

Natural Food Security Policy Network for Local Food Development in Bulungan Regency, North Kalimantan Province

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ABSTRACT

This study is motivated by the growing population and its implications for increasing food demand and potential long-term food insecurity, exacerbated by Indonesia's current economic instability, global population growth, and climate change, which have driven up the prices of key commodities. In *Bulungan* Regency, the Food Security Index has shown only slight improvement, rising from 77.00 in 2022 to 77.11 in 2023, indicating persistent challenges such as higher food demand than supply, limited use of local food, weak coordination and communication at the community level, minimal and delayed data collection, and difficulties in aligning indicators for assessment. The objective of this study is to analyze the Food Security Policy Network in local food development and identify strategies to enhance food security in *Bulungan* Regency. Using a qualitative descriptive method, data were collected through interviews, observation, and documentation, and analyzed using data reduction, data presentation, and conclusion drawing. The findings reveal that while formal structures and divisions of tasks have been established, coordination remains sectoral and inconsistent; trust-building has not fully extended to grassroots actors such as farmers and MSMEs; data sharing exists but is underutilized; and resource limitations in human capital, infrastructure, and local institutions hinder policy implementation. The study concludes that governance networks in food security policy exist but require strengthening in cross-sector coordination, equitable trust-building, effective information dissemination, and optimization of local resources to ensure sustainable local food development.

Keywords: Food Security Policy, Local Food Development, FSVA Team, Government Network

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INTRODUCTION

Current regional government administration in Indonesia is directed at realizing community welfare through improved services, empowerment, community participation, and increased regional competitiveness. These efforts must take into account the principles of democracy, equity, justice, and the uniqueness of each region within the Unitary State of the Republic of Indonesia, as mandated by Law Number 23 of 2014 concerning Regional Government (Fauzi, 2019). Regional governments, as public organizations, strive to provide services and public goods such as housing, clothing, and food, which serve as benchmarks for community welfare in both developed and developing regions (Pratama & Putu, 2015). Their obligations include ensuring affordability, fulfilling food consumption needs, and guaranteeing the availability of sufficient, safe, high-quality, and nutritionally balanced food. Achieving these goals requires the formulation and implementation of public policies, which depend on collaboration within a policy network system involving the central government, local governments, the private sector, and non-governmental organizations (Dunn, 2017; Fauzi, 2019; Rulinawaty, 2021; Dunn, 2017).

Food security has become a global issue as population growth threatens long-term food availability and increases the risk of food insecurity (Rukmana, 2020). Effective policies are therefore crucial to maintaining sustainable food supplies. Syaokani argues that the public policy process, from formulation to implementation, must be guided by clear objectives and

specific timelines (Pratama & Eka, 2015; Siregar, 2021). In Indonesia, food security policies are also shaped by economic instability, global population pressures, and climate change, all of which have driven up prices for key commodities and increased dependency on imports such as soybeans, garlic, sugar, and beef (Parikesit, 2022).

Indonesia's position in the 2022 Global Food Security Index (GFSI) underscores these challenges, ranking 69th out of 113 countries, below Singapore, Thailand, Malaysia, Vietnam, and the Philippines. Indicators such as food supply availability (50.9), nutritional quality (56.2), and sustainability and adaptation (46.3) remain below the Asia-Pacific average. Local food development is therefore an essential regional policy, not only to support national programs such as *Peningkatan Penggunaan Produk Dalam Negeri (P3DN)* but also to align with the 2030 SDGs in reducing poverty and stunting, minimizing inequality, preserving the environment, and strengthening MSMEs.

In North Kalimantan, particularly *Bulungan* Regency, food security remains a pressing issue. Despite improvements, vulnerabilities persist, as reflected in the Food Security Index (*Indeks Ketahanan Pangan/IKP*), which rose slightly from 77.00 in 2022 to 77.11 in 2023. This highlights the need for sustained policy actions to strengthen local food strategies and reduce reliance on imported staples (National Food Security Agency, 2018). Local food development also serves to promote regional uniqueness, empower communities, and advance sustainable development goals outlined in the 2021–2026 *Rencana Pembangunan Jangka Menengah Daerah Rencana Strategis* of *Bulungan* Regency.

The main challenges identified include the gap between food demand and supply, which forces communities to rely on imported rice, and limited adoption of alternative local foods such as cassava-based flour (*Mocaf*). Urban populations, in particular, remain dependent on imported wheat flour due to perceptions of quality and affordability. These realities show that policy implementation must address not only production and distribution but also public perception, community coordination, and market dynamics.

The governance of food security policies in *Bulungan* Regency reflects the importance of networking. Policy networks bring together government, private, and community actors, whose interdependence and collaboration are crucial for success (Klijn & Koppenjan, 2020; Rulinawaty, 2021). One such initiative is the Food Security and Vulnerability Atlas (FSVA), which helps identify vulnerable regions, allocate resources, and guide interventions. Nevertheless, challenges persist, such as slow data collection and difficulties in aligning assessment indicators, which hinder effective mapping and program implementation (Rukmana, 2020).

Previous studies, such as Rulinawaty et al. (2020), highlight that policy networks succeed when multiple stakeholders contribute and collaborate meaningfully. Similarly, Rukmana (2020) demonstrated how government, NGOs, and community-based organizations interact in implementing food security policies at the local level. This study aims to build on these insights by analyzing governance networking in *Bulungan* Regency, focusing on how local food development policies can strengthen food security while promoting sustainable economic growth.

Despite existing studies on food security policies and governance networks in Indonesia (Rulinawaty et al., 2020; Rukmana, 2020), research gaps remain. First, most previous studies have analyzed food security at the national level or in Java-centric regions, while less attention

has been paid to frontier and outermost regions such as North Kalimantan, where vulnerabilities and resource limitations are unique (Miles & Huberman, 2014). Second, earlier research has focused heavily on food availability and distribution, yet less emphasis has been given to the interaction between local food development, governance networks, and community participation, which are critical in achieving sustainable food resilience. This study fills these gaps by providing a localized analysis of *Bulungan* Regency, where food security challenges intersect with dependency on imported staples, weak coordination mechanisms, and low utilization of local food alternatives such as *Mocaf* (cassava-based flour).

The objective of this research is to analyze how policy networks in food security management contribute to the development of local food in *Bulungan* Regency and to identify strategies that can strengthen cross-sectoral coordination, enhance community participation, and optimize the utilization of local resources. Theoretically, this study is expected to contribute to the development of public administration science, particularly in relation to governance networks in regional food security policies. Practically, the findings will provide valuable insights for local governments in formulating more inclusive and sustainable policies, for small and medium-sized enterprises (SMEs) as a basis for strengthening their role in local food development, and for communities to increase awareness and participation in maintaining food security.

METHOD

This study employed a descriptive qualitative research design aimed at providing an in-depth understanding of food security policy networks in *Bulungan* Regency, with a particular focus on local food development strategies. A qualitative approach was chosen because the object of study—policy networks and governance—requires contextual exploration rather than statistical generalization. The research process was carried out in three stages: pre-fieldwork, fieldwork, and report writing. At the pre-fieldwork stage, the researcher identified the research focus, formulated the problem, reviewed relevant theories and regulations, and prepared research instruments such as interview guidelines and documentation checklists. During fieldwork, the researcher acted as the primary instrument by conducting observations, semi-structured interviews, and documentation related to food security programs and FSVA (Food Security and Vulnerability Atlas) activities. Key informants included stakeholders from the Food Security Agency, Agriculture Office, Central Bureau of Statistics, division heads for food availability and local food, as well as representatives of MSMEs, farmers, and local communities. The report-writing stage then synthesized field findings into systematic analyses aligned with academic standards.

The data sources consisted of both primary and secondary data. Primary data were obtained directly from interviews and field observations, while secondary data were collected from books, journals, official documents, and online resources. Informants were selected purposively to ensure competence and relevance to the study. Data collection techniques included interviews, observations, and documentation, all designed to capture the dynamics of policy networks—contact, trust, information sharing, and resource exchange—within local food development policies. The data were analyzed using Miles and Huberman's (2014) interactive model, which includes data condensation, data display, and conclusion drawing/verification. Data condensation involved selecting and simplifying information to focus on the research

problem, while data display organized the findings to reveal emerging patterns. Finally, conclusion drawing and verification ensured the validity of results through cross-checking field evidence with documentation. This systematic approach allowed the researcher to uncover how governance networks influence food security outcomes in *Bulungan Regency*.

RESULTS AND DISCUSSION

Description of the Research Object

Geographical Conditions

Bulungan Regency consists of 10 districts, 81 villages, and 6 urban wards with a total population of 168,116 people (BPS, 2024). Geographically, Bulungan Regency is one of the regencies located in the northern part of Kalimantan Island, with a total area of 13,181.92 km². It lies between 2°09'19"–3°34'49" North Latitude and 116°04'41"–117°57'56" East Longitude. The regency is bordered by Tana Tidung Regency to the north, the Sulawesi Sea and Tarakan City to the east, Berau Regency to the south, and Malinau Regency to the west.

Climatologically, according to the Tanjung Harapan Meteorological Station (2023), Bulungan Regency has a moderate climate with minimum and maximum temperatures ranging between 23.8°C and 35.9°C, and humidity levels from 60% to 98%. The average annual rainfall is approximately 250 mm. The region is characterized by seven main river systems, 15 mountains, and 201 islands, with Mandul Island being the largest, covering 38,737.41 hectares.

Demographic Conditions

Based on BPS data (2024), the population of Bulungan Regency is 168,116, comprising 88,731 males and 79,385 females. With a total area of 13,182 km², the population density is relatively low, averaging 12.34 persons per km².

Population distribution varies across districts, with the largest concentrations in Tanjung Selor (60,581 people), Tanjung Palas (18,070 people), and Tanjung Palas Timur (20,327 people) in 2023. These areas represent the regency's urban centers and serve as focal points for economic and social activities. Rural districts, such as Peso and Peso Hilir, have smaller populations and face greater infrastructural limitations.

The Food Security and Vulnerability Atlas (FSVA) Team

The Food Security and Vulnerability Atlas (FSVA) is a thematic map that visualizes geographic areas vulnerable to food insecurity. It provides accurate, comprehensive, and systematic information to support prevention and intervention strategies related to food and nutrition. The FSVA is mandated by Law No. 18/2012 on Food and Government Regulation No. 17/2015 on Food and Nutrition Security, requiring both central and local governments to establish integrated food and nutrition information systems.

In response, the Government of Bulungan Regency officially established the FSVA Team through Regent Decree No. 188.45/506 of 2023. The team consists of multi-sectoral and multi-disciplinary members, including the Food Security Office, Agriculture Office, Health Office, Public Works and Spatial Planning Office, Social Office, Village and Community Empowerment Office, Industry and Trade Office, Bappeda, the Central Bureau of Statistics,

and local academics. Its tasks include data collection, processing, analysis, and periodic mapping of food security indicators.

According to the FSVA documents of 2022–2024, the thematic maps identified villages with low levels of food security, providing the basis for policy interventions. Programs derived from FSVA findings include promoting local food production, stunting reduction initiatives, nutritional improvement, and education campaigns on diversified, nutritious, balanced, and safe diets (B2SA).

Key FSVA Indicators

The FSVA framework in Bulungan Regency is based on three main pillars: food availability, food access, and food utilization.

- 1) Food Availability: Most local food needs are still supplied from outside the region. From 2021 to 2023, no villages were classified in the highest vulnerability categories, indicating that availability is generally sufficient, though structurally dependent on external supplies.
- 2) Food Access: Poverty levels decreased from 14% in 2021 to 12.3% in 2022, yet many households still dedicate a large share of expenditure to food. Remote villages in Peso and Sekatak remain without permanent access to electricity, which constrains food distribution.
- 3) Food Utilization: Challenges include limited access to clean water (about 30.86% of households in some villages), uneven health services (with ratios of one health worker per 650–800 residents), and high stunting rates exceeding 25% in priority villages. Although female education levels are rising, they have not significantly reduced malnutrition.

FSVA Mapping Results and Priorities

The 2022 FSVA mapping showed that out of 81 villages in Bulungan Regency:

- 1) 2 villages (2.47%) were classified as Priority 1 (very high vulnerability), including Long Lian (Peso) and Long Bang (Peso Hilir).
- 2) 7 villages (8.64%) were classified as Priority 2 (moderate vulnerability), spread across Peso, Tanjung Palas Barat, Tanjung Palas Tengah, and Sekatak.
- 3) 15 villages (18.52%) were classified as Priority 3 (low vulnerability), spread across 8 districts, including Tanjung Selor, Tanjung Palas Timur, and Tanjung Palas Utara.

These vulnerable villages are characterized by high poverty rates, limited clean water access, inadequate health personnel, and poor transportation infrastructure. Such data serve as the basis for local government interventions to address food security challenges in Bulungan Regency.

Duties and Authorities of the FSVA Team

Based on the Regent's Decree of Bulungan Regency No. 188.45/506 of 2023, the duties and authorities of the Food Security and Vulnerability Atlas (FSVA) Team are as follows: (1)

holding meetings to determine methodologies and indicators; (2) consolidating, compiling, and analyzing indicator data; (3) processing and analyzing data on food security and vulnerability as the basis for mapping; (4) coordinating meetings to ensure data availability; and (5) conducting validation meetings for final data preparation.

FSVA Team Work Programs

Since its establishment and up until 2023, the FSVA Team has carried out several strategic work programs. These include the preparation of FSVA 2022 and FSVA 2023, which mapped food vulnerability down to the village level using nine indicators across the three pillars of food security. The team also facilitated data updates through technical training and coordination with village and sub-district officials, and disseminated FSVA findings to government agencies, non-governmental organizations, and community groups through coordination forums.

Furthermore, FSVA results have been integrated into regional planning documents such as the OPD Work Plans (Renja), the Regional Government Work Plan (RKPD), and the Regional Development Planning Forums (Musrenbang), ensuring policy and program alignment. The team has also identified priority areas for local food security development, such as cassava processing into modified cassava flour (mocaf) in Tanjung Palas Timur and Sekatak, and the strengthening of sustainable household food initiatives.

The FSVA team has also designed intervention programs, including integrated food markets, the development of community food barns, the empowerment of farmers and local food MSMEs, food assistance for vulnerable households, and education programs on diversified, nutritious, balanced, and safe diets (B2SA). These programs are aligned with regional spatial planning (RTRW) and the Strategic Environmental Assessment (KLHS) to harmonize food security initiatives with broader development goals in Bulungan Regency.

Local Food Development in Bulungan Regency

Local food development is an integral part of food security strategies aimed at strengthening self-sufficiency and diversifying community diets. In Bulungan Regency, this policy is guided by the North Kalimantan Governor's Regulation No. 25 of 2021 on Local Food Development, and it is further aligned with FSVA mapping results and regional strategic plans in the field of food security.

The implementation of local food development focuses on several objectives: (a) utilizing locally available commodities such as cassava, maize, bananas, and breadfruit; (b) empowering farmers and MSMEs as the main actors in local food processing and distribution; (c) promoting dietary diversification through nutrition education and campaigns on diversified, nutritious, balanced, and safe (B2SA) foods; and (d) increasing the added value of local food products through processing innovations and post-harvest support.

One concrete example of this policy is the cassava processing program into modified cassava flour (mocaf), which has been developed in Tanjung Palas Tengah and Sekatak Districts. The program provides an alternative to wheat flour while also serving as a strategy for village-based economic empowerment. Local government support includes training on processing technologies, provision of basic production tools, and facilitation of partnerships with MSMEs and local markets (Bulungan Food Security Office, 2023).

Interviews with local entrepreneurs highlight the benefits of these initiatives. One mocaf producer, Mrs. Tien, stated: *“This program has greatly helped households, especially women, to earn additional income. However, we still face limitations in production equipment and marketing opportunities”* (Interview, October 24, 2024). This perspective was reinforced by the Head of Food Availability Division, who explained that beyond mocaf, the government also promotes the Sustainable Food Yard (P2L) program targeting vulnerable households and women farmer groups, providing seeds, polybags, and training in household food management (Interview, August 12, 2024).

The integration of local food development programs into regional planning documents such as the RKPD and OPD Strategic Plans ensures alignment with broader food security strategies, as well as the prioritization of vulnerable villages identified through FSVA (2022–2024). However, challenges remain, particularly limited road and transportation access, inadequate community expertise and equipment, distribution and marketing constraints, low youth participation in agriculture and food processing, and restricted budgetary and technical support.

As one technical staff member from the Food Security Office emphasized: *“Stronger synergy between agencies, entrepreneurs, and communities is needed so that local food programs do not only run during specific projects but become a sustained habit and necessity for the community”* (Interview, August 23, 2024). This highlights the need for reinforced coordination, institutional capacity, and long-term support to achieve the goal of regional food self-sufficiency.

CONCLUSION

This study concludes that the food security policy network in *Bulungan* Regency has engaged multiple stakeholders, yet its implementation remains suboptimal across dimensions of governance such as contact, trust, information sharing, and resource exchange. Although a formal structure exists through the FSVA Team, coordination is still sectoral and lacks synergy, while community trust and participation remain limited due to uncertainty over program continuity. The dissemination of food security data has not been maximized, and constraints in human resources, agricultural infrastructure, and institutional involvement hinder the effectiveness of policies. To address these challenges, it is recommended that the government strengthen cross-sectoral coordination, build inclusive trust with grassroots actors, and establish more effective mechanisms for information sharing to ensure transparency and informed decision-making. Furthermore, greater investment in agricultural facilities, empowerment of farmers and MSMEs, diversification of local food, and value-added product development should be prioritized to promote sustainability, reduce inequality, and enhance regional self-reliance in food security.

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