

Strategies to Uphold Food Sovereignty in Indonesia

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ABSTRACT

The principle of food sovereignty is a democratic, transparent, environment-based food system, local products and markets as the main pillars in achieving sustainable food security. Food sovereignty makes a very real contribution in overcoming food insecurity in areas where there are often extreme climates, crop failures, dependence on imported food, and encouraging the provision of healthy food in the long term (sustainable) that can be accessed by all people (equitable). and encourage local food production and consumption (local wisdom). Food sovereignty seeks to improve the quality of life of farmers and rural communities. Strategies to build food sovereignty can be through (a) Utilization of biodiversity as a sustainable food source through local food diversification, (b) Improvement of agricultural cultivation and quality of food production through research and innovation produced by BRIN, (c) Consistency in the implementation of protection of productive agricultural land from land use conversion, (d) Monetary, fiscal policy support and access to finance for farmers, fishermen, and other food producers, (e) Improvement of processing/downstream technology of food commodities in productive, efficient, competitive, and sustainable, (f) Development of infrastructure and food production facilities appropriately and integrated, (g) Synergy of food development policies between the central and local governments, and (h) Application of import duties on imported food to protect domestic food commodities and products.

Keywords: Food Sovereignty; Food Security, Diversification, Biodiversity, Government Policies.

1. Introduction

Food is a complex global development issue as many people are still unable to meet their total physical and intellectual capacities due to food micronutrient deficiencies caused by food insecurity. Government policies to achieve food security targets, address existing problems, and involve stakeholders in policy and program implementation. Efforts to realize food sovereignty include three development missions in formulating programs and policies: (1) self-sufficiency; (2) sustainability; and (3) farmer welfare. The Ministry of Agriculture does not stand alone in implementing every program and has tried to develop agriculture in collaboration with other parties (stakeholders) at home and abroad. Policy implementation and stakeholder involvement in realizing sustainable food sovereignty in Indonesia still face challenges in integrating food, policies and programs to address national food problems (Dzulhidany & Rahman, 2022).

The principle of food sovereignty is a system of food democratization, a transparent system based on the environment (agroecology), and prioritization of local products and markets are fundamental pillars in achieving sustainable food security. The food sovereignty

model or food security model can guarantee long-term food security, thus supporting the approach of integrating various perspectives into a complex and interconnected system. Food sovereignty should be seen as an integral component of the transformation towards a sustainable food system, not a neoliberal food system. Policies adopting food systems are context-specific and adapted to local circumstances. Institutional transformation involves governments, non-government institutions, and community organizations as key actors in the food system transformation process. Concepts can reinforce each other resulting in more benefits in developing sustainable and equitable food systems (Byaruhanga & Isgren, 2023).

The food sovereignty model makes a very real contribution to overcoming food insecurity in areas where there are frequent extreme climates, production failures, dependence on imported food, promoting the stability of long-term (sustainable) healthy food provision that is accessible to all communities (justice) and encouraging local food production and consumption (localization). The implementation of food sovereignty has provided opportunities for local food procurement, innovation centers, and several types of cultivation technology development with greenhouses, hydroponics, vertical farming, and urban farming to strive for a more localized food system, thereby increasing food security and sovereignty (Bonsignore et al., 2018).

Food security as a policy is linked to hunger, poverty and environmental degradation. Food security and rural development share the same goal, both seeking to improve the quality of life of farmers and rural residents, but food security prioritizes economic aspects over humanitarians. The food security approach prioritizes food exports over national or local consumption. The impact is the increasing use of various resources, especially petroleum for transportation, food prices are always linked to petroleum prices. As a result, some countries such as India export staple foods, but have many populations suffering from hunger (Pachón-Ariza1, 2013).

The concept of sovereignty rejects trade as the primary means of meeting human food needs, but food must be produced through sustainable agricultural systems. The production inputs used (seeds, fertilizers, anti-pests) must be organic, not factory-made chemical products (Bainus & Yulianti, 2018). There is a clear link between food sovereignty approaches and rural development. The principle of food sovereignty seeks to improve the quality of life of farmers and rural communities. This relationship is established through a new way of understanding rural development with a paradigm of diversity of rural development. The new approach has very interesting results, it is important to try to continue a deeper characterization of the complexity of rural development (Pachón-Ariza1, 2013).

Food sovereignty directly improves food security and nutritional adequacy. Most

research on food sovereignty focuses on the impact of increasing autonomy over production processes through the application of agroecological practices, it needs to be expanded to the role of land access, local markets, and gender equality on food security and nutritional adequacy (Sampson et al., 2021). Greater uncertainty in food production, greater price instability, increased demand due to population growth and increased income, uncertainty over climate change, and natural disasters are still latent problems and building food sovereignty (Jamaludin, 2022). Lack of coordination across policies and will hinder the development of more diverse food systems to produce healthier diets. Lack of monitoring and assessment of the program hinders the collection of data that can be used to improve the program. This is why the government reacts slowly to new issues faced by Indonesia in terms of improving food security (Muhafidin, 2022).

2. History of the Importance of Food Sovereignty

In food policy, there is no continuity of the diversity of staple foods which is the historical reality of the nation with Indonesia's food policy today. Initially, the diversity of staple foods which is the local wisdom of the people of the archipelago received considerable attention in the idealism of President Sukarno. However, this was not fulfilled in the next leadership period. At the laying of the first stone of IPB development, April 27, 1952 President Sukarno had said:

"This matter of people's food supply for us is a matter of life and death. Keep in mind, again keep in mind. If we do not show this people's food massively, radically and revolutionarily, we will suffer harm..."

"... Make your nation a strong nation, an independent nation in the true sense of independence. Why talk about free politics if we are not free when it comes to rice. That is, always have to ask for rice from neighboring nations?"

In 1945-1965, many Indonesians had low food quality and insufficient consumption, a deep concern for malnourished Indonesians. From a food security perspective, this measure is an extra challenge for the government, food is needed in increasing quantities, in addition to improving quality also requires greater diversification. A much bigger challenge arises from population growth. The increase in food production cannot keep pace with population growth. The fact that food crises contribute to regime change (Nawiyanto, 2017).

Macroeconomic policy as a mandate from the Constitution of the Republic of Indonesia in Article 1 paragraph 3, and Article 33 paragraph 4 states that the national economy is organized based on economic democracy with the principles of togetherness, equitable efficiency, sustainability, environmental insight, independence and maintaining a

balance of economic progress and national unity. The substance of the Minister of Finance Regulation No. 213 of 2011 is *das sollen*, and has a vertical nature in sync with Law No. 19 of 2013 concerning the protection and empowerment of farmers. The principle of development of economic democracy contains horizontal harmonization with food security, especially Article 56 letter e of Law Number 18 of 2012 concerning Food. The mandate of social justice is contained in the fifth precept of Pancasila and expressed in Article 33 of the NRI Constitution of 1945 (1945 Constitution). The role of the state as the controlling owner of policies to realize social welfare. The foundation of values contained in the ideology of Pancasila must be able to fill and be implemented in every vision of development, as well as food security policy (Adnyani, 2019).

3. Result and Discussion

Strategy for Building Food Sovereignty

There are several strategies for building food sovereignty that can be implemented in Indonesia, including: Utilizing biodiversity for food diversification, Improving food quality through research and innovation, Protection of productive agricultural land from land use conversion, Monetary, fiscal policy and access to funding for farmers and other food producers, Improved processing/downstreaming technology for food commodities, Development of infrastructure and integrated food production facilities, Synergy of food development policies between central and regional governments, Imposition of import duties on food imports to protect domestic food commodities and products. The various strategies above will be explained in more depth below.

Utilization of biodiversity for food diversification

Indonesia's ethnic diversity and biodiversity are advantages that need to be maintained for the sustainability of food sovereignty. Good development policy is one that considers culture as a valuable capital through wider group participation (Sugeng & Fitria, 2023). Three levels of biodiversity managed by farmers are multiple cropping, resource diversity, and household nutrient diversity. Perennial crops are intercropped with various types of cereals and legumes, and show that intercropping models can increase land productivity levels with indicators of nutrient efficiency, biomass, and soil moisture for plant roots. Plant association is not only a strategy for avoiding the risk of crop failure, but its implementation requires knowledge of synergistic (or antagonistic) relationships between crops. Woody perennials grow better when combined with shrubs or shrubs based on the beneficial value and economic value obtained by farmers. Management of spatial heterogeneity includes the presence of earthworm populations or termite nests that can remodel organic matter plant residues causing the concentration of soil nutrients (C, N, P)

to increase. Yields increase systematically in the presence of termite nests and earthworm populations. Wild plants (i.e. grasses, shrubs, vines, and trees) from the surrounding landscape play an important role in maintaining micronutrient accessibility at the household level. Agricultural biodiversity contributes to household nutrition, and this diversity comes from the farming family's ability to blend crops in smart ways. Local ecological knowledge is invaluable for extension services and rural development because it revisits past practices, then new skills or new methods can be developed in their respective areas. The creativity of farmers to continue to innovate in the use of biodiversity will play a role in multifunctional agricultural systems (Félix et al., 2018).

Strategies to strengthen local food systems are essential to improve people's livelihoods as a solution to the problems of high food prices, inadequate food quality, and limited availability of economic and physical access to food produced inside or outside communities. Strategy Development includes increasing access to production resources, especially native seed varieties, and improving overall agroecological management of land use systems, basic seed use, local food, and home yard production. Low dietary diversity can contribute to macro- and micronutrient deficiencies, the production of food diversity and participation in nutrition education are key to the success of the program. Biodiversity and food security together as a development policy that enables farmers through socio-cultural processes to support biodiversity preservation. In the case of coffee farmers, market integration often leads to a decline in agricultural diversity, many farmers in the region continue to manage the biodiversity of livestock farming as part of the structure of socio-cultural values. The food sovereignty platform advocates for an integrated system between nature rights and human rights to be more ecologically resilient, socially equitable and economically equitable agri-food systems (Fernandez & Méndez, 2019). Optimization through input management technology and intake of amelioran, fertilizer and pesticide from around 700 thousand hectares of tidal swampland, can produce 6.49 million tons of dry milled grain / year. But in fact, the contribution of tidal swampland is only about 600-700 thousand tons. In order to achieve food sovereignty, the use of tidal swamp land needs to be increased through the use of innovative science and technology (IPTEK) and strong commitment from stakeholders. Tidal swamplands have extensive biodiversity and specific local wisdom. The biodiversity of food crops in tidal marshlands includes rice, maize, beans, tubers, vegetables and horticulture, including ducks, chickens and swamp buffalo. Local wisdom includes tidal swamp land management which includes how to assess and select sites, land clearing and water management, soil fertility treatment and improvement, and planting patterns (Noor & Rahman, 2015).

Improving food quality through research and innovation

The results of BRIN's research and innovation are implemented to improve the welfare of farmers, fishermen, and other food producers through basic pricing of essential food products and price protection at the producer level. The research and innovation system serves as a catalyst for the transformation of the food system that is urgently needed, research on what food system transformation is and how to realize it. Research and innovation are gaining attention in academic and policy environments, explicitly accommodating the systemic nature of current issues, and identifying challenges associated with transformative research. The challenges that exist in the research and innovation system are very diverse and interrelated, so there is a need for an integrated system with perspectives for future food systems (Kok et al., 2019).

In the case of increasing the potential of tidal swamps, land use needs to be improved through the use of science and technology (IPTEK), innovation and strong commitment from stakeholders in order to achieve food sovereignty. Tidal swamplands have extensive biodiversity and specific local wisdom. The biodiversity of food crops in tidal marshlands includes rice, maize, beans, tubers, vegetables and horticulture, including ducks, chickens and swamp buffalo. Local wisdom includes tidal swamp management including how to assess and select sites, land clearing and water management, soil fertility treatment and improvement, and planting patterns. Quality assurance of food traded by the community by paying attention to hygienic quality, quality and nutritious quality (Mulyana et al., 2021).

Policymakers need to adopt a holistic system-based approach that respects the diverse benefits of agrobiodiversity. Strategic alliances between farmers, government, academia, non-governmental organizations can produce a fact-based approach in order to encourage agroecological life and food sovereignty, food security and sustainable nutrition.

Protection of productive agricultural lands from land use conversion

The availability of sustainable food agricultural land is essential in ensuring national food independence, resilience, and sovereignty. Juridically, the state is obliged to guarantee the right to food as the right to food security and sovereignty. Such state obligations are faced with the challenge of meeting the growing need for food, and are mainly due to the accelerating increase in population. On the other hand, economic and industrial development has had a negative impact on land degradation, land use change, and agricultural land fragmentation. Regional spatial planning regulations are often only limited to efforts to control land conversion as an effort to protect it, there has been no determination of sustainable agri-food areas due to various obstacles. In its implementation, spatial

planning policies are not enough to control the rate of conversion of agricultural land (Oktiana et al., 2020).

The results of research on the dynamic model of food security in Bantul Regency provide a picture of a scenario without land conversion control in 2021, rice balances minus 1,925 tons. The scenario with a policy of controlling rice field conversion up to 50% of the rice field conversion rate can reduce the rice balance deficit in 2021, if the conversion of functions is reduced by 50% of the rice field conversion rate, then the rice balance will be minus 1,001 tons. The best-case scenario for sustainable agricultural land is to combine controlling the conversion of paddy fields to 50% of the conversion rate of paddy fields and increasing food diversification, so that the rice balance in 2030 will reach a surplus of 5,460.24 tons. The most feasible scenario to be applied at the policy level is one that combines controlling paddy field conversion by 50% of the rice field conversion rate and increasing food diversification (Ayub et al., 2023).

The results of the Analytical Hierarchy Process (AHP) analysis *of the Quadruple Helix concept* are the main pillars that play a role in encouraging the protection of sustainable food agricultural land covering four sectors, namely the government, private sector, academics and NGOs / foundations, with collaboration and complementarity, it is expected that agricultural commodity prices will be more competitive, agricultural land ownership is protected, regulations run dynamically and innovation will be implemented properly for sovereignty food. The control strategy is a joint commitment, especially regional leaders, in responding to the conversion of sustainable food agricultural land and carrying out consequences after the issuance of a regulation on the Protection of Sustainable Food Agricultural Land (Satria et al., 2018).

Monetary, fiscal policy and access to finance for farmers and other food producers

Tight monetary policy significantly reduces food inflation and agricultural production while increasing rural unemployment. Short-term and 10-year interest rates increased due to contractionary monetary policies pursued by both countries. It is recommended to implement an inclusive monetary policy where policymakers work closely with the government to achieve price stabilization and a reasonable employment rate (Rivai, 2022). The amount of credit provided to the agricultural sector increased after the introduction of the interest rate ceiling. Variations in the amount of loans in the agricultural sector are influenced by the imposition of interest rate ceilings. The imposition of ceiling interest rates has a significant impact on the supply of credit to the agricultural sector. These findings were correct after controlling for bank-specific characteristics such as bank size, equity, asset quality, liquidity, revenue concentration and bank market concentration. This suggests

that the interest rate ceiling may be effective in increasing lending to the agricultural sector (Murungi et al., 2023).

Food import policies make the lives of farmers increasingly in the tomb of rent-hunting forces, market players who determine prices and market needs. The lives of local farmers are increasingly squeezed between the power of the state with its fiscal policy and the power of financiers with the strength of its business networks. Farmers no longer have a bargaining position for the state, and farmers tend to be marginalized by policies that favor the market (Dewi, 2014).

Improved technology of processing/downstreaming food commodities

Food downstream technology builds a productive, efficient, competitive, and sustainable food system with the support of research and innovation. Downstream agro-industrial products is a transition of exports of *raw materials products* to products that are highly competitive and meet the high demands of quality and hygienic processed product requirements. Agro-industrial downstream products are finally able to penetrate the export market, able to increase employment, increase the interest of young people in agriculture, able to improve the welfare of farmers, able to authorize downstream rural products as a driver of agricultural and rural development (Elizabeth & Anugrah, 2020). Increasing technological resources in farmers, or equitable distribution of technology in each region is carried out by providing counseling to farmers, fishermen and laborers (Mulyani et al., 2020).

Innovation in rice development based on integrated crop management and markets supports the implementation of regional innovation systems, and strategic policies on target are needed in the focus strategy of agricultural development with character and innovation that is able to touch aspects of upstream to downstream sub-sectors, so that in the end it is able to increase product downstream with policy direction on the development of agricultural entrepreneurship and strengthening marketing institutions. The priority programs in supporting the strategy of strengthening downstream products formulated are: 1) Farmer entrepreneurial capacity building program aims to shape entrepreneurial character in every farmer, especially in the downstream sector of marketed rice, 2) Development and Development Based Program, 3) Product Downstream Program, aims to provide added value from rice derivative products so that they have marketable value (Maulana & Putryanda, 2017). Cassava can be processed on an industrial scale with traditional technology such as cassava and products that require semi-modern technology in the form of tapioca and those that require high technology in the form of MOCAP and dextrin. By-products in the form of onggok are processed into animal feed and bioethanol raw materials.

MOCAF can be used as a filling ingredient for pies, bread, frozen foods, bakery, instant food pudding, candy gum and many other products (Wiraputra et al., 2019).

Development of infrastructure and integrated food production facilities

Improving good infrastructure between regions makes it easier to supply food, especially for eastern Indonesia. Provision of facilities by strengthening efficient food marketing and developing markets in villages. Improving community nutrition through food by enriching and paying attention to the basic needs of the community. Improve community nutrition through food by enriching and paying attention to the basic needs of the community. Infrastructure development is one of the factors that cannot be separated from supporting the realization of food security of a region. availability in supporting infrastructure can also ultimately maximize the affordability, availability, utilization and food security indices

Infrastructure development is one of the factors that cannot be separated from supporting the realization of food security of a region. The case in Bali Province is one of the provinces that has a high food security index score, even in the ranking of the national food security index Bali Province has an index score of 85.15 making Bali Province the first place in food security when compared to other provinces. Bali Province is one of the provinces that has a high food security index score, even in the ranking of the national food security index Bali Province has an index score of 85.15 making Bali Province the first place in food security when compared to other provinces (Mulyani et al., 2020).

Agropolitan is a growing and developing agricultural city that is able to spur the development of agribusiness systems and businesses so that they can serve, encourage, attract, and attract agricultural development activities (agribusiness) in the surrounding region. The agropolitan area consists of agricultural cities and villages of agricultural production centers in the vicinity, with boundaries that are not determined by government administrative boundaries, but rather determined by taking into account the existing economies of scale. Infrastructure development of agropolitan areas is to improve supporting infrastructure based on superior commodities such as improving agricultural infrastructure and facilities, increasing the development of processing and post-harvest facilities, increasing the development of marketing facilities to take advantage of export opportunities, increasing production facilities in the form of terminals, traditional markets, and regional superior product markets (Padmini et al., 2016).

Synergy of food development policies between central and local governments

National Food Sovereignty can be realized if the government can facilitate increasing the enthusiasm and motivation of local communities to manage and process

natural resources in their regions, streamline the application of local technology, and develop economic infrastructure management to produce highly competitive agricultural and food products, as well as create equitable agribusiness food markets (Ahmadi, 2019).. Development of domestic food supplies and utilization of domestic resources optimally, increasing basic reserves both at the central and regional levels as well as strong community support by building domestic food supplies and utilizing domestic resources optimally, increasing basic reserves both at the central and regional levels and strong community support. The stability of food prices through regional and central staple food income can distribute food assistance to the poor or isolated communities (Mulyani et al., 2020). Partnerships with local communities to improve health and food security as well as local food sovereignty by building healthy, sustainable environments and food systems relevant to local culture. Partnership collaboration to strengthen local food sovereignty, overcome unexpected challenges by collaborating with religious leaders, cooperatives, counseling, non-profit organizations, and government agencies in an integrated manner to build partnerships in developing regional potential (Sowerwine et al., 2019).

Management based on local wisdom as carried out in Bangsal Village, Komerang Ilir Regency is the Kalang System of buffalo farming and capture fisheries system or beje system for fish farming, while for rice cultivation, there are several stages whose activities are based on local wisdom, namely a) Tillage, with a rewang/mill system; b) Nursery, using self-harvested seeds; c) planting, by transplanting, planting remotely and directly planting (tunjam); d) fertilization, using weeds or wild plants; e) plant maintenance; by using scarecrows and plastic surrounding the fields to repel pests; f) Harvesting, by mutual aid cutting rice using a sickle (ngarit together); and g) Post-harvest, by selling the harvest directly or stored by yourself. The level of food sovereignty in the village is included in the high category, this shows that the village has achieved sustainable food sovereignty (Mulyani et al., 2020). Local communities in various semi-arid regions have developed specific adaptable food crops and livelihoods to cope with the harsh environment. Rice and maize are currently the most common food crops and are widely cultivated traditionally. In the case there are still some native plants, food plants that are still wild (not yet cultivated), especially *Dioscores* sp. It is still considered a buffer for food stocks. The era of decentralization and devolution should use it to promote food security and regional food sovereignty. This requires the commitment of local governments to manage and protect local food resources, develop small-scale production for local markets, embrace and improve traditional mixed crop practices, in a spot-spot and mosaic environment, the concept of business scale must be adapted to the specific conditions of the community and environment (Ngongo et al., 2021).

Enforcement of import duties on food imports to protect domestic food commodities and products.

The rice import duty policy protects the competitiveness of domestic rice, maintains price stability and absorption of domestic rice production and pushes the price of Dry Harvested Grain at the farmer level above the government purchase price so that it is more profitable for farmers. The rice import duty policy supports agricultural business certainty and increases the income of rice farmers, as well as supporting food security goals and is in line with Law 18/2012 Article 56 letter e. The consistent increase in rice production, exceeding the population growth rate, supports the availability of food supply for the community so as to support the realization of food security (Abidin, n.d.). The country's commitment to WTO agreements plays an important role in shaping the food environment, availability, nutritional quality, and accessibility of food. The strong relationship between trade liberalization and food imports, especially processed food, is shown in indicators of import volume, quality of imported food, tariff size, marketing policies, composition, labeling, and domestic food trade, and the participation of foreign companies (Ravuvu et al., 2021).

Food imports negatively affect the exchange rate of food farmers (NTPP), so it needs to be used as a basis for the government to continue to protect against the rapid import of food sub-sectors. The negative influence of imports can also be used as motivation to increase the productivity and competitiveness of domestic food commodities, so that the government does not need to import food to improve the welfare of farmers. Efforts to increase the productivity and quality of food products can be taken through intervention and strengthening government budget support for input factors that affect the productivity of the food sub-sector, such as fertilizers, irrigation, seeds, capital for farmers and the policy of cost of goods purchased (HPP) for harvested dry grain for rice commodities (Carolina & Sirait, 2018).

4. Conclusion

Indonesia is an agricultural country, there is a large area of fertile land so that it is very potential for self-sufficiency in various types of food commodities. Food sovereignty is a dead price, a national pride so that we must uphold it so that it stands firmly as a symbol of Indonesia's prosperity. Some of the efforts that can be taken in realizing food sovereignty in Indonesia include:

Biodiversity is the basis for food diversification based on local wisdom, developing the potential of the bio-agrotechnology environment in harmony with local values and culture; Research and innovation outputs coordinated by BRIN facilitate the development of food production potential by utilizing marginal lands, processing food raw materials into food

products according to current community demands; Productive lands must be maintained and protected in anticipation of the rapid demand for conversion of agricultural land for the needs of infrastructure, industrial and housing development; Inclusive monetary and fiscal policies that support price stability, the food business climate and rural employment; Downstream agro-industrial products in the form of shifting exports of raw material products to highly competitive products and meeting the demand for quality and hygienic processed products; Development of infrastructure and integrated food production facilities that will support the efficiency and productivity of quality food and competitive with imported products. National Food Sovereignty can be realized if the central government facilitates, motivates local communities to manage and process local natural resources, streamlines the application of local technology, and develops economic infrastructure management to produce highly competitive agricultural and food products; Import duties on food imports will protect domestic products from price competition while anticipating the flood of imported products in the domestic market.

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