

Evaluating Food Security Policy Implementation: An Adaptive Governance Approach with Educational Implications

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Abstract:

This study evaluates the implementation of food security policies in Padang City through an adaptive governance approach, integrating William N. Dunn's (2017) evaluation framework. The research aims to assess how local institutions, policy actors, and socio-ecological contexts influence the effectiveness, efficiency, equity, responsiveness, and appropriateness of food security programs. Using a descriptive qualitative method, data were gathered through in-depth interviews with officials from the Food and Fisheries Agency, local business actors, and beneficiary communities, alongside document analysis of regional policy reports. The findings indicate that while programs such as "Gerakan Pangan Murah" (GPM), "Pekarangan Pangan Lestari" (P2L), and "Cadangan Pangan Pemerintah Daerah" (CPPD) contribute to local food access, challenges include limited budgets, weak cross-sectoral coordination, and low community participation. The adaptive governance framework reveals that local food policies in Padang are moderately effective but not yet efficient or equitable due to institutional fragmentation and insufficient climate adaptation integration. The study recommends strengthening inter-agency collaboration, developing data-based food information systems, and promoting participatory food diversification strategies. For education, these findings highlight the importance of integrating food security awareness and adaptive governance into educational curricula to foster future leaders who can address these challenges effectively.

Key Words: *Adaptive Governance, Evaluation Framework, Educational Implications*

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INTRODUCTION

Food security is a critical issue directly linked to the quality of life, social stability, and the economic sustainability of a country (Khan et al., 2023; Mishenin et al., 2023). In the context of sustainable development, food security not only involves the availability of food but also its accessibility, affordability, and equitable distribution across all social groups (Baspakova et al., 2024, Onyeaka et al., 2024). When a country fails to provide safe, nutritious, and affordable food, it jeopardizes not only public health but also economic and social stability. For

instance, according to data from Statistics Indonesia (2024), the prevalence of undernourishment in Padang City is 8.57%, higher than the national average (8.27%). This indicates that there are still significant challenges in achieving proper food security. Therefore, this study is essential for identifying and evaluating existing policies and providing recommendations to improve food access and make it more inclusive, thereby strengthening national and regional food security.

Although Indonesia has clear regulations on food security, such as Law No. 18 of 2012 on Food and supporting regional regulations, implementing these policies still faces many challenges. In Padang City, despite various programs such as *Gerakan Pangan Murah* (GPM) or Cheap Food Movement, *Pekarangan Pangan Lestari* (P2L) or Sustainable Food Yard, and the *Cadangan Pangan Pemerintah Daerah* (CPPD) or Regional Government Food Reserves, structural constraints—limited budgets, weak cross-sectoral coordination, and low community participation — are the main obstacles. Furthermore, the reliance on key food commodities like rice and the uneven distribution of food worsen household vulnerabilities, creating disparities in achieving food security. Hence, this research is important to delve deeper into these challenges, analyze existing policies, and formulate more effective solutions grounded in adaptive strategies.

Previous studies have examined food security policies across various regions, but few have explored implementation challenges in depth, especially regarding adaptive governance. Research by Yusran et al. (2025) emphasizes that food security policies must incorporate climate adaptation, given the direct impact of extreme weather on food availability and public nutrition. Similarly, Pitri and Yusran (2025) and Thow (2025) highlight the importance of managerial capacity and intersectoral coordination for the success of food policy. However, gaps remain in understanding the effectiveness of policies in local contexts, particularly in regions like Padang, where geographical factors, such as coastal and hilly terrain, play a crucial role in shaping policy outcomes. This study seeks to address this gap by applying William N. Dunn's (2017) evaluation framework and adaptive governance principles to assess the local food security policies in Padang City, offering insights into their effectiveness, efficiency, and equity.

The novelty of this research lies in its integration of adaptive governance and policy evaluation frameworks to assess regional food security policies. While traditional policy evaluations tend to focus on administrative achievements, this study adds value by considering the resilience, inclusiveness, and adaptability of food security policies in response to local ecological, social, and institutional conditions. Given the increasing pressure from climate change and environmental degradation, the importance of adaptive governance in food security cannot be overstated. This study will contribute new insights into how regional policies can be strengthened to address both immediate and long-term challenges in food security, with implications for policy reform and institutional capacity-building.

The primary research question this study addresses is: How effective are the food security policies implemented in Padang City, and how can they be improved through adaptive governance principles? The study argues that the current food security policies in Padang, while moderate in effectiveness, lack sufficient inter-agency coordination, integration of climate adaptation, and community participation. By applying an adaptive governance approach, this research proposes solutions to overcome institutional fragmentation and improve policy effectiveness. It further argues that a participatory approach to food diversification and climate-sensitive strategies is crucial for ensuring long-term, inclusive food security. The findings of this research will provide empirical evidence for enhancing local food security policies in Padang and can serve as a model for other regions facing similar challenges.

RESEARCH METHOD

This study uses a descriptive qualitative method to evaluate the implementation of food security policies in Padang City, focusing on the interaction between policy actors, institutional mechanisms, and the socio-ecological context. The approach follows the policy evaluation framework of William N. Dunn (2017), which includes effectiveness, efficiency, equity, responsiveness, and appropriateness, alongside the principles of adaptive governance, emphasizing institutional capacity to adapt to social and environmental changes (Torres-Lima et al., 2022). Padang was selected for this study due to its coastal geography, high ecological vulnerability, and its role as a central food distribution hub in West Sumatra Province.

The research data consists of primary data obtained through in-depth interviews with officials from the Fisheries and Food Agency, business actors, and beneficiaries of food security programs, as well as secondary data from regional policy documents and statistical publications. Data collection techniques include interviews, field observations, and document analysis, which are analyzed using the interactive model of Miles, Huberman, and Saldaña (2014). The analysis follows triangulation of sources and methods to ensure valid findings.

The study aims to provide an in-depth understanding of the performance of food security policies in Padang City, examining how these policies adapt to local challenges such as climate change, resource limitations, and community participation dynamics. It will contribute to the development of more responsive and inclusive food security policies in the future.

RESULT AND DISCUSSION

Result

Implementation of Food Security Policy

The implementation of food security policies in Padang City is carried out through several key programs, including *Gerakan Pangan Murah* (GPM),

Pekarangan Pangan Lestari (P2L), and *Cadangan Pangan Pemerintah Daerah* (CPPD), all coordinated by the Fisheries and Food Agency. These programs are derived from national policies aimed at strengthening local access, price stability, and food independence. However, despite a strong commitment from local government, the implementation has faced structural, coordination, and participation challenges, limiting its effectiveness and sustainability.

Institutionally, food security policies in Padang are still hindered by a lack of human resources, overlapping authority between agencies, and weak monitoring systems. This reflects findings from other studies, which highlight that food security policies often fail to meet their objectives due to poor inter-agency coordination and misalignment between planning and execution. Additionally, the reliance on annual budget cycles rather than adaptive institutional frameworks has resulted in the short-term effectiveness of programs like GPM and P2L.

From an efficiency perspective, limited operational funding and technical capacity have led to infrequent activities and minimal logistical support. Without adequate organizational capacity, food security policies remain administratively focused and fail to adapt to social and environmental changes. The findings suggest that building stronger bureaucratic capacity and enhancing coordination across sectors are crucial for improving policy performance.

In terms of adaptive governance, the study found that coordination between key sectors, such as the Food Agency, Agriculture Department, and Social Services, remains sectoral, with little institutionalized involvement from the private sector or communities. To enhance policy effectiveness, the study calls for strengthening institutional capacity, creating cross-sectoral coordination mechanisms, and integrating spatial food data systems for a more responsive approach to price changes and climate conditions.

Low-Cost Market Policy

Low-Cost Market Policy or *Gerakan Pangan Murah* (GPM) program, initiated by the Padang City Government, aims to stabilize food prices and improve food access for low-income households. This program is executed through collaboration between the Fisheries and Food Agency, Perum Bulog, and local business actors, providing essential commodities like rice, eggs, cooking oil, and chili at below-market prices. The primary goal of GPM is to curb food inflation and ensure the affordability of essential goods at the household level.

The findings of this study show that the GPM program is beneficial to the community during specific periods, particularly around religious holidays or when food prices spike. However, the effectiveness of GPM remains situational and lacks a systematic approach. Many activities are carried out as a quick response to price increases rather than being part of a long-term, integrated food control strategy. In line with Dunn's (2017) framework, the effectiveness of a

policy should not only be measured by its ability to address immediate issues but also by its long-term impact on public welfare.

From an efficiency standpoint, the GPM program faces significant challenges. It often relies on annual budget allocations and limited logistical support, which impacts the frequency of activities and the reach of the program. The distribution of affordable food has not extended to coastal and peripheral areas like Koto Tengah and Bungus Teluk Kabung, which have higher economic vulnerability. This shows that the principle of equity in the policy's execution has not been fully optimized. Furthermore, inter-agency coordination is insufficient, as communication between the Food Agency, Trade Department, and private actors remains suboptimal, leading to uneven distribution and community complaints about price discrepancies across regions.

The GPM program has not fully utilized information technology as an adaptive governance tool. Price and stock monitoring systems are still manual, relying on periodic reports between agencies. In the context of adaptive governance, real-time data and information systems are essential for local governments to make quick and responsive decisions based on changing market and climate conditions. Therefore, the program would benefit from the development of an integrated, real-time food information system to improve policy efficiency and precision. While the program demonstrates the local government's responsiveness to immediate price changes, its reactive nature — rather than a preventive, long-term strategy — indicates a need for improvement. Ultimately, for the GPM program to become more effective and sustainable, a spatial data-driven adaptive food governance model, enhanced inter-agency collaboration, and community involvement in program planning and evaluation are essential to ensure inclusive and long-lasting food security in Padang City.

Household Food Policy

The *Pekarangan Pangan Lestari* (P2L) program or Household Food Policy in Padang City aims to promote household food independence, diversify consumption, and reduce reliance on imported or market-based food products. This initiative is part of a national strategy to achieve household-based food security, encouraging the use of household yards and small plots for growing nutritious and economically valuable crops. The program has raised awareness about food independence, particularly among women and active community groups, such as the PKK, but its impact on reducing food insecurity has not been significant. Data from BPS (2024) indicates that the prevalence of undernourishment in Padang remains at 8.57%, highlighting the program's limited ability to improve food access comprehensively.

While the P2L program has proven effective in certain areas, its implementation is still short-term and heavily dependent on government grants, lacking an institutional framework to ensure sustainability once external funding ends. The absence of a social learning mechanism limits the capacity of

communities to manage and expand their food production independently. Moreover, there is a gap in the coordination between agencies, which weakens the efficiency and sustainability of the program. Some groups have struggled to continue activities once financial support ceases, pointing to the need for ongoing technical support and capacity building at the local level.

From an equity perspective, the program has seen more success in areas with adequate land availability, such as Kuranji and Pauh, but it faces significant challenges in urban and coastal areas where space is limited. This reflects a lack of contextual adaptation to local social and ecological conditions. To address this, innovative solutions like urban farming, hydroponic gardens, and vertical farming systems could enable urban communities to participate in household food production. The government needs to tailor the program to the specific needs of different regions, ensuring equitable access to food security initiatives.

Overall, the P2L program has been moderately effective in raising awareness and increasing participation in local food production, but it has not established a resilient and sustainable institutional ecosystem. The policy is partially effective with low efficiency, and it lacks the necessary social innovation to adapt to changing social, economic, and environmental conditions. To strengthen its impact, the local government should develop a community-based food system model, supported by ongoing technical assistance, microfinance access, and partnerships with local universities or NGOs. This approach would create a more inclusive, resilient, and adaptive household food governance system, enhancing the program's long-term sustainability and its ability to respond to climate and economic changes.

Regional Food Reserve Policy

The Regional Food Reserve Policy in Padang City is regulated through the Mayor's Regulation No. 67 of 2021, which serves as a guide for the provision, management, and distribution of strategic food reserves to address emergencies such as natural disasters, price crises, and disruptions in food distribution. This policy is aligned with Law No. 18 of 2012 on Food, emphasizing that local governments must ensure the availability of food, particularly for vulnerable groups. Given Padang's coastal geography, frequent floods, and landslides, the presence of food reserves is critical in maintaining local food security stability.

The research findings show that while the policy has a solid legal foundation and institutional structure, its implementation faces several challenges, particularly in the stages of procurement, storage, and distribution. The local government's storage facilities are still limited, unable to accommodate long-term food stock. Moreover, food aid distribution is often delayed during disasters due to suboptimal inter-agency coordination. This indicates that while the policy has legal and institutional support, it has not fully achieved its strategic goals.

In terms of efficiency, logistical costs for transporting food from Perum Bulog to local warehouses are high due to the lack of an integrated distribution system. This inefficiency is compounded by the dependency on the annual APBD budget, which destabilizes the storage and stock rotation processes. Furthermore, the equity of food distribution is a concern, as it is still more focused on areas affected by major disasters, while food-insecure areas such as Kelurahan Air Dingin, Bungus, and Koto Tengah are not fully served. This shows the policy's lack of a spatial approach in prioritizing areas based on food vulnerability, which is crucial for adaptive governance.

In terms of responsiveness, the local government reacts relatively quickly during natural disasters, but the emergency response system remains reactive, without an integrated early warning system that combines weather data, food stocks, and local logistics. This weak coordination limits the timeliness and effectiveness of food aid distribution. The policy has not fully embraced adaptive governance, as it still lacks cross-sector collaboration and flexibility in decision-making. The involvement of communities, social organizations, and the private sector in managing food reserves is minimal, despite the potential for these actors to strengthen the resilience of the system.

Overall, the regional food reserve policy in Padang City is moderately effective but still lacks efficiency and adaptability. While the policy ensures preparedness for food crises, it struggles with logistical challenges and inadequate coordination. To improve its effectiveness, the local government needs to develop an integrated food information system, based on spatial data that includes food stock, distribution, and vulnerability indicators. Furthermore, adopting a community-based food reserve approach, involving farmers, NGOs, and local communities, can enhance the sustainability of the policy, making it more adaptive and responsive to social and ecological dynamics.

Towards Adaptive Governance of Food Security: Implications for Education

The findings from various dimensions of food security policy implementation in Padang City reveal that food security has become a key priority in the regional development agenda. However, its implementation still faces significant challenges related to effectiveness, efficiency, equity, and sustainability. The three major programs—*Gerakan Pangan Murah* (GPM), *Pekarangan Pangan Lestari* (P2L), and *Cadangan Pangan Pemerintah Daerah* (CPPD)—have clear policy directions and positive impacts on the community but are not yet coordinated into a unified food security system. The implementation remains sectoral, dependent on annual budgets, and lacks adaptive innovations based on data and public participation.

In the context of policy evaluation, effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness are not balanced in Padang's food

security policies. The policies have shown tangible results, such as price stability and increased awareness about local food, but their impact has been short-term. Efficiency is still weak due to suboptimal resource use and lack of systematic inter-agency coordination. Adequacy is limited as the policy instruments are not proportional to the scale of food security issues, which are affected by climatic and economic factors. Equity concerns arise, as the policy mainly reaches urban communities, with less focus on coastal and peripheral areas.

This analysis shows that the food security policies in Padang are still at the stage of policy compliance, where the focus is on administrative adherence to regulations rather than achieving substantive outcomes for community food security. From an adaptive governance perspective, this indicates low institutional adaptability and a lack of social innovation in managing cross-sectoral policies. The shift towards adaptive governance calls for flexibility, multi-stakeholder collaboration, and continuous learning mechanisms to respond to social and environmental dynamics effectively.

Empirically, the food security policies in Padang tend to be reactive and coordination-based rather than adaptive and integrative. Programs like GPM and P2L work well independently but do not complement each other. The reliance on central government budget support makes the policies vulnerable to political changes and fiscal priorities. Weak coordination between agencies causes slow decision-making and poor responsiveness to changing ground realities. These findings emphasize the need for stronger coordination and alignment between the Food Agency, Agriculture Department, Social Services, and the National Food Agency to create a more effective and integrated food security system.

The shift to adaptive governance cannot rely solely on technical interventions such as price subsidies or aid provision. It must involve institutional transformation that places local communities as primary actors. The local government needs to build a system of learning governance that allows policy implementers to learn from experiences, incorporate community feedback, and adjust strategies based on environmental changes. Strengthening this system through active involvement of social organizations, NGOs, and the private sector will help foster collaboration and improve resource management in food security governance.

Overall, food security policies in Padang have moved in a more progressive direction but still face fundamental challenges in institutional structure, coordination, and public participation. Programs like GPM, P2L, and CPPD have made tangible contributions to expanding food access and availability but have not yet been integrated into a cohesive governance framework. The study shows that food security policies are effective in the short term but need improvements in efficiency, equity, and responsiveness to social

and ecological changes. The transition to adaptive governance is necessary, with a focus on data-driven decision-making, community participation, and institutional learning. Therefore, the main challenge for Padang's food security policy is not just increasing food production and distribution but building a responsive, inclusive governance system that adapts to the dynamic social, economic, and environmental changes ahead.

Discussion

The findings of this study on food security policy implementation in Padang City reveal both congruences and differences when compared to existing literature. The study aligns with Ariyanti et al. (2022) and Cavalcante & Pereira (2022), which emphasize the challenges in local food security policies due to weak inter-agency coordination, limited resources, and a lack of sustainable systems. In Padang, these issues persist, especially in the limited capacity of the bureaucracy and the inadequate cross-sectoral coordination between agencies like the Fisheries and Food Agency, the Agriculture Department, and the Social Services Department. However, a notable difference in this study is the application of the adaptive governance framework, which highlights the need for flexibility, cross-sectoral collaboration, and a participatory approach, suggesting a shift from the primarily administrative and reactive policies identified in previous studies. This study brings forward the importance of integrating adaptive governance, which is less emphasized in earlier works, proposing a new direction for policy-making that prioritizes resilience, inclusivity, and community involvement.

The study also finds that while the government has implemented various food security programs like the "Gerakan Pangan Murah" (GPM) and "Pekarangan Pangan Lestari" (P2L), their impact has been short-term and not integrated into a sustainable system. This finding resonates with Dunn's (2017) evaluation framework, where the effectiveness and sustainability of policies are core criteria. The study confirms that while these programs have successfully addressed short-term food accessibility issues, they lack long-term strategies that could ensure continuous food security in the face of climate change and fluctuating economic conditions. The reliance on annual budgeting cycles and a reactive rather than proactive approach undermines the overall impact of these programs, highlighting the need for institutional reforms and a more comprehensive, adaptive governance model.

From a theoretical perspective, this study expands upon the work of Torres-Lima et al. (2022) and Akther (2024) by incorporating the concept of adaptive governance, which emphasizes the role of institutional flexibility in responding to dynamic environmental and social conditions. The findings show that the current food security policies in Padang, although grounded in solid

regulatory frameworks, lack the adaptive capacity to address long-term sustainability. The policies, particularly GPM and P2L, are not sufficiently integrated into a broader system that can respond dynamically to new challenges such as climate change or economic shocks. This theoretical contribution pushes for a paradigm shift in food security policy from rigid, short-term measures to flexible, long-term solutions that prioritize local context, community participation, and cross-sectoral collaboration.

Practically, this research suggests that there is an urgent need to enhance the institutional capacity in Padang for food security governance. The study highlights the importance of integrating spatial food data systems to improve decision-making, as well as the need for stronger coordination mechanisms between local, provincial, and national actors. The findings point to the necessity of creating an inclusive governance model where community participation is not just encouraged but institutionalized, aligning with the recommendations of Ahmad (2024) and Untung et al. (2025). These practical implications suggest that policy reforms should include not only technical support but also institutional capacity-building to create a more resilient and adaptive food security system.

Finally, this study presents important implications for both policy and practice in food security governance. While Padang's policies have been successful in providing short-term solutions, they have not been able to create a long-lasting impact due to their administrative nature and lack of cross-sectoral coordination. The findings emphasize the need for a paradigm shift from an administrative approach to an adaptive one. The incorporation of data-driven decision-making, real-time food monitoring systems, and active community involvement in food security programs would ensure a more sustainable and equitable food security system. The study calls for an integrated food information system, better inter-agency coordination, and a collaborative approach to food security that can adapt to both social and environmental changes, thus contributing to the long-term goal of achieving food sovereignty in Padang City.

CONCLUSION

The most important finding from this study is the recognition that while food security policies in Padang City, such as the "Gerakan Pangan Murah" (GPM) and "Pekarangan Pangan Lestari" (P2L), have contributed to short-term improvements in food access, they lack sustainability and adaptive capacity in the face of changing environmental and economic conditions. The research highlights the need for a shift from reactive, administrative approaches to adaptive governance models that incorporate community participation, inter-agency collaboration, and data-driven decision-making. These findings underscore the importance of building a more resilient and inclusive food security system that can adapt to both socio-economic dynamics and

environmental challenges, ensuring long-term food security for vulnerable populations in the region.

The strength of this study lies in its contribution to the field by integrating the concept of adaptive governance into the evaluation of local food security policies. By combining Dunn's (2017) policy evaluation framework with the principles of adaptive governance, the research provides a comprehensive approach to understanding the limitations and potential of existing food security strategies. However, the study has limitations, including its focus on a single city and reliance on qualitative data, which limit the generalizability of the findings. Future research could expand to a broader range of regions and incorporate quantitative data to provide a more comprehensive analysis of food security governance across Indonesia. Additionally, further studies could explore how to scale adaptive governance practices to the national level, fostering broader systemic change.

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