

# SCALING OUT COMMUNITY-BASED INTEGRATED FARMING PROGRAM IN SORONG REGENCY SOUTHWEST PAPUA INDONESIA

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**Abstract:** The Integrated Farming Program was implemented in Kampung Adat Malasigi, Klayili District, as an extension of a similar initiative in Klasafet District, Southwest Papua. This program, part of the Corporate Social Responsibility (CSR) initiative by PT Pertamina EP Papua Field, in collaboration with the Kasuari Foundation and the local business institution of Sumur Olie Village, aims to boost agricultural productivity and promote processed banana products. This study examines the program's impact on local economic and social conditions. Key findings include an 80% increase in banana productivity in Kampung Adat Malasigi and a 30% increase in Klasafet District. Additionally, community income rose by 33% in Kampung Adat Malasigi and 25% in Klasafet District. The development of processed banana products, such as banana chips and dried bananas, has become a popular venture. However, challenges remain in addressing infrastructure gaps and improving market access. The study concludes that while the program has achieved notable success, further efforts in infrastructure development, institutional capacity building, and product innovation are needed to ensure long-term sustainability.

**Keywords:** Scale-out strategy, community participation, featured product.

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Submission : May 22<sup>nd</sup> 2024

Revision : July 16<sup>th</sup> 2024

Publication : August 30<sup>th</sup> 2024

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## INTRODUCTION

The Integrated Farming Program in Kampung Adat Malasigi, Klayili District, is an extension of a similar initiative in Klasafet District, Southwest Papua, focusing on banana cultivation and processing to address infrastructure gaps, limited market access, and technological barriers. Bananas, a staple food and high-value agricultural commodity in the region, hold great potential for value-added processing (Komang Ariyanto, 2023). This program, a collaboration between PT Pertamina EP Papua Field, the Kasuari Foundation, and local economic institutions, provides technical assistance in banana cultivation, product processing, and capacity-building in marketing (Yahya et al., 2022).

It aims to increase production, boost income, and diversify banana-based products, thereby enhancing community welfare (Mishra & Debata, 2021).

The program builds on the success of an earlier initiative in Klasafet District that integrated freshwater fish farming with hydroponic agriculture, resulting in improved economic outcomes, reduced unemployment, and strengthened local institutions (Chauhan, 2022; Khatri et al., 2023). This model of integrated farming and community empowerment has been shown to yield sustainable benefits and supports corporate social responsibility (Mohammed et al., 2022).

This study evaluates the program's impact on production capacity, income, and product diversification, while assessing community participation and identifying implementation challenges. Findings indicate significant increases in banana productivity (80% in Kampung Adat Malasigi and 30% in Klasafet District) and income (33% and 25%, respectively). However, infrastructure and market access remain key obstacles. The study highlights the importance of community-based approaches in fostering sustainable agricultural development, aligning with global best practices in rural development (Ouma et al., 2023; Yazdanpanah et al., 2021; Yudhatama et al., 2021). Further efforts in infrastructure, institutional capacity building, and innovation are needed to maximize the program's potential.

## LITERATURE REVIEW

Scaling out was the approach that emphasized replicating successful innovations in different communities or locations. Scaling out also aims to spread the same results or even better. Context-specific issues that affect the system that is trying to change are commonly found, and replication might need to address the root of the problem. Many participants described the shift in their scaling efforts as to focus on the policy (Moore et al., 2015). This may be true, but scaling out could give alternatives to improve the more successful program with different constraints and resources.

Community-based program interventions could generate a population-wide impact and are intended to address all people equally (Weber, 2015). Scaling up and/or scaling out the program with a participatory approach could be an alternative to achieving the program's aims.

The first integrated farming program was conducted in Kampung Klamono Olie, Klasafet District, Sorong Regency, Southwest Papua. The program is designed to empower communities by developing a local economy based on fisheries and agriculture with an innovative and sustainable approach. This approach includes the use of hydroponic technology, which utilizes circulating water from fish ponds as a source of nutrition for plants, thereby reducing the need for chemical fertilizers and promoting a closed-loop system.

The Integrated Agriculture Program is a pioneering community empowerment initiative that integrates freshwater fish farming with hydroponic agriculture. This innovative and sustainable approach, tailored to local environmental conditions, is poised to create alternative sources of income, reduce unemployment, and strengthen local institutions. Economic empowerment programs in remote areas such as Kampung Klamono Olie are crucial, given the dependence of communities on natural resources around them. With this program, we aim to create sustainable economic independence and inspire the

creation of community development models that can be replicated in other regions with similar characteristics, thereby multiplying its impact.

The integrated agriculture Program is designed to empower communities through an integrated approach that combines freshwater fish farming with hydrogenic farming. The selection of hydrogenic technology, which utilizes circulating water from fish ponds as a source of nutrition for plants, is an innovation that is not only environmentally friendly but also efficient in the use of local resources. This program is expected to increase community income and reduce dependence on non-renewable natural resources by utilizing limited land. With the crucial support of local stakeholders and efforts to strengthen local institutions such as village-owned enterprises (local economic institutions), Sumur Olie Village, this program is expected to create sustainable economic independence for the people of Kampung Klamono Olie.

The Integrated Agriculture Program shows that community empowerment programs integrated with local potentials can significantly improve economic and social welfare. The success of this program is mainly due to the participatory approach that involves the community from the planning stage to implementation. This approach ensures that programmes are appropriate to local needs and contexts, thereby increasing community participation and commitment levels. The collaboration of all stakeholders enables more effective mobilization of resources and faster and more targeted problem-solving.

Although the program is successful in many aspects, some challenges remain. One of the main challenges is the program's sustainability after the end of external support. Although the local economic institution of Wells Olie has been strengthened institutionally, further supervision and mentoring are still needed to ensure that this organization is able to be independent in the long term.

Another challenge is the adaptation of new technologies by society. Although the training has been conducted, some group members still need help applying hydrogenic technology consistently. This shows that continued training and ongoing technical support are still required to ensure the success of this technology.

The findings of this study provide some important implications for the development of community empowerment programs in the future. First, it is essential to strengthen local capacity in technical aspects, management, and administration to ensure the program's sustainability. Secondly, a more adaptive approach to implementing new technologies is needed, including ongoing training and long-term technical support.

In addition, collaboration between various stakeholders must be continuously strengthened, especially regarding program supervision and evaluation. Ongoing support from companies and governments is critical to ensuring that programs such as Integrated Agriculture are successful in the short term and have a sustainable, long-term impact. Overall, integrated agriculture programs have shown that with the right approach, community empowerment programs can effectively improve the socio-economic well-being of people in the company's area of operation. However, this program's long-term sustainability and effectiveness still require continued attention and support from all stakeholders.

The concept of community empowerment through integrated farming has received significant attention in the academic literature. Chambers (2014) emphasized the importance of participatory approaches in rural development, which is in line with the

methodology used in this program. In addition, Ellis and Biggs (2001) show that rural livelihood diversification, as promoted by this program through the introduction of fish farming and hydroponic farming, can significantly improve the economic resilience of rural households.

In the Indonesian context, Rosegrant et al. (2013) highlighted the importance of agricultural innovations to increase the productivity and income of smallholder farmers. Their study supports the approach taken in this program, which combines modern farming techniques with local knowledge. Furthermore, Dewan et al. (2017) point out that successful community empowerment programs in Indonesia often rely on strong partnerships between the private sector, government, and local communities, which is also a hallmark of this Integrated Farming program.

In terms of program sustainability, Pretty (2008) emphasizes the importance of strengthening local institutions to ensure the sustainability of rural development initiatives. This is in line with this program's efforts to strengthen local economic institutions such as Olie Wellur Village. However, as Cleaver (2005) points out, institutional strengthening must take into account local power dynamics and existing social norms to be truly effective.

Finally, in terms of program scalability and replication, Westley and Antadze (2010) suggest that successful social innovations often require careful adaptation to the local context, rather than simply direct replication. This suggests that while this Integrated Farming program has been successful in Klamono Olie Village and Malasigi Traditional Village, replication in other areas may require adjustments based on local social, economic and environmental conditions.

## **METHOD**

This study was meticulously conducted in Klayili District, Sorong Regency, Southwest Papua. This district was chosen due to their significant agricultural activities and the potential for the Integrated Farming Program to make a substantial impact. Kampung Klamono Olie was the location for the implementation of the Integrated Agriculture Program in the first stage, and Kampung Malasigi for program development, based on their willingness to participate and their existing agricultural practices. The study was designed as a comprehensive case study, allowing for a detailed examination of various aspects of program implementation, including challenges, successes, and long-term impacts.

### **Planning and Initial Data collection**

Research begins with meticulous planning, which includes determining the study's focus, identifying research subjects, and determining data collection methods. This stage also includes initial data collection through a review of company documents related to CSR programs and Integrated Agriculture, ensuring a comprehensive and robust approach to the study.

### **Primary and secondary Data collection**

**In-depth interviews:** Interviews were conducted with various stakeholders, including the beneficiary communities, the Board of the local economic institution, representatives

of PT Pertamina EP Papua Field, and program implementing partners. This interview aims to obtain first-hand information about the program's implementation, the challenges faced, and the impact on the community.

**Field observation:**

The researcher personally visited the site to observe the implementation of banana plantation and product processing program. This hands-on approach allows for a detailed understanding of the physical condition of the program and the interaction between community members and the program, ensuring a comprehensive assessment. Focus Group discussions (FGDs): FGDs are conducted with groups of beneficiaries to gather a collective view on the program's effectiveness. These discussions help to understand the public perception of the benefits and challenges faced.

**Documentation:**

The researcher collects and analyzes related documents, such as activity reports, financial statements, and program planning documents. This documentation is used to evaluate the suitability between program planning and implementation.

**RESULT AND DISCUSSION**

The program conducted several key phases:

1. **Program Socialization:** Socialization was carried out as the initial stage to introduce the program to the community of Kampung Adat Malasigi and Klasafet District. This socialization involved explaining the program's objectives, benefits, and implementation methods to the community, ensuring they understood the importance of active participation in this program. The socialization also served as a forum to gather feedback from the community and tailor the program to local conditions.
2. **Cultivation Site Preparation:** After the socialization, land cultivation was identified and prepared. In Kampung Adat Malasigi, this process involved measuring the land and clearing the area for banana planting. In Klasafet District, the available land was utilized with technical assistance from the local business institution Sumur Olie Village.
3. **Training and Mentoring:** Training was provided to the community on modern banana cultivation techniques, including selecting superior seedlings, planting techniques, plant care, and pest control. Training in banana processing was also provided, covering production processes, packaging, and marketing of processed banana products. Ongoing mentoring was carried out by the NGO Kasuari in Kampung Adat Malasigi and by the Local Business Institution Sumur Olie Village in Klasafet District.
4. **Monitoring and Evaluation:** Monitoring was conducted to track the progress of the program implementation and to identify any challenges faced. The evaluation was conducted after each program phase to assess its effectiveness and impact on community welfare. The evaluation results were used as a basis for improving and developing the program in the future.

These phases are in line with the participatory development approach advocated by Chambers (2008) in his book "Revolutions in Development Inquiry". Chambers emphasizes the importance of involving local communities in every stage of a development program, from planning to evaluation. This approach ensures that programs are appropriate to local needs and contexts, and increases community ownership of the program.

As a comparison, the first program conducted in Klamono District has had impacts, among others: a. Improving the community's standard of living The Integrated Agriculture Program has positively impacted and improved the standard of living of the people in Kampung Klamono Olie. Based on interviews and survey data, most beneficiaries reported increased income from fish farming and hydrogenic farming activities, which they did not previously have; b. Unemployment reduction: The program also managed to reduce the unemployment rate in the region. Fifty-five family heads (KK) are actively involved in this program as direct workers and business managers, thus creating new sustainable job opportunities; c. Strengthening local capacity through training and mentoring, the program has successfully improved local capacity regarding technical skills and business management. Strengthening this capacity is essential to ensure the community can run and develop businesses independently after the program ends.

This positive impact is consistent with the findings of Ellis and Biggs (2001) in their article "Evolving Themes in Rural Development 1950s-2000s". They highlight the paradigm shift in rural development from a top-down approach to a more participatory and community empowerment-oriented approach. This Integrated Farming Program reflects that paradigm shift, focusing on local capacity building and the creation of sustainable economic opportunities.

### **Production Capacity Increase**

Implementing the banana cultivation and processing program led to a significant increase in production capacity in both Kampung Adat Malasigi and Klasafet Districts. In Kampung Adat Malasigi, banana production increased by 80%, while in Klasafet District, the increase was 30%. This substantial growth can be attributed to the adoption of modern cultivation techniques introduced during the training sessions, which enhanced the efficiency of banana farming practices. The use of superior banana seedlings and organic fertilizers also contributed to improved crop yields.

This significant increase in production capacity is in line with the findings of Rosegrant et al. (2014) in their report for the International Food Policy Research Institute entitled "Food Security in a World of Natural Resource Scarcity: The Role of Agricultural Technology". They emphasized that the adoption of the right agricultural technology can dramatically increase productivity, especially in developing countries. In the context of this program, the introduction of modern cultivation techniques and the use of superior seeds is a clear example of the application of appropriate technology.

However, the difference in the level of increase in production between Kampung Adat Malasigi (80%) and Klasafet Sub-district (30%) indicates the existence of contextual factors that influence the success of the program. This is consistent with the argument of Birner et al. (2009) in their article "The Political Economy of Agricultural Extension Policy

in Developing Countries” which highlights the importance of considering local conditions in the implementation of agricultural programs. They emphasize that factors such as access to resources, infrastructure, and local socio-political dynamics can affect technology adoption rates and program success.

### **Income Growth**

The program also had a notable impact on community income levels. In Kampung Adat Malasigi, household incomes increased by 33%, while in Klasafet District, the increase was 25%. This income growth was driven by both the increase in banana production and the introduction of value-added products such as banana chips and dried bananas. These products provided new revenue streams for the community, allowing them to earn higher profits compared to selling raw bananas alone.

This significant increase in income is in line with the concept of “value chain upgrading” discussed by Kaplinsky and Morris (2001) in their book “A Handbook for Value Chain Research”. They argue that value-added upgrading in the production chain can significantly increase the income of producers. In the context of this program, the processing of bananas into value-added products such as chips and dried bananas is a clear example of value chain upgrading.

However, the difference in the level of income increase between Kampung Adat Malasigi (33%) and Klasafet District (25%) suggests that there are factors that influence the effectiveness of the program. This can be attributed to the argument of Barrett et al. (2012) in their article “Smallholder Participation in Contract Farming: Comparative Evidence from Five Countries” which highlights the importance of market access and infrastructure in determining the success of agricultural programs. They found that farmers with better access to markets and infrastructure tend to benefit more from agricultural development programs.

### **Product Diversification**

One of the critical successes of the program was the diversification of processed banana products. The training provided to the community enabled them to produce various banana-based products, with banana chips and dried bananas emerging as the leading items. This diversification not only expanded the market for banana products but also reduced the community's dependence on a single product, thereby mitigating economic risks.

The success of this product diversification is in line with the concept of “livelihood diversification” discussed by Ellis (2000) in his book “Rural Livelihoods and Diversity in Developing Countries”. Ellis argues that livelihood diversification can increase the economic resilience of rural households by reducing dependence on a single source of income. In the context of this program, banana product diversification allows communities to reduce the risk of price fluctuations and market demand for one type of product.

However, while product diversification has been successful, challenges in accessing wider markets remain. This is in line with the findings of Markelova et al. (2009) in their article “Collective Action for Smallholder Market Access” which highlights the importance

of collective action and institutional development in helping smallholders access markets. They argue that organizing farmers into groups or cooperatives can increase their bargaining power and facilitate access to wider markets.

### **Community Participation**

High levels of community participation, particularly in Kampung Adat Malasigi, have been instrumental in the success of the program. The participatory approach has fostered a sense of ownership among the community members, making them feel integral to the program's success. Their active involvement, enthusiasm during training sessions, and commitment to applying the learned techniques in their farming practices have been a critical factor in the program's achievements.

The high level of community participation is in line with the concept of “participatory development” advocated by Chambers (1994) in his article “The Origins and Practice of Participatory Rural Appraisal”. Chambers emphasized the importance of involving local communities in every stage of development programs, from planning to evaluation. This approach not only increases program effectiveness, but also builds community capacity and confidence.

However, the difference in the level of participation between Kampung Adat Malasigi and Klasafet District shows that there are factors that influence the level of community participation. This can be attributed to Cleaver's (1999) argument in his article “Paradoxes of Participation: Questioning Participatory Approaches to Development” which highlights the complexity of community participation in development programs. Cleaver argues that participation is influenced by various factors, including social structure, local power dynamics, and community perceptions of program benefits.

### **Challenges and Limitations**

Despite the positive outcomes, the program faced several challenges. Infrastructure limitations, particularly in Klasafet District, hindered the efficient transportation of raw materials and finished products. Poor road conditions and lack of access to reliable transportation services resulted in delays and increased costs, affecting the overall profitability of the banana products.

Market access also proved to be a significant challenge. While the program succeeded in producing high-quality banana products, connecting these products with larger markets remained difficult. The limited reach of local markets constrained the community's ability to capitalize on their increased production and diversified products fully.

These infrastructure and market access challenges are in line with the findings of Poulton et al. (2006) in their article “The Future of Small Farms: New Directions for Services, Institutions, and Intermediation”. They highlight the importance of infrastructure and market access in determining the success of smallholders. According to them, limited infrastructure and market access can significantly reduce the profitability of small-scale farms, even when productivity increases.

Furthermore, the market access challenges faced by this program mirror what Barrett (2008) mentions in his article “Smallholder Market Participation: Concepts and Evidence from Eastern and Southern Africa” as the ‘market participation paradox’. Barrett explains



that while smallholders can increase their production, they often face difficulties in accessing more profitable markets due to various structural and institutional barriers. To address these challenges, several recommendations can be made. First, infrastructure development, such as improving road conditions and transportation services, is essential to ensure the sustainability and scalability of the program. Second, strengthening institutional capacity, particularly in the areas of marketing and distribution, will help connect the community with broader markets. Finally, ongoing innovation in product development should be encouraged to maintain the competitiveness of banana products in the market.

The Scale-Out Strategy in this program could enhance the quality of the products as materials used in this program also improved, including:

1. **Superior Banana Seedlings:** Superior banana seedlings were selected based on their resistance to disease and high production capacity. These seedlings were provided to the community to be planted on the prepared land.
2. **Fertilizers and Pesticides:** Organic fertilizers and environmentally friendly pesticides were used to enhance banana plant growth and protect the plants from pest attacks. The community was also trained on proper usage to ensure that the plants received adequate nutrients without harming the environment.
3. **Agricultural Equipment:** Agricultural tools such as hoes, sickles, and sprayers were provided to assist the community in the planting and care of banana plants.
4. **Processing Equipment:** For banana product processing, equipment such as slicers, dryers, and packaging machines were provided. These tools were used to process bananas into value-added products such as banana chips, dried bananas, and other products.
5. **Packaging Materials:** Packaging materials such as plastic wraps, labels, and packaging machines were provided to ensure that processed banana products could be marketed effectively and attractively to consumers.

This program could enhance the community's capability in banana cultivation and processing techniques by utilizing the appropriate cultivation and processing techniques. The scale-out strategy proved that the second program could be more successful than the first one. The second scaling-out program was considered successful because there was a learning process from the previous program.

The findings of this study confirm the importance of participatory approaches in community development, in line with Chambers' (2014) argument on rural development. The high level of community participation, especially in Kampung Adat Malasigi, shows that community involvement from the planning stage to implementation can increase the sense of ownership and commitment to the program. This is in line with Cleaver's (2005) findings that emphasize the importance of understanding and utilizing local social structures in development initiatives.

### **Program Sustainability**

Although the program has shown positive results, sustainability challenges remain, especially after external support ends. This reinforces Pretty's (2008) argument about the importance of strengthening local institutions. Efforts to strengthen local economic institutions such as Sumur olie Village are a positive step, but need ongoing support to ensure their ability to manage the program independently in the long term.

The success of the program in increasing productivity and product diversification shows the importance of innovation in agricultural development, as emphasized by Rosegrant et al. (2013). However, the difference in success rates between Kampung Adat Malasigi and Klasafet District shows that adaptation to the local context is crucial, as suggested by Westley and Antadze (2010) in the context of social innovation scalability.

### **CONCLUSION**

The banana cultivation and processing program as a part of integrate farming program in Kampung Adat Malasigi and Klasafet District has demonstrated significant success in increasing production capacity, enhancing community income, and diversifying banana products. However, addressing infrastructure and market access challenges is crucial to sustaining and expanding these achievements. By implementing the recommended strategies, the program can further improve the economic welfare of the participating communities. The success of this program confirms the importance of innovation and collaboration in community empowerment, as well as the company's commitment to social and environmental responsibility. In addition, replication or scaling out programs in other regions have also proven successful in the initiation of banana cultivation and banana processing development programs in Kampung Malasigi Klayili District. The program has made a substantial impact on increasing banana production, community income, and product diversification. In Kampung Adat Malasigi, production capacity grew by 80%, while in Klasafet District, it increased by 30%. Household incomes followed a similar trend, rising by 33% and 25% in the respective areas. These figures reflect the program's success in not only enhancing agricultural output but also improving livelihoods. A key factor contributing to this success was the effective scale-out strategy. Lessons learned from the program's initial implementation in Klasafet District were adapted and applied in Kampung Adat Malasigi, leading to even greater outcomes. This demonstrates the importance of experience-based adaptation in scaling development projects to new contexts. Community participation also played a vital role. High levels of engagement, especially in Kampung Adat Malasigi, were central to the program's effectiveness. This aligns with participatory development theories, which emphasize the importance of involving local communities at all stages of development initiatives for better outcomes. One of the notable successes was product diversification. The program introduced value-added products, such as banana chips and dried bananas, creating new revenue streams for local communities. This economic diversification has enhanced the communities' resilience by reducing their reliance on raw banana production alone.

**ACKNOWLEDGEMENTS**

We thank the community leaders and the local government of Klayili District and Klasafet Districts, Southwest Papua, for providing the necessary sources of information and Pertamina EP Papua Field, which initiated and implemented this program.

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