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Evaluation of FSVA Use as an Indicator in Tanjungpinang City Food Security Planning Process

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ABSTRACT

This study evaluates the use of the Food Security and Vulnerability Atlas (FSVA) as an indicator-based instrument in the food security planning process of Tanjungpinang City. The issue is important because Tanjungpinang, as an urban and archipelagic area, has limited agricultural land, depends on food supplies from outside the region, and faces uneven socioeconomic and basic service conditions across its wards. The purpose of this study is to assess how FSVA indicators can describe local food security conditions, identify vulnerable areas, and support evidence-based planning for targeted policy interventions. This research employed a quantitative descriptive approach using secondary data from relevant government institutions, including data on food supply facilities, low-welfare population, transportation connectivity, clean water access, and health personnel. The data were analyzed through individual indicator analysis, standardization, weighting, composite scoring, and spatial classification into six priority groups. The findings show that Tanjungpinang City is generally in a relatively food-secure condition, with no ward classified as Priority 1. However, one ward is classified as Priority 2, one ward as Priority 3, one ward as Priority 4, seven wards as Priority 5, and eight wards as Priority 6. Senggarang and Dompak require particular attention because their vulnerability is influenced by low-income households, limited clean water access, and an unequal ratio of health personnel. The study concludes that FSVA is useful not only as a vulnerability mapping tool but also as a planning framework that links data, spatial analysis, causal factors, and policy interventions to strengthen sustainable urban food security.

Keyword: FSVA, Food Security, Food Vulnerability, Urban Planning

INTRODUCTION

Food security planning in urban and archipelagic areas requires an analytical framework that can capture not only the availability of food commodities, but also the unequal capacity of households and territories to access and utilize food in safe and nutritious ways. In the context of Tanjungpinang City, this issue becomes increasingly relevant because the city has limited agricultural land, depends heavily on food flows from outside the region, and contains several wards with different levels of socioeconomic vulnerability. The uploaded study draft explains that the 2024 FSVA for

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Tanjungpinang City uses five main indicators covering food availability, food access, and food utilization, and identifies Dompak and Senggarang as areas requiring closer policy attention . This article is therefore positioned within the broader field of urban food security studies that emphasize multidimensional indicators, spatial vulnerability mapping, and evidence-based public policy planning as essential tools for improving local food resilience (Jones et al., 2013; Manikas et al., 2023; Dawood & van Vuuren, 2023; Dinku et al., 2023).

The core issue examined in this article is the extent to which the Food Security and Vulnerability Atlas (FSVA) can function as a reliable indicator base in the food security planning process of Tanjungpinang City. FSVA is not merely a descriptive map; it is a planning instrument that transforms fragmented sectoral data into a spatially organized picture of food vulnerability. This is important because urban food insecurity often appears in hidden forms: food may be physically available in markets, but economically inaccessible to poor households; clean water may exist at the city level, but remain unevenly distributed; and health services may be present institutionally, but insufficient in relation to local population density. Therefore, the evaluation of FSVA use must assess whether its indicators are sensitive enough to identify vulnerable territories, clarify causal factors, and guide intervention priorities in local development planning (Hecht et al., 2019; Ikudayisi, 2024; Safayet et al., 2024; Young et al., 2021).

Previous studies have shown that food security measurement becomes more meaningful when it integrates multiple dimensions rather than relying on a single indicator. Spatial and composite approaches are especially useful because they help policymakers distinguish between areas that are vulnerable due to poverty, areas constrained by infrastructure, and areas affected by limited public services. In this sense, FSVA corresponds with contemporary research that views food insecurity as a territorially embedded problem shaped by socioeconomic status, household purchasing power, infrastructure access, water security, and public health capacity. However, studies on food security indicators are still often dominated by national, rural, or household-level analysis, while city-level planning instruments in small island and archipelagic contexts remain less explored. This gap provides the basis for the originality of this article, which evaluates FSVA not only as a technical mapping tool but also as an indicator system for local government planning in Tanjungpinang City (Raffo-Babici et al., 2025; Abdelatif & Djiar, 2025; Feizizadeh et al., 2023; Safayet et al., 2024).

The author's approach in discussing this issue is evaluative and policy-oriented. Rather than treating FSVA as a final administrative output, this article examines how FSVA indicators can be translated into planning priorities, intervention design, and cross-sectoral coordination. The analysis focuses on the relationship between indicator selection, spatial classification, and practical policy use. This approach is relevant because food security planning at the city level requires not only data accuracy, but also institutional capacity to interpret data into programs such as poverty reduction, food distribution support, clean water provision, health worker allocation, urban agriculture, and food reserve management. Accordingly, this article contributes to the literature by linking indicator-based vulnerability mapping with the planning cycle of local government, especially in an island city whose food system is shaped by trade dependence, limited production space, and uneven household welfare (Hackbarth et al., 2025; Petrovics & Giezen, 2022; Horst et al., 2017; Sibbing et al., 2022).

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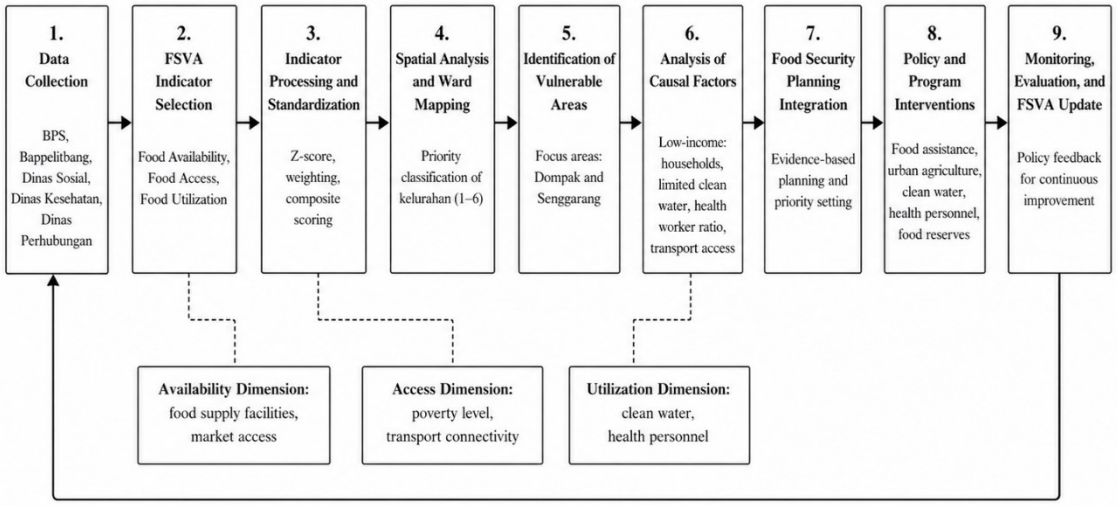

Figure 1. Flow Diagram of FSVA-Based Food Security Process in Tanjungpinang City
Source: Author, 2026

An important aspect of this study lies in the urban character of Tanjungpinang's food security challenge. Unlike rural regions where food availability is often measured through agricultural production capacity, urban food security depends strongly on market networks, logistics continuity, household income, infrastructure, and public services. This condition explains why the city-level FSVA does not prioritize the ratio of agricultural land in the same way as rural FSVA models, but instead gives greater attention to food supply facilities, poverty-related access, transportation connectivity, clean water, and health personnel. The relevance of this adjustment is supported by urban food system studies showing that food security in cities is deeply connected to food environments, supply chain resilience, spatial equity, and the interaction between formal and informal food systems (Warren et al., 2015; Dinku et al., 2023; Hecht et al., 2019; Wascher et al., 2015).

The significance of evaluating FSVA in Tanjungpinang City also lies in its potential to improve the precision of local policy targeting. If FSVA indicators are used only as statistical reporting tools, their contribution to planning will be limited. However, if they are integrated into the planning process, they can help the government identify which wards require food access support, which areas need clean water infrastructure, which communities face health service gaps, and which localities require livelihood strengthening. This is particularly important because spatially disaggregated indicators can reduce the risk of generalized policy responses that overlook vulnerable pockets within generally food-secure cities. In this regard, FSVA can support more adaptive, accountable, and evidence-based planning by connecting data, territory, and intervention priorities (Liu et al., 2025; Sandoval et al., 2025; Cattivelli & Rusciano, 2020; Martellozzo et al., 2014).

From a scientific perspective, this article is important because it evaluates the practical value of an indicator-based food security instrument in a specific local governance setting. Many food security studies discuss measurement validity, household vulnerability, urban food systems, or spatial modelling, but fewer studies examine how such instruments are actually used in municipal planning processes. By focusing on Tanjungpinang City, this article highlights the need to evaluate whether FSVA is capable

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of bridging technical measurement and policy execution. The study also contributes to discussions on urban sustainability because food security is closely related to poverty, infrastructure, water, health, and resilience against external supply disruptions. Therefore, the article's contribution is not limited to food policy, but also extends to public administration, regional planning, and evidence-based local governance (Sonnino, 2009; Morgan, 2009; Battersby, 2017; Béné et al., 2019).

Table 1. Key Analytical Focus of FSVA Evaluation in Tanjungpinang City Food Security

No.	Aspect	Indicator Focus	Relevance to Planning
1	Food availability	Ratio of food supply facilities and infrastructure to households	Identifies adequacy of local food distribution points and market access
2	Food access	Ratio of low-welfare population and transportation connectivity	Guides poverty reduction, food assistance, and mobility-based interventions
3	Food utilization	Access to clean water and ratio of health workers to population	Supports health, nutrition, sanitation, and basic service planning
4	Spatial vulnerability	Priority classification of wards	Determines targeted intervention areas such as Dompak and Senggarang
5	Policy integration	Use of FSVA results in local planning	Links data-based mapping with program budgeting, coordination, and monitoring

Source: Author, 2026

Based on this background, the objective of this article is to evaluate the use of FSVA as an indicator in the food security planning process of Tanjungpinang City. The discussion is directed toward understanding how FSVA indicators represent the city's food security condition, how they identify vulnerable wards, and how they can inform more targeted policy interventions. The article argues that FSVA will be more valuable when it is not treated merely as a vulnerability map, but as a planning framework that helps local government connect data, spatial analysis, program priorities, and institutional coordination. Through this focus, the article offers an original contribution by examining FSVA within the concrete planning needs of an island urban area, where food security depends on the interaction between supply systems, household welfare, infrastructure, health services, and adaptive governance.

METHODOLOGY

This study employed a quantitative descriptive approach to evaluate the use of the Food Security and Vulnerability Atlas (FSVA) as an indicator-based instrument in the food security planning process of Tanjungpinang City. The quantitative approach was selected because the study relies on measurable indicators that can describe the level of food security and vulnerability across administrative areas, particularly at the ward or *kelurahan* level. The descriptive design was used to explain the actual condition of food availability, food access, and food utilization based on the 2024 FSVA framework, while also identifying which indicators are most relevant for supporting local planning and

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policy intervention. Through this design, the study does not attempt to test causal hypotheses statistically, but rather to organize, interpret, and evaluate indicator-based data as a basis for evidence-based food security planning in an urban island context such as Tanjungpinang City (Creswell & Creswell, 2018; Bryman, 2016).

The data used in this study consisted of secondary data obtained from relevant government institutions, including Statistics Indonesia at the city level, Bappelitbang, the Department of Labor and Social Affairs, the Department of Health, Population Control and Family Planning, and the Department of Transportation. These data were selected because they correspond to the official FSVA indicators used in measuring food security vulnerability in Tanjungpinang City, namely food supply infrastructure, population welfare level, transportation connectivity, access to clean water, and the ratio of health workers to population. The use of secondary data is appropriate in this study because FSVA is designed as a policy-support instrument that depends on administrative, statistical, and spatial data produced by public institutions. Therefore, the quality of the analysis depends on the relevance, consistency, and comparability of the indicators used in constructing the composite food security vulnerability classification (Nardo et al., 2005; OECD, 2008).

Table 2. Tanjungpinang City FSVA Indicators 2024

No.	Aspect	Indicator	Definition	Data Source
1	Food Availability	Ratio of food supply infrastructure and facilities to the number of households	The number of food supply infrastructure and facilities, such as markets, minimarkets, shops, food stalls, eateries, and restaurants, compared to the number of households or household heads in each ward.	BPS, 2024; Bappelitbang, 2023
2	Food Access	Ratio of population with the lowest standard of living to the total ward population	The number of residents with the lowest level of social welfare compared to the total population of each ward.	Department of Labor and Social Affairs; Integrated Social Welfare Data/DTKS, 2024
3	Food Access	Wards without adequate road, waterway, or air transportation connectivity	Wards with transportation access that is not available throughout the year, or areas that rely on waterway or air transportation but do not have adequate	Bappelitbang, 2023

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https://ojs.umrah.ac.id/index.php/jgbr

No.	Aspect	Indicator	Definition	Data Source
			public transportation services.	
4	Food Utilization	Percentage of households without access to clean water compared to the total number of households	The number of households in income groups 1–4 using unprotected clean water sources compared to the total number of households in each ward.	Bappelitbang, 2023
5	Food Utilization	Ratio of healthcare workers to the population in the ward	The number of healthcare workers, including general practitioners, specialists, dentists, midwives, nurses, public health workers, nutritionists, pharmacists, and pharmacy assistants, compared to the ward population.	Bappelitbang, 2023; Dinkes PP & KB, 2024

Source: Author, 2026

The analytical process was conducted through individual indicator analysis and composite analysis. Individual indicator analysis was used to classify each FSVA indicator according to its level of vulnerability, while composite analysis was carried out by standardizing indicator values and applying weights to produce an overall priority classification for each ward. The composite score was then used to classify areas into six priority groups, where Priority 1 indicates the highest level of vulnerability and Priority 6 indicates the strongest level of food security. In the context of Tanjungpinang City, the FSVA model uses five indicators representing three main dimensions of food security, namely food availability, food access, and food utilization; the agricultural land ratio indicator is not applied because the study area is urban and its food supply is more dependent on trade, infrastructure, and distribution networks than on local agricultural production.

The data analysis method in this study consisted of individual index analysis and composite index analysis. Individual index analysis was conducted by classifying each FSVA indicator based on the experimental distribution method, while composite analysis was carried out using a weighting method to determine the relative contribution of each indicator to the overall food security vulnerability score. Before calculating the composite score, each indicator value was standardized using a z-score and transformed into a 0–100 scale to ensure comparability among indicators with different units of measurement. The composite score for each ward was calculated by multiplying each standardized indicator value by its respective weight and then summing all weighted values using the following formula: $Yj = \Sigma(ai \times Xij)$, where Yj refers to the composite score of ward *j*, ai refers

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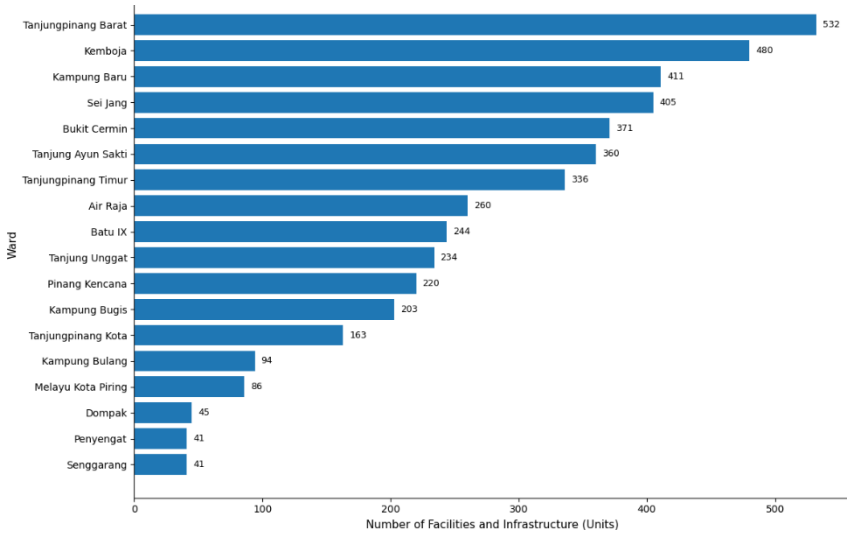
https://ojs.umrah.ac.id/index.php/jgbr

to the weight of indicator *i*, and Xij refers to the standardized value of indicator *i* in ward *j*. Furthermore, the cut-off score for determining priority groups was calculated using the formula **Kj = Σ(ai × Cij)**, where Kj represents the composite cut-off score for group *j*, **ai** is the weight of indicator *i*, and **Cij** is the standardized cut-off value of indicator *i* in group *j*. Through this calculation, each ward was classified into six priority groups, where Priority 1 indicates the highest food insecurity vulnerability and Priority 6 indicates the strongest food security condition.

RESULTS AND DISCUSSION

1. Overview of Food Availability in Tanjungpinang City

Food availability is one of the main dimensions in assessing food security because it reflects the extent to which food can be supplied to meet community needs in a sustainable manner. In the context of Tanjungpinang City, food availability is not primarily determined by local agricultural production, but by the continuity of food distribution from outside the region and the presence of food supply facilities within each ward. This condition is closely related to the urban and island characteristics of Tanjungpinang, where limited agricultural land makes the city dependent on interregional food flows, markets, shops, minimarkets, food stalls, and other distribution channels. Therefore, the FSVA assessment places food supply infrastructure as an important indicator for measuring the city's food availability condition.



Figue 2. Number of Food Supply Facilities and Infrastructure in Tanjungpinang City
Source: Tanjungpinang City Statistics Office, 2024.

The Food Law No. 18 of 2012 defines food availability as the condition in which food is available from domestic production, food reserves, and imports when local production and reserves are insufficient to meet demand. In Tanjungpinang City, this concept must be understood through the relationship between food supply capacity, distribution systems, and market access. Since the city does not have sufficient agricultural land to support staple food production, especially rice, food availability depends on the smooth functioning of supply chains, transportation routes, storage facilities, and local trade networks. Thus, food availability in this study is interpreted not

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merely as production capacity, but also as the ability of the urban food system to ensure that food reaches communities through accessible distribution points.

Agricultural production in Tanjungpinang City remains limited but still contributes to local food resilience. Agriculture, including livestock, forestry, and fisheries, contributed around 2.30% to the city's Gross Regional Domestic Product in 2023. Rice is not produced because there is no available land for rice cultivation, while corn, cassava, and sweet potatoes remain the main local commodities. Corn production reached 146.10 tons in 2023, increasing compared to the previous year due to improved harvesting schedules and farmer productivity. Cassava production also increased from 28 tons in 2022 to 70.60 tons in 2023, while sweet potato production reached 13.6 tons in the same year. Although these figures show the existence of local production potential, their contribution is still limited compared to the city's overall food demand.

The ratio of food supply facilities and infrastructure to the number of households is therefore used as the main indicator of food availability in the FSVA model for Tanjungpinang City. Food supply facilities include markets, minimarkets, shops, stalls, restaurants, and other places where food is stored, sold, and distributed to the community. The higher the ratio of food supply facilities to households, the better the food availability condition in a ward. Based on the 2024 data, most wards in Tanjungpinang City are classified as relatively food secure in terms of food availability, although several wards still require attention because of limited supply infrastructure compared to their household population.

2. Food Access and Socioeconomic Conditions

Food access refers to the ability of households to obtain sufficient, safe, and nutritious food through various sources, including purchases, own production, reserves, exchanges, gifts, loans, or food assistance. In Tanjungpinang City, food access is strongly influenced by household purchasing power, poverty conditions, and transportation connectivity. Although food may be available in markets and shops, vulnerable households may still experience food insecurity if they lack the economic resources to purchase adequate food. Therefore, FSVA uses the ratio of residents with the lowest welfare level to the total population as one of the key indicators for assessing food access.

The poverty condition in Tanjungpinang City shows an important trend for understanding food vulnerability. The percentage of poor people decreased from 9.85% in 2022 to 7.95% in 2023, indicating improvement in household welfare. However, this decline does not automatically eliminate food vulnerability because poverty remains unevenly distributed across wards. Based on the Integrated Social Welfare Data, several wards still contain households with the lowest standard of living. These include Penyengat, Senggarang, Kampung Bugis, Tanjung Unggat, Kampung Bulang, Tanjungpinang Barat, Kemboja, Kampung Baru, Dompak, Tanjungpinang Timur, Melayu Kota Piring, and Air Raja. These areas require continued attention in poverty reduction and food access programs.

Transportation connectivity also plays an important role in determining food access. Poor infrastructure can limit household mobility, reduce access to markets, increase distribution costs, and weaken economic opportunities. In Tanjungpinang City, most wards have roads accessible by four-wheeled vehicles throughout the year. However, Penyengat Ward has different geographical characteristics because it relies on water transportation. This condition shows that food access in island and coastal urban

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VOL 3, NO. 2, AUGUST 2026
https://ojs.umrah.ac.id/index.php/jgbr

areas cannot be assessed only through economic indicators, but must also consider physical access, transportation systems, and the reliability of public mobility services.

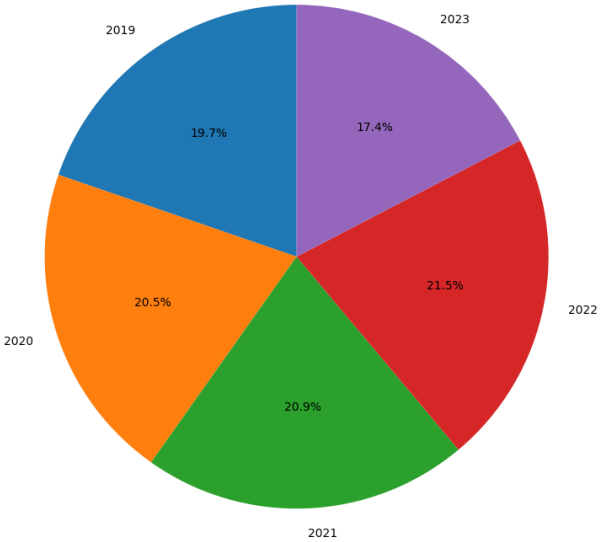

Figure 3. Percentage of Population Below the Poverty Line in Tanjungpinang City
Source: Tanjungpinang City Department of Labor and Social Affairs, 2023.

Overall, food access in Tanjungpinang City is shaped by the interaction between welfare level and transportation connectivity. The decline in poverty indicates progress, but the presence of low-income households in several wards shows that food access remains a strategic issue in local food security planning. Vulnerable households may be affected by price fluctuations, limited income, and unequal access to food distribution points. Therefore, FSVA findings are useful for directing policy interventions toward wards with higher poverty levels, weaker purchasing power, or specific transportation barriers.

3. Food Utilization, Clean Water, and Health Services

Food utilization is the third main component of food security and refers to how households use food and how individuals absorb nutrients effectively. This dimension includes food storage, preparation, consumption practices, access to safe water, sanitation, health conditions, and the availability of health services. In Tanjungpinang City, food utilization is assessed through two main indicators: the percentage of households without access to clean water and the ratio of health workers to the population in each ward. These indicators are important because food security cannot be achieved only by ensuring food availability and access; it also requires conditions that allow food to be consumed safely and transformed into good nutritional outcomes.

Access to clean water is a critical factor in food utilization because unsafe water can increase the risk of disease and reduce the body's ability to absorb nutrients. Households without protected water sources are more vulnerable to health problems, especially children, pregnant women, and other vulnerable groups. In the FSVA framework for Tanjungpinang City, the clean water indicator measures the number of households in income groups 1–4 that use unprotected clean water sources compared to the total number of households in each ward. This indicator helps identify areas where food vulnerability is not caused by food shortage alone, but also by poor basic

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VOL 3, NO. 2, AUGUST 2026
https://ojs.umrah.ac.id/index.php/jgbr

infrastructure. The ratio of health workers to the population is another important indicator in food utilization. Health workers, including general practitioners, specialists, dentists, midwives, nurses, public health workers, nutritionists, pharmacists, and pharmacy assistants, contribute to improving public awareness of balanced nutrition, reducing morbidity, and supporting maternal and child health. In areas where the number of health workers is not proportional to the population, communities may experience weaker access to preventive and curative health services.

The impact of food utilization conditions can also be seen through health and nutritional outcomes. The number of malnourished children under five in Tanjungpinang City during 2019–2023 was recorded at 94 cases, with the highest number found in Tanjungpinang Timur District and the lowest in Tanjungpinang Kota District. In 2023, child mortality under five reached 35 cases, while maternal mortality during childbirth reached 6 cases. These data show that food security planning must integrate nutrition, clean water, and health service policies. Therefore, FSVA indicators are useful not only for mapping food vulnerability, but also for identifying basic service gaps that influence household and individual nutritional resilience.

4. Food Security Vulnerability Classification and Causal Factors

The composite FSVA analysis provides a spatial picture of food security and vulnerability in Tanjungpinang City. The vulnerability classification is based on a combination of indicators from food availability, food access, and food utilization. Through weighted analysis, each ward is classified into six priority levels. Priority 1 represents the highest level of vulnerability, while Priority 6 indicates the strongest food security condition. This classification does not mean that all residents in a vulnerable ward are food insecure, nor does it mean that all residents in a secure ward are free from food vulnerability.

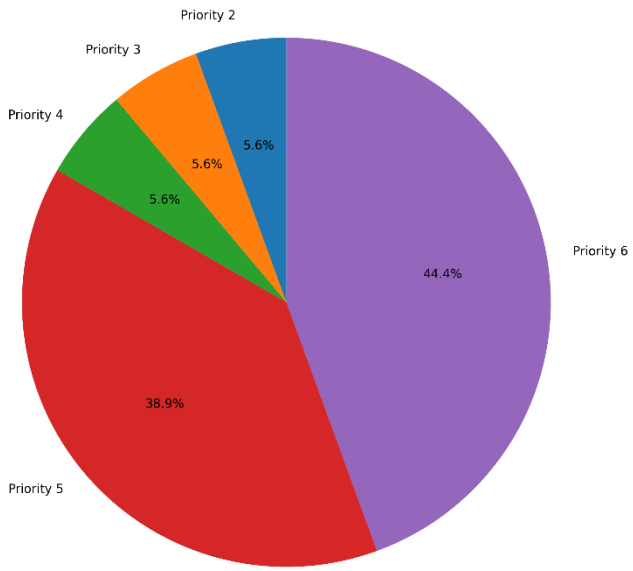

Figure 4. Distribution of Wards by Priority
Source: Tanjungpinang City Department of Labor and Social Affairs, 2023.

Based on the 2024 FSVA analysis, none of the 18 wards in Tanjungpinang City are classified as Priority 1. One ward is classified as Priority 2, one ward as Priority 3, one

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eISSN: 3108-9356 pISSN: 3109-0605
VOL 3, NO. 2, AUGUST 2026
https://ojs.umrah.ac.id/index.php/jgbr

ward as Priority 4, seven wards as Priority 5, and eight wards as Priority 6. This distribution indicates that Tanjungpinang City is generally in a relatively food-secure condition. However, the existence of wards in Priority 2 and Priority 3 demonstrates that vulnerability still exists and must be addressed through targeted planning. Senggarang Ward is classified as Priority 2, while Dompak Ward is classified as Priority 3, making both areas important targets for food security intervention.

The main factors causing vulnerability in Priority 2 and Priority 3 wards are related to the proportion of low-income households and the ratio of health workers to population density. Dompak and Senggarang are relatively vulnerable because they face socioeconomic and service-related constraints. The increase in poor households can weaken purchasing power and reduce the ability of families to obtain nutritious food consistently. At the same time, a limited number of health workers and restricted access to clean water can worsen vulnerability by affecting food utilization and nutritional outcomes.

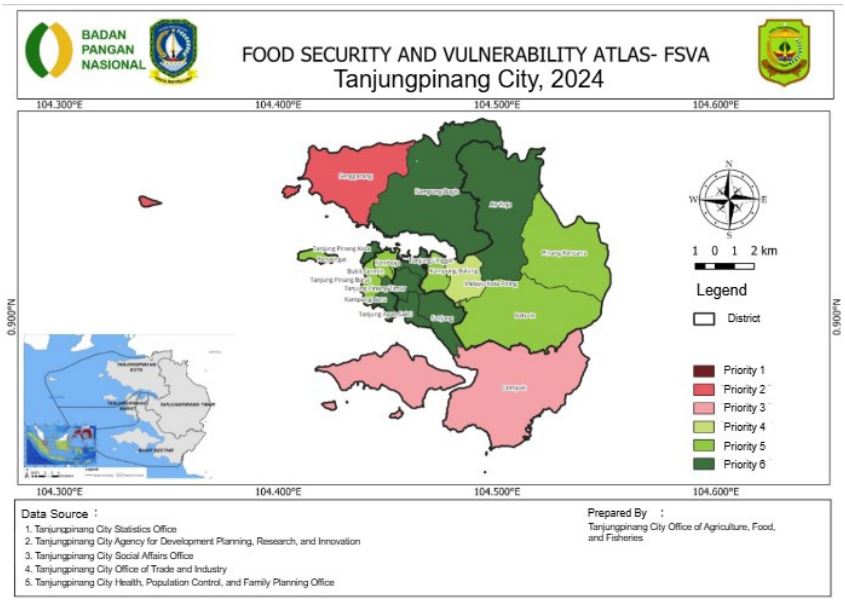

Figure 5. Food Security and Food Vulnerability in Tanjungpinang City in 2024
Source: Author, 2025

The food security vulnerability map is important because it translates statistical indicators into spatial information that is easier for policymakers to interpret. Through this map, the government can identify which wards require immediate attention, which indicators contribute most strongly to vulnerability, and what type of intervention is most appropriate. For Tanjungpinang City, FSVA mapping confirms that policy responses should prioritize vulnerable wards while maintaining food security conditions in relatively secure areas. This spatial approach strengthens evidence-based planning because it connects data analysis with territorial policy targeting.

5. Policy Intervention and Strengthening of FSVA-Based Planning

The causes of food security vulnerability differ from one ward to another; therefore, policy interventions must also be designed according to the specific conditions of each area. FSVA helps the local government understand these differences by

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VOL 3, NO. 2, AUGUST 2026
https://ojs.umrah.ac.id/index.php/jgbr

identifying priority locations and the causal factors behind vulnerability. In Tanjungpinang City, Priority 1–3 areas require greater attention, especially Senggarang Ward as Priority 2 and Dompak Ward as Priority 3. These areas are characterized by relatively higher vulnerability due to low-income households, limited basic infrastructure, and unequal health service capacity. Therefore, intervention strategies must be directed toward improving economic access, clean water infrastructure, health personnel distribution, and food supply resilience.

The Tanjungpinang City Government has implemented several interventions to strengthen food security, including the distribution of local government food reserves in the form of rice to affected families, food assistance for families listed in social welfare data, and training or skills development programs for vulnerable communities. However, several issues still require stronger policy follow-up. These include the adjustment of health personnel needs according to population size, continued poverty reduction programs, improved access to clean water, and better coordination among institutions involved in food security planning. Without these improvements, food assistance may only provide temporary relief without addressing the structural causes of food vulnerability.

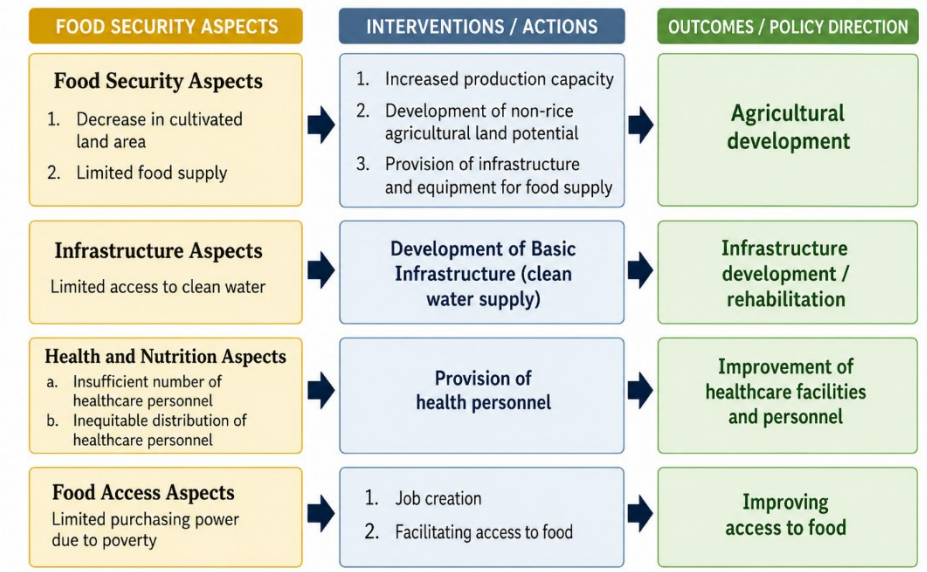

Figure 6. Intervention Framework to Improve Food Security
Source: Author, 2025

The recommended intervention framework includes several strategic areas. In the food availability aspect, the government needs to increase local production capacity, develop non-rice agricultural potential, and provide infrastructure and equipment for food supply. In the infrastructure aspect, the priority is to expand clean water access through basic infrastructure development and rehabilitation. In the health and nutrition aspect, interventions should focus on increasing the number of health workers, improving the equitable distribution of personnel, and strengthening health facilities in underserved areas. In the food access aspect, policies should support job creation, skills training, food assistance, and facilitation of household access to affordable and nutritious food.

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Food security enhancement programs in Tanjungpinang City should therefore include job creation, skills training for working-age populations, communication and education for household food production through home gardens, proposals for infrastructure development through the Musrenbang process, recruitment of medical personnel, optimization of local food resources, strengthening of health infrastructure, equitable allocation of health facilities, expansion of non-rice agricultural land, promotion of Sustainable Food Agriculture Land, and adjustment of the Detailed Spatial Plan for agricultural development. Through these measures, FSVA can become more than a mapping instrument; it can function as a planning framework that connects data, vulnerability analysis, intervention design, institutional coordination, and continuous policy evaluation.

CONCLUSION

FSVA data helps to describe the picture of vulnerability, which was previously general, in a more specific way for each area. This spatial approach facilitates the identification of intervention targets, thereby enabling more efficient use of resources. This study also emphasizes the importance of integrating FSVA data with socioeconomic data and environmental factors to design comprehensive policies. Challenges such as dependence on external supplies and climate change are issues that need to be given top priority in any food security policy.

The establishment of FSVA 2024 in Tanjungpinang City shows that FSVA is an effective food security monitoring tool. This city is in a food security zone, with some locations still requiring special attention. It is proposed to strengthen local food production development programs through urban agriculture and aquaculture, improve distribution infrastructure, develop strategic food reserves, and enhance the FSVA-based information and early warning system. Inter-agency coordination among authorities, communities, and businesses is crucial to achieving sustainable food self-sufficiency.

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