

Local Food Security Program Implementation in Kuler Village, South Papua, Indonesia

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Abstract: This study analyses the implementation of the Local Food Security Program in Kampung Kuler, South Papua, a region with abundant food potential yet constrained by socio-cultural and institutional barriers. The objectives of this research are to examine the implementation process of the local food security enhancement program in terms of communication, resources, implementers' attitudes, and bureaucratic structure; to identify supporting and inhibiting factors; and to assess the program's contribution to strengthening food security and community empowerment. Although policy support is relatively strong, gaps between planning and field implementation remain a central challenge, particularly among Indigenous communities whose decision-making structures and livelihood patterns differ from formal administrative expectations. Using a qualitative case study approach, data were collected through in-depth interviews, field observations, and document analysis to evaluate how key implementation variables shape program effectiveness. The findings reveal that strong coordination, traditional leadership, and increasing community participation, especially among women, serve as important enabling factors, while logistical constraints, limited infrastructure, and extreme weather disrupt program consistency. Divergent perceptions of program sustainability between implementers and community members highlight the need to align expectations and strengthen local capacity. The study concludes that food security programs in remote Indigenous areas require adaptive, culturally sensitive policy designs that strengthen village institutions and foster community ownership.

Keywords: Local Food Security; Program Implementation; Governance Systems; Community Participation; Institutional Capacity; Decision-Making Structures; Strong Coordination; Local Capacity.

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1. Introduction

Food security is a global strategic agenda that is becoming increasingly urgent as the threats of climate change, ecosystem degradation, and food access inequality in developing countries grow [4]. The FAO emphasises that utilising local food is an effective strategy for strengthening sustainable food systems, particularly in rural areas and indigenous communities. In Indonesia, food security challenges stem from limited local food diversification and suboptimal community participation in food production and distribution systems. In Papua, local food potential, such as sago, tubers, and coastal products, is abundant.

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However, their utilisation is still hampered by social, economic, and institutional factors, including in Kuler Village, Merauke Regency. The gap between policy design and implementation on the ground is a consistent challenge in local-level food security programs [6]. Various studies have shown that policy implementation is often hampered by weak coordination among actors, limited implementing capacity, and inadequate technical support. The lack of integration among local governments, village officials, and technical implementers prevents implementation from proceeding according to the initial plan, resulting in inconsistencies in achieving program targets [10]. This obstacle underscores the need to strengthen governance systems that enable more effective, responsive coordination with local dynamics. Beyond technical and administrative issues, a program's sensitivity to the community's social and cultural context is also a determining factor in its success [18].

In indigenous or rural communities with distinctive social rules, collective values, and local practices, overly homogenous policy approaches tend to be ineffective. Studies show that local food programs require a deep understanding of social structures, informal leadership mechanisms, and community food habits to design appropriate interventions. When these elements are ignored, program implementation risks creating resistance or low participation, which ultimately reduces the quality of program output [17]. Another finding suggests that the mismatch between planning and implementation is even more pronounced in indigenous communities, particularly when local values are not integrated into the program design process. In some cases, programs that fail to consider community lifestyles, decision-making structures, and food preferences hinder the effectiveness of interventions, as research in several remote indigenous areas has shown. Theoretically, the public policy implementation model identifies communication, resources, implementer disposition, and bureaucratic structure as determinants of program implementation effectiveness [19]. This model provides an analytical framework for understanding how various actors and administrative mechanisms work in translating policies into practice, while integrating it with the concept of food security as stipulated in the Regulation of the National Food Agency of the Republic of Indonesia Number 10 of 2022 concerning Procedures for Compiling Food Security and Vulnerability Maps, which emphasizes four main dimensions availability, access, utilization, and stability as an important basis for strengthening rural development [5].

Naukenjerai District in Merauke Regency is one of the locations for a local resource-based food security strengthening program. The government is implementing the program in Kuler Village by providing taro, sweet potato, and cassava seedlings to the community to encourage local food diversification. These crops were selected based on their ecological suitability and potential contribution to the local community's daily food needs, ensuring the program aligns with the region's characteristics. The implementation of this program also has a strong legal basis through Merauke Regency Regulation Number 3 of 2022 concerning the Protection of Sustainable Food Agricultural Land, as well as the Decree of the Head of the Agriculture, Food, Maritime Affairs and Fisheries Service of South Papua Province Number 500/224/V/2023 concerning the provision of locally sourced food to reduce food insecurity among Indigenous Papuan Farmers (OAP). Through these regulations and administrative support, local food seed assistance can be channelled to the community in a targeted manner, to increase local food production and reduce dependence on external supplies. This situation indicates that the study of the implementation of local food programs, including in Kuler Village, requires an in-depth research approach to understand the socio-cultural dynamics that influence the program's success. Therefore, further research is needed to produce more contextual and applicable recommendations for strengthening community-based food security [20].

From a community empowerment perspective, contemporary literature emphasizes the importance of active participation, capacity building, and community control over local resources as key factors for success, so that the integration between the policy implementation framework, food security theory, and empowerment approach allows for a more comprehensive analysis of the program dynamics in Kuler Village and provides a theoretical basis for assessing the extent to which the policy can answer the needs of the community [14]; [3]. The objectives of this study are to analyse the implementation process of the local food security improvement program in Kuler Village based on communication variables, resources, implementer attitudes, and bureaucratic structure; identify supporting and inhibiting factors in program implementation; and assess the program's contribution to improving food security and community empowerment. This article offers an important scientific contribution, particularly given the limited empirical research on the implementation of local food-based food security programs in Papua's border regions. The existing academic literature over the past decade has largely focused on national food production or food interventions in urban areas, while studies on coastal indigenous communities are relatively rare [16]. This research also enriches theoretical discourse by integrating the frameworks of policy implementation, food security, and community empowerment into a single, comprehensive analysis. Thus, this article provides a novel contextual understanding of the success factors of local food programs in remote rural areas and offers evidence-based recommendations for strengthening local food security policies.

2. Literature Review

Public policy implementation theory is an important foundation for understanding how a program is implemented within the context of government and society. One of the most widely used models in the last decade is the Edwards model, which emphasises four variables: communication, resources, implementer disposition, and bureaucratic structure as key factors in

successful implementation [15]. The relevance of this theory is increasingly strong in the study of program implementation at the local level because it can explain variations in program success due to differences in implementers' capacity and the social dynamics of the local community [1]. On the other hand, a food security framework that emphasises availability, access, utilisation, and stability is an important basis for assessing the impact of local food-based programs [16]. The community empowerment perspective in recent literature also emphasises the importance of active participation, capacity building, and community control over local resources. These three concepts complement each other in understanding how local food programs are implemented and accepted by the community [16]. Several studies show that local food security programs face complex implementation challenges [11]. Studies in various developing countries reveal that the lack of synchronisation between planning and field practice leads to low program effectiveness. Other research in rural Indonesia found that weak communication, low technical capacity of implementers, and budget constraints are major obstacles to local food programs [2]. In Papua, a recent study highlighted cultural issues, geographic distance, and institutional fragmentation as key factors influencing the success of community-based food programs. These results indicate that implementing local food programs is not only technical but also heavily influenced by social and institutional dynamics. From these various studies, several relevant research gaps can be identified.

First, studies on the implementation of food security programs in rural border areas, particularly in southern Papua, remain very limited, even though this region has distinct socio-cultural characteristics compared to other regions. Second, most previous studies have focused primarily on aspects of food production or access. In contrast, in-depth studies on the relationship between policy implementation and community empowerment in the context of local food are still rare. Third, few studies combine policy implementation analysis with food security frameworks and empowerment theories, so the emerging understanding remains fragmentary. This article addresses this gap by analysing the implementation of a local food security program in Kuler Village through the integration of three theoretical frameworks: policy implementation, food security, and community empowerment. By focusing on the rarely studied context of coastal indigenous communities, this research provides a novel empirical contribution that can expand the literature on the dynamics of local food programs in remote areas. This article also enriches the theoretical discourse by demonstrating how interactions between program implementers and the community influence food security outcomes and the level of community empowerment in the local context. This research conceptual framework was developed to provide a strong analytical basis for understanding the dynamics of local food security program implementation in Kuler Village. This framework stems from the need for a comprehensive perspective, recognising that local food programs are not only about administrative arrangements but also interact with social, cultural, and community capacity factors [8]. Thus, an approach is needed to explain the relationships among actors, the program implementation process, and its impact on people's daily lives (Figure 1).



Figure 1: Key components of effective governance systems

The first pillar of the conceptual framework is the policy implementation model, which emphasises the importance of communication, resources, implementer disposition, and bureaucratic structure as determinants of program success [7]. These variables help trace how policies are translated into action, as well as what factors strengthen or hinder programs at the local level. This model serves as a foundation for assessing the extent to which the implementation process is proceeding according to plan. The second approach is the food security framework, which encompasses the dimensions of food availability, access, utilisation, and stability. This framework is used to substantively assess program achievements, particularly regarding their impact on community food security [13]. The integration of these concepts into the conceptual framework enables research to map changes in food conditions experienced by local households resulting from program interventions, as well as the extent to which the program addresses the needs of communities in remote coastal areas such as Kuler Village. The third approach is community empowerment theory, which emphasises community participation, capacity building, and control over resources. This perspective complements the previous two approaches by providing a lens for understanding how communities engage with, benefit from, and exercise control over local food management. Thus, the conceptual framework examines not only program implementation but also changes in power relations and community capacity as part of the program's impact. By combining these three approaches, this research's conceptual framework presents a holistic perspective that connects the policy implementation process, food security conditions, and the dynamics of community empowerment. The conceptual framework diagram systematically illustrates the interrelationships of these variables and places the community at the centre of the analysis. This framework serves as a guideline for formulating a qualitative case study research design that is sensitive to the socio-cultural context while capturing the complexity of implementing the local food security program in Kuler Village. The conceptual diagram is structured as follows.

3. Research Methods

This research uses a qualitative case study approach, focusing on a deep understanding of the implementation process of the local food security improvement program within the social, cultural, and institutional contexts of Kuler Village. Case studies are an effective approach for exploring the complex phenomena of policy implementation in a natural setting, while also allowing for exploration of the interactions between factors that influence program success. This approach was chosen because it captures the dynamics of community participation and program implementation that cannot be explained solely through quantitative measurements. Primary data were collected through in-depth interviews, field observations, and visual and textual documentation of program implementation. Secondary data were collected from official local government documents, program reports, and scientific literature related to food security, policy implementation, and community empowerment. The combination of primary and secondary data is essential to increase the credibility of the findings and enable triangulation of information [9]. Primary data collection techniques included in-depth semi-structured interviews, direct observation of program activities, and documentation. In-depth interviews explored the experiences, perceptions, and interpretations of implementers and beneficiaries, particularly regarding factors influencing program implementation success. Observations were used to record actual practices and interactions between actors in program implementation, while documentation served as a supporting source to verify information from interviews and observations.

The instruments used included interview guidelines, observation log sheets, and document collection formats. Data inclusion and exclusion criteria were established to ensure the relevance and validity of the information. The primary data included information from program implementers at the district and village levels, community leaders, and program beneficiaries directly involved in implementation. Data from informants not directly involved in the program were excluded to avoid perception bias. For secondary data, only official documents, program reports, and scientific articles published within the past five years that are relevant to local food security issues and policy implementation were included. The research analysis unit includes program implementers at the district and village levels involved in planning, coordination, and implementation of activities, as well as beneficiary communities that participate through activities such as receiving local food seeds, joining farmer groups, and engaging in food security and empowerment activities. The selection of this analysis unit aims to capture the implementer's perspective while also examining the program's impact on the community. Data were analysed using thematic analysis, which allows for the identification and interpretation of meaningful patterns in qualitative data through the following stages: familiarisation, initial coding, theme development, theme review and definition, and interpretation drawing. This process is supported by NVivo 12 software to ensure more systematic, accurate, and transparent data management.

4. Findings and Discussion

The results of this qualitative research are presented in the form of three main themes obtained through the process of coding and categorising field data, namely: (1) the effectiveness of program coordination and governance, (2) community participation in the implementation of local food security programs, and (3) supporting and inhibiting factors in program implementation at the village level. Each theme is formulated from recurring patterns that emerged from interviews, observations, and documentation. In addition, several relevant secondary data sources are presented in the supporting information, with references to open-access sources. The successful implementation of food security programs in indigenous areas is heavily influenced by

the ability of policy design to accommodate local values and community social dynamics. As highlighted in previous studies, programs that are not integrated with the lifestyles, decision-making structures, and food preferences of indigenous communities tend to experience a mismatch between planning and implementation. This lack of synchrony demonstrates the importance of a contextual approach to rural food policy, particularly in remote areas with strong socio-cultural characteristics.

A theoretical framework on public policy implementation—which places communication, resources, implementer disposition, and bureaucratic structure as key factors—provides an analytical basis for interpreting field findings. In the context of this program, the effectiveness of coordination and governance is an important indicator directly related to the food security dimension as stipulated in the National Food Agency Regulation Number 10 of 2022. The availability of information, clarity of roles, and stability of the implementation process have been shown to improve food access and utilisation in Kuler Village. Empirically, this study found that regular communication between actors through weekly meetings and informal reports supported consistent program implementation. Structured coordination patterns at the district and village levels reinforced the clarity of implementation flows, aligning with literature on the importance of collaborative governance. However, logistical barriers, particularly transportation access, remained a significant challenge, hindering the smooth implementation of certain activities. These geographic factors demonstrate that implementation effectiveness is determined not only by the organisation's internal preparedness but also by external conditions that are difficult to control.

The link between theory and field findings demonstrates that the successful implementation of food security programs in remote areas requires adaptive policy design. Geographical constraints and limited resources demand flexibility in implementation mechanisms, as previous research suggests. Therefore, programs in indigenous areas need to be designed with sensitivity to the local context and the system's ability to respond to environmental dynamics. Integrating collaborative governance and understanding local values is key to strengthening community-based food security. Community participation in program implementation. Interviews revealed that the level of community involvement varied among farmer groups, traditional leaders, and beneficiary families. Observations revealed that active participation occurred primarily in activities that provided direct benefits, such as distributing local food seeds and training in agricultural processing. Program documents indicate a trend of increasing women's involvement in local food production activities over the past two years, consistent with global reports on women's roles in community-based food security [12]. The data also show that the younger generation's involvement is relatively low, especially in agricultural activities, consistent with empirical findings of a decline in youth interest in traditional agriculture.

The dimension of community participation emphasises that the success of food security programs is inextricably linked to residents' social dynamics and internal motivations. From the perspective of community empowerment theory, variations in engagement across groups reflect the level of social preparedness and individual capacity to respond to the program. Increased female participation indicates a shift in the structure of productive roles at the household level, a sign of functioning empowerment mechanisms that build capacity and expand resource access. Meanwhile, low youth engagement indicates psychosocial barriers, such as low interest in the agricultural sector, and signals a long-term threat to the regeneration of local agricultural actors. This interpretation suggests that the success of food programs is related not only to community involvement but also to how their values, aspirations, and social identities shape their responses to interventions. The results of this study highlight the supporting and inhibiting factors that influence the quality of the local food security program. Supporting factors that strengthen local food security program implementation include the availability of natural resources, traditional knowledge, and the role of traditional Figures and informal leaders in building legitimacy and participation. Support from village officials through routine coordination and administrative assistance also facilitates implementation. These findings underscore the importance of social capital trust, networks, and collective norms in strengthening program adaptation in local communities.

Identification of several structural and technical inhibiting factors. Frequent extreme weather in coastal and lowland areas causes uncertainty in cropping patterns, increases the risk of crop failure, and disrupts seed and harvest distribution. Limited storage facilities and inadequate processing equipment pose challenges in maintaining the quality and continuity of local food production. These obstacles are exacerbated by limited road and transportation infrastructure, resulting in inconsistent access for program implementers to provide technical assistance. These findings indicate that program success in remote areas is significantly influenced by infrastructure resilience, consistent with research on the vulnerability of agricultural infrastructure in remote areas, which shows that unprepared physical facilities can reduce overall program effectiveness. Perceptions vary between program implementers and the community regarding program sustainability. Implementers place greater emphasis on strengthening farmer group capacity, ongoing training, and production management as key to sustainability. Meanwhile, the community focuses more on the availability of supporting facilities, such as processing equipment, stable seeds, and market access. This difference in perception indicates that sustainability is influenced not only by technical readiness but also by the alignment of understanding and expectations between actors. This pattern is consistent with previous studies on the dynamics of sustainability in local development programs, which emphasise that sustainability is highly dependent on the community's ability to adopt innovations and the extent to which they understand the program's benefits for their daily lives. The community's

ability to accept and implement local food innovations is also reflected in the literature on indigenous communities, which emphasises that innovations are more readily accepted when they align with local cultural values and practices.

Community reliance on external support is a major challenge to program sustainability. Programs that rely on external parties to distribute tools, seeds, and training tend to create a top-down intervention pattern that undermines local initiatives. Several community groups have indicated difficulties continuing activities without technical assistance from facilitators, indicating that internal capacity has not yet been fully developed. This finding aligns with studies that identify dependence on external facilitators as a common obstacle in community-based development programs and as a hindrance to the development of local self-reliance. Furthermore, difficult geographic access reduces the intensity of technical assistance, preventing district-level implementers from conducting optimal monitoring, as research on program implementation in remote rural areas has also found. Village institutional capacity is a critical factor determining the quality of program implementation. Villages with strong organisational structures can manage program administration, hold regular meetings, and coordinate roles across community groups. Conversely, villages with limited administrative capacity exhibit obstacles in program uptake, resource management, and activity documentation. This variation indicates that program implementation requires a differentiated approach, as not all villages have the same level of institutional readiness. The literature on local governance demonstrates that strong governance capacity is a key factor in the success of village development programs, particularly in diverse socio-cultural contexts (Table 1).

Table 1: Research findings and policy implications table

Indicator	Research Findings	Research Implications
Program Coordination and Governance	Communication between actors is inconsistent; weekly meetings run smoothly but are hampered by logistics and transportation issues. Role structures are clear, but they don't always function optimally in activities that rely on external support.	Strengthening more adaptive communication mechanisms and coordination planning that account for geographic barriers is needed. Flexible governance designs for remote areas are essential.
Distribution of Implementing Roles	The division of tasks has been established, but its implementation is influenced by each actor's capacity and dependence on external facilitators.	Strengthening the capacity of village implementers and establishing a more independent work structure is necessary to reduce dependence on external parties.
Community Participation	Active involvement occurs in activities that provide direct benefits; women's participation increases, but youth participation is low.	Programs need to target specific strategies for low-engagement groups (e.g., youth) and expand the space for women's empowerment to ensure program sustainability.
Social Readiness and Citizen Motivation	Variations in social readiness across community groups influence the level of program acceptance.	A needs-based, locally adapted approach to activity planning is needed to ensure more equitable and sustainable participation.
Program Supporting Factors	Strong social capital, support from traditional leaders, fertile land, local knowledge, and village organisational capacity are catalysts for implementation.	Strengthening social capital and support from community leaders can be prioritised as core strategies in the design of community-based program interventions.
Program Inhibiting Factors	Extreme weather, limited infrastructure, lack of storage facilities and processing equipment, and geographical distance hamper technical assistance.	Policies are needed that emphasise the development of basic infrastructure, storage facilities, and sustainable logistical support so that the program can be implemented stably.
Perception of Program Sustainability	Differences in views between implementers (focus on capacity building) and the community (focus on facilities and market access).	Programs need to bridge differences in perception through participatory dialogue and the development of joint sustainability plans that balance technical aspects and community needs.
Dependence on External Support	Some groups have not been able to continue activities without facilitators; the intensity of mentoring is unstable due to geographical barriers.	Internal empowerment needs to be prioritised by increasing local technical capacity and by developing more sustainable, context-specific mentoring mechanisms.
Village Institutional Capacity	Villages with strong organisational capacity are better able to manage administration and coordination; villages with low organisational capacity experience difficulties.	Implementation needs to use a differential approach based on institutional readiness, including administrative training and strengthening local governance.

Overall, this study's results show that the implementation of the local food security program in Kuler Village is influenced by coordination dynamics among actors, the level of community participation, and the readiness of village resources and institutions. Variations in communication quality, technical capacity, and geographic conditions indicate that program implementation takes place within a complex context, where local socio-cultural forces play a crucial role in supporting the program's sustainability. This pattern of findings is consistent with field data, which confirms that program success is determined not only by formal mechanisms but also by how the community responds and engages in each stage of the activity. These findings highlight the supporting and inhibiting factors that shape the overall implementation process, including limited technical resources, reliance on external facilitators, and variations in village institutional capacity. These elements provide a snapshot of the objective conditions of program implementation at the local level, while also revealing the patterns of involvement and operational dynamics that influence activity outcomes.

5. Conclusion

The results of this study indicate that the implementation of the local food security program in Kuler Village occurred within a context shaped by dynamics of inter-actor coordination, levels of community participation, and the diversity of village institutional capacities. These three aspects interacted to shape implementation patterns that depended not only on administrative mechanisms but also on local social and cultural strengths. These findings confirm that program success was influenced by effective governance, community readiness to participate, and local actors' ability to overcome geographical, technical, and logistical constraints. Overall, this study successfully addressed its stated objectives by demonstrating how these factors influenced the implementation process and the program's outcomes in a remote coastal area. This research contributes by integrating perspectives from policy implementation, food security, and community empowerment to understand program dynamics in indigenous communities. This approach clarifies the factors that support and hinder program success and provides an analytical basis for implementers and local governments to improve mechanisms, strengthen local capacity, and enhance the effectiveness of interventions. For further research, a more in-depth study of the role of youth and women in strengthening local food self-sufficiency is needed, given the diverse dynamics of participation found. Furthermore, a comparative study across regions with varying socio-cultural characteristics would provide a broader picture of the program's success factors at the community level. Practically, increasing access to technical resources, ongoing mentoring, and strengthening village institutions are crucial steps to promote the program's sustainability and independence in the future.

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