addressed the time and energy constraints in their laundry section through mechanisation to ease women's work there. One of the young women working at the factory indicated decent work conditions, including the provision of protective clothing, water and breakfast, health insurance (NHIF), social security (NSSF) and no-harassment or favouritism practices. The young woman, however, indicated that the work does not provide her with a sense of security for the future as it is seasonal. Working in the factory, according to the factory worker, is not respectable but provides a sense of purpose: *"This work is not respected by others, but it makes me feel good that there is something to do."*

3. CONCLUSION

PAEM has effectively improved the economic opportunities for women in the Kenyan macadamia value chain through initiatives that enhance collective bargaining, offer gender-sensitive extension services, and prioritise sustainable farming certifications. However, issues such as delayed payments and seasonal factory work remain unresolved. Recommendations for replication include strengthening farmer groups focusing on women's leadership, expanding gender-sensitive services,

ensuring timely payments, promoting organic and Fairtrade certifications, leveraging digital tools for farm management, creating stable year-round employment in agricultural processing, and improving access to social security benefits. These strategies can help other organisations replicate PCL's successes, promoting equitable and sustainable development in the agricultural sector and beyond.