Study of Policy Innovation Strategy to Accelerate Achievement of Indonesian Soybean Self-sufficiency in 2035

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ABSTRACT
The high consumption and demand for soybeans without an increase in production have forced the Indonesian government to import soybeans. Import policy must be given special attention to suppress price increases and make the rate of MSMEs continue to grow well. Method research uses a qualitative method with a literature review from many literature and data sources, then used to make a policy-making model based on incremental theory. The results indicate that self-sufficiency in soybeans may be realised if long-term arrangements are made for several things, namely expanding the area, subsidising soybean prices, import regulations and setting fair soybean import tariffs, developing the soybean jabalsim subsystem with innovation, controlling the rate of population, and the improvisation with technology innovation. Policy recommendation steps can be carried out by determining import tariffs using an open and closed system following domestic production conditions, forming small analysis teams that observe, accompany and engage directly in the sub-division of soybean issues, synergy and compatibility of legal products in the central government related to import excise tariffs according to WTO standards and rigid subsidy prices below import prices.

Introduction

Soybeans are the world's leading source of vegetable protein and vegetable oil and are popular among the people of Indonesia. Soybeans have a significant role in the provision of nutritious food, so it is referred to as "Gold from the soil" and as "The World's Miracle" because of their high amino acids as a source of vegetable protein (Rachmanti et al., 2016). Soybeans are a strategic commodity in Indonesia's economy, but lately, they have been experiencing problems because their availability is insufficient for the community's needs (Aimon & Satrianto, 2014).

In 2021, the projection of domestically produced soybeans reached 613.3 thousand tons, down 3.01 per cent from 2020, which reached 632.3 thousand tons (Ministry of
Agriculture, 2021). It is expected to fall by 3.05 per cent to 594.6 thousand tons in 2022. A year later, soybean production will decrease by 3.09 per cent to 576.3 thousand tons. Meanwhile, soybeans from Indonesia fell 3.12 per cent to 558.3 thousand tons in 2024 (Lindblom, 1979). Indonesia is the largest tempeh producer in the world, and it is the largest soybean market in Asia.

The Central Statistics Agency (BPS) noted that the average per capita consumption of tofu and tempeh in Indonesia was 0.304 kilograms (kg) every week in 2021 (Figure 1). This figure increased by 3.75 per cent compared to the previous year, which amounted to 0.293 kg weekly. The average per capita tofu consumption is 0.158 kg per week in 2021. This number increased by 3.27 per cent compared to 2020, which was 0.153 kg per week. Meanwhile, the average per capita consumption of tempeh is 0.146 kg per week. The amount increased by 4.29 per cent compared to the previous year, which was 0.146 kg.

In terms of production and consumption, inequality is a problem because Indonesia, the fourth largest population in the world, must depend on soybean food imports because domestic production cannot meet the demand for tempeh and tofu producers (Indonesia Data, 2022).

The value of soybean imports to Indonesia has fluctuated over the past five years. From 2018 to 2020, there was a decrease in the value of imports, but the number increased again in 2021. Meanwhile, soybean imports to Indonesia reached 2.48 million tons in
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2021 (Figure 2). This number increased to 0.58 per cent compared to the previous year, which was 2.47 million tons (Hulu, 2023).

The next problem concerns the determination of soybeans as a mandatory priority commodity. World soybean importing countries such as the United States initially prioritised soybean commodities. The role of soybean grower and exporter associations, government subsidies, and multinational corporations is critical to America's strategic soybean trade policy. The Chinese state also makes soybeans a strategic commodity, so it involves the government and state-owned enterprises as essential keys to the strategic development of soybeans (Hulu, 2023). This differs from Indonesia's policy, which makes soybeans only a strategic commodity and not a mandatory priority for domestic production. Even though society and industry use a lot of raw soybean materials, this condition causes demand for soybeans to continue to increase every year, thus forcing the situation to carry out imports (Firdaus et al., 2018). Based on these challenges, it is necessary to formulate policy recommendations and strategy steps to accelerate the fulfilment of domestic soybean supply to realise soybean self-sufficiency in 2035.

There is still a chance to achieve self-sufficiency, but it requires formulating a unique program to make it happen. Many studies and studies conducted to achieve self-sufficiency targets, such as (Rachmat, 2014), revealed that soybean self-sufficiency could be achieved through area expansion and productivity improvement, supported by macro and micro policies. If productivity does not increase, an additional area of 1.336 million ha must be attempted, or if expansion of the area is not achieved, productivity must be increased to 4.88 tons/ha. Making a national agreement on land area expansion and establishing synergistic partnerships with all stakeholders is essential. This statement is supported by (Rachmat, 2014) institutional strengthening and financing support. There is a need for technology transfer, especially in the soybean R&D consortium. Policy support can spur farmers and the private sector to develop soybeans. However, this policy has not been implemented, so it must be monitored.

Research by (Fathorrazi and Adam Ridjal, 2015) revealed that the soybean self-sufficiency strategy can be carried out by simultaneously empowering all parameters of production technology components—the importance of commitment from relevant stakeholders. Self-sufficiency can be achieved by reducing post-harvest yields by 2 per cent, increasing the population by 1.5 per cent/year, and increasing soybean consumption by 1.0 per cent/year. The study conducted by (Sayaka et al., 2021) explained the importance of marketing aspects, the implementation of effective base prices (COGS) and regulating the period of soybean imports, import quotas, or import tariffs according to WTO rules.

**Research Methods**

The preparation of this journal uses qualitative methods with an incremental theory policy-making model. Qualitative methods with literature review are carried out to obtain information relevant to the problem to be studied. This information is about theories and concepts as well as findings related to the central theme of the research conducted.
Various information can be extracted from primary sources derived from original essays written by people who experienced, observed, or worked independently, as well as secondary or tertiary sources.

In conducting a literature review, researchers try as far as possible to use primary literature sources whose information is more authentic (Ibnu et al., 2003). The concept of Incremental is a policy that has changed slightly from before. This policy is a continuation of government activities in the past, which were added or modified little by little.

**Results and Discussions**

**Indonesia's Soybean Policy**

In the period before 1973, the soybean policy sought to meet domestic supply sourced from domestic soybean production (soybean self-sufficiency). From 1974 to 1997, the soybean policy was dominated by more than 50 per cent domestically; the rest came from imports, with the highest domestic production in 1992 of 1.8 million tons. This achievement is supported by several policies, including basic price policy (HPP), government intervention in monopolies (Bulog), intensification and extensification programs, and the imposition of high import duty (BM) rates (10 per cent). From 1998 to 2004, the role of Bulog and HPP was abolished, and the policy of reducing import duty rates from 0 per cent to 5 per cent resulted in the shift in the fulfilment of locally produced soybeans to imports (more than 50 per cent came from imports). In 2005, the government established a tariff harmonisation program based on a unique pattern, with the soybean import duty level set at 10 per cent and periodic tariffs ranging from 0 to 5 per cent. The period from 2011 to 2022 saw the removal of tariffs on soybean imports. Based on the analysis of the study of the Fiscal Policy Agency (2014), the percentage difference between international and consumer prices during the import duty exemption period averaged 104.3 per cent. Meanwhile, during the imposition of a 10 per cent import duty rate, the average gap only reached 79.8 per cent. Through this, import tariffs are not recommended because they are less effective in encouraging domestic soybean productivity and controlling fluctuations in domestic soybean prices. To encourage food security and self-sufficiency, especially soybeans, more effective tariff and non-tariff policies such as soybean trade regulation, intensification programs, and extensification of soybean crops need to be supported by policies to increase import tariffs.

**Incremental Policy**

The concept of incrementalism is a government policy-making process that has not changed for many years; there is a tendency to maintain previous policies because they are considered easier to do and only make policies to solve problems on the surface. This pattern of incrementalism continues to occur due to interactions between actors or stakeholders where priorities are taken. So far, the Ministry of Trade depends on the tempeh tofu industry for importers, while the Ministry of Agriculture prioritises local soybean farmers. This is one of the reasons self-sufficiency is not achieved, and it is due to the lack of synergy among policymakers. At the same time, the role of soybean industry associations is not vital enough for the decision-making process (Maulana et al., 2018).

Charles E. Lindblom, in his book "The Science of Muddling Through" (Lindblom, 1979), explains the decision-making process with the model "disjointed incrementalism" or incremental model. Incremental is a policy that has changed little from before. This policy is a continuation of government activities in the past, which were added or modified little by little. This model is best suited for pluralistic societies such as the United States. According to Yehezkel Dror (1968), incremental decision-making models...
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tend to produce inaction and maintain the status quo so that change cannot be seen quickly and is less significant. Although each policy has weaknesses, it is hoped that following up on the flagship policy of the previous period can improve the implementation of soybean self-sufficiency in Indonesia. Policies must be continuously modified according to the development of global crisis challenges, geopolitical influences, and climate change.

The U.S. government has had federal policies for local and regional foods since 2008, such as programs administered by the USDA in large categories such as marketing and promotion, agricultural business and research assistance, village and community development, nutrition and education, and agricultural land conservation. The federal government has supported increasing program grant funding, and this interest has only increased to date. This policy is also supported by United States legal regulations such as the Farm Bill program in the Farm Act of 2014, PL 113-79 on the latest omnibus farming. Other examples include Russell’s National School Lunch Act and the Child Nutrition Act, which provide additional program funding in some cases to provide nutrition for children to grow up healthy and strong. The American government still uses pre-existing policies, but it continues to be strengthened. This policy also makes it easier for farmers because the government guarantees marketing and promotion programs for crops, business and research assistance, and rural community development programs with grants; all systems are transparent and integrated.

Brazil is the largest soybean importer in the world, 134 million metric tons ahead of the United States. In the 1960s, Brazil was still importing soybean oil, and then it began a revolution to become the largest soybean-producing country in the world. In the mid-1980s to mid-1990s, Brazil experienced dramatic variations in annual inflation rates, ballooning foreign debt, and sluggish or negative economic growth. The annual inflation rate soared upwards, exceeding 100 per cent in 1980 and 200 per cent in 1983, but policy modernisation and evolution have always been carried out from pre-existing policies. Policies are further strengthened; the government supports the movement of the agricultural economy, in this case, soybean exports, and provides agricultural loan grants, land expansion carried out since the 1980s and research cost assistance for agriculture. Establishing energy pricing policies and consistent import costing also strengthens this support. The key to this success is also balanced by infrastructure development. Those policies have existed before but continue to be realised for improvement (Gebhardt et al., 2006).

![Figure 3](source: Statistical Center Body, 2022)

The Canadian government also has an integrated policy from the previous policy; even after the pandemic, there are many updates, such as providing food banks to utilise leftover food for food security and suppressing expired food. Policies that already exist
and continue to be developed are Farm Credit Canada, Agrimarketing, Agriinsurance, Agrirecovery, Agristability, and many more. Through these case studies, the Government of Indonesia also needs to establish policies that strongly support the realisation of solutions to the problem of domestic soybean self-sufficiency. It is necessary to conduct a detailed analysis of the implementation of previous policies that are considered adequate in the realisation of soybean self-sufficiency policy.

**Production and Consumption Gap**

The Ministry projects a soybean harvest area of 362,612 hectares, but the amount decreased by 5 per cent to 344,612 hectares in 2022. The harvest area will also decrease by 5.1 per cent in 2023 to 326,861 hectares. This widespread decline has a direct impact on soybean production. The projected soybean production of 594.6 thousand tons in 2022 has decreased by 3.05 per cent from 2021. This production is expected to decline by 3 per cent annually, reaching 558.29 thousand tons in 2024.

The crop area decreased due to competition for land use with other agricultural commodities of strategic value, such as corn and chilli. The average per capita tofu consumption is 0.158 kg every week in 2021. This number increased by 3.27 per cent compared to 2020, when it was only 0.153 kg weekly. The average per capita consumption of tempeh is 0.146 kg per week. The amount increased by 4.29 per cent compared to the previous year, which was 0.146 kg. The amount of production and consumption is evident that inequality occurs.

**Constraints on Increasing Production**

Low soybean productivity with a high level of agricultural risk makes the production value and income of soybean farmers relatively low compared to substitute commodities. Soybeans are susceptible to HPT compared to other rice and crop crops. Coaching and services for soybean farmers are less widely carried out, so not all farmers know effective soybean cultivation techniques. The economic value of soybeans is lower than that of other commodities, causing the motivation of farmers to plant soybeans to be low.

In addition, without a particular policy that is synergistic and harmonious in all institutions that favour local soybeans, it is not easy to realise soybean self-sufficiency. So far, the food development program focuses on other staple crops, such as rice, so energy, resources, financing, attention allocation, and guidance for other strategic commodities are limited (Nainggolan & Rachmat, 2014). Other factors that affect national soybean production are world soybean prices, the number of Indonesian population, per capita income of the Indonesian population, and soybean import tariffs (Triandini, 2014).

**Soybean Imports to Meet Consumption and Production Inequality**

Soybean imports were influenced by soybean demand, the rupiah exchange rate against the dollar and soybean imports in the previous year. The population and demand for industrial soybeans in the previous year positively influenced the demand for industrial soybeans. The price of imported Indonesian soybeans influences soybean prices at the retailer level; if the price is expensive, it affects domestic soybean prices.

The value of soybean imports to Indonesia has fluctuated in the last five years. The value of imports decreased from 2018 to 2020, but the number increased in 2021. The volume of soybean imports to Indonesia reached 2.48 million tons in 2021. This number
increased by 0.58 per cent compared to the previous year, which was only 2.47 million tons (Hulu, 2023).

**Soybean Import Tariffs and Domestic Soybean Prices**

Many factors make local soybean prices, such as farmers' access to markets, soybean agricultural land area that decreases so that production decreases and results in soybean scarcity, the quality of local soybean products that are inferior to imported soybeans (Aldillah et al., 2014). The comparison of corn farming and imports with domestic soybean farming is not competitive. In addition to its less preferred nature than imported soybeans, the price of local soybeans is relatively low. Imported soybeans get very low import tariffs, making retail prices more affordable (Sayaka et al., 2021). Every increase in local soybean prices of one rupiah per kilogram will increase the volume of soybean imports by 93.33 tons. Increasing local soybean prices will demand imported soybeans, considering the relatively cheaper price. When local soybeans experience increased prices, importers will prefer imported soybeans from international markets with lower prices (Mahdi & Suharno, 2019).

**Weak Soybean Agribusiness Management**

The Indonesian Soybean Farmers Association does not have strong enough bargaining power to formulate government policies. This importer power leads to an oligopolistic market because only large companies can import large quantities of U.S. soybeans; in the case of Indonesia, only three companies control and regulate 85 per cent of national soybean imports.

Government policy has not favoured the agricultural sector and soybean trade optimally. In addition, Indonesia's agricultural agribusiness model has not developed in private or state-owned companies. After Bulog was castrated by the IMF in 1998, it seems the government no longer has the incentive to develop strategic government-owned agricultural enterprises.

**Policy Recommendation Innovation**

Soybean self-sufficiency can be realised in the long term through the arrangement of the following:

1. **Area Expansion and Production Increase**

The government must expand the production area by inviting universities and the Provincial Agriculture Office to develop Non-APBN/KUR Soybean locations; then, it is necessary to facilitate the signing of an MoU between Himbara Banking and off-taker companies as a step to meet the soybean development target with KUR funds (Swadaya Online, 2022). The Ministry of Agriculture imports GMO soybean seeds to be developed in Indonesia with productivity of 2 tons to 2.5 tons per ha. Increasing production can also be done by using superior soybean varieties that have been produced by the Agricultural Research and Development Agency, BATAN and universities so that there is no soybean productivity gap at the farmer level that is not by seed specifications (Nainggolan & Rachmat, 2014).

Related institutions that need to be strengthened are the human resources of agricultural extension workers themselves, plant seed supervisors (PBT), plant nuisance organism controllers (POPT), Farmer Mantri, Plant Protection Brigade, Alsintan Service Business (UPJA), and so on. The government must seriously support soybean financing, especially on the map of potential areas to increase soybean production and productivity through various credit schemes, such as food and energy security credit (KKP-E), agricultural financing service scheme (SP3), community-rooted Independent Institutions.
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It is essential to form small teams of upstream-downstream agricultural affairs to apply modern mechanisation, prioritising potential self-sufficiency in soybeans that have succeeded in developing soybean production and special teams for training human resources for priority and strategic commodity farmers. Furthermore, there is a need for a special team to evaluate policy in the short and long term to assess the effectiveness of policies in overcoming soybean problems in the field. Then, there is also a need for a unique team of market analysts who monitor the development of soybean prices and their distribution so that they are not inferior to specific individuals and that the security of soybean stocks in the market can be accounted for.

2. Marketing Aspect: Fair Soybean Import and Agribusiness Regulations

The marketing aspect consists of two aspects. Namely, the first is about the application of the effective base price (HPP) through the purchase of Bulog with sufficient state budget allocation based on a Presidential Regulation (Perpres), not based on a Minister of Trade Regulation (Permendag). Second, regarding the regulation of soybean import periods, import quotas, and import tariffs according to WTO rules (Sayaka et al., 2021).

Research (Sitaresmi, 2015) revealed that soybeans with superior varieties have been unable to release the import trap. The government needs political will to revitalise the state's role in the diplomacy of international trade negotiations related to agriculture. Policy recommendation steps can be taken by setting import tariffs. Based on research by Perdana et al. (2013), import tariffs affect the percentage of domestic soybean production. The imposition of import tariffs of 5 per cent will reduce imports by 1.22 per cent, increase Indonesia's soybean production by 1.37 per cent, raise soybean prices at the retailer and farmer levels by 0.54 per cent and 0.31 per cent, respectively, and reduce domestic soybean demand by 0.009 per cent.

Ideally, restore import tariffs to 10-20 per cent because it can increase domestic soybean production by up to 1.6 million tons for every 10 per cent customs duties; this is added to the innovation of import tariff policies with an open and closed system between 5-25 per cent by following domestic soybean production conditions. The establishment of import policies cannot necessarily carry out import restrictions without increasing the productivity of domestic soybeans. The government needs to form a unique team of analysts for priority commodities (food and plantations) that are strategic to observe global system movements such as inflation and GDP that occur in the country of origin of imports because an increase of 1 per cent of GDP per capita of the country of origin of imports will reduce the volume of soybean imports in Indonesia by 2.398883 per cent (Mahdi & Suharno, 2019). Implementing policies that involve all stakeholders and focus on the development of agriculture and the domestic soybean industry is the key to stabilising soybean supply and prices in the long term (Hulu, 2023).

In this case, they are synergising and harmonising legal products at the Ministry of Finance, Ministry of Trade, Ministry of Agriculture and the House of Representatives of the Republic of Indonesia regarding import excise tariffs by the WTO and subsidy pricing. One of the characteristics of this synergistic policy is that the added value impact is felt at the subsystem level of farmers as producers and subsystems of small processing industries as consumers and people consuming processed soybean products.

The government must be committed to re-functioning the role of BULOG as a national soybean procurement institution that regulates the trade and distribution of
soybeans. However, BULOG's operations must receive strict supervision to avoid monopolistic practices that only benefit a few people. Unsecured KUR loans can be done by monitoring and analysing soybean production and productivity potential for smallholders according to a particular land area, especially in strategic areas of soybean self-sufficiency.

Furthermore, the formation of a public service innovation team was carried out to facilitate government access to farmers to facilitate complaints of soybean farmers in the field, accelerate the KUR realisation process without waiting for a long and complicated process, manage soybean production mapping and needs in each region with an all-digital system. BULOG needs to regulate commerce with digital public service innovations based on the E-Agriculture Government and provide price incentives to farmers/food industry artisans in case of soybean price fluctuations, such as developed countries protecting their soybean farmers.

In addition, developing agribusiness models for private agricultural corporations and the government is essential. Indonesia's agribusiness policy should not be anti-market to strategically utilise the international market for exporting soybeans and derivative products (Hulu, 2023). It is also important to cooperate with the private sector to increase production and arouse the interest of domestic soybean farmers.

3. Development of Soybean Jabalsim Distribution Subsystem

Jabalsim is a vehicle for the spread of superior varieties and a supporting factor for increasing soybean production. The expansion of planting areas does not develop if it is not supported by the provision of adequate seeds of high-yielding varieties because there is often a circulation of fake seeds among farmers. The development of soybean jabalsim can be done by forming a particular container for the distribution of seeds of superior varieties with a digital service system accommodated to the centre to minimise fraud of superior seeds that do not have official certificates.

1. Speed Control of Total Population

Population control needs to be done because adding one soul can increase the import volume by 21 kg (Rahmania, 2014). Support for population control through family planning (KB) programs is needed to achieve self-sufficiency in soybeans. In the simulation program that has been made, it is assumed that the government can control the population increase rate at a rate of 1.5 per cent per year. This is related to the certainty of the projection of national soybean needs, primarily determined by the population and consumption level/capita/year (IK. Tastra et al., 2013).

4. Soybean Technology Innovation Using Appropriate Mechanical Technology and Smart farming

Using prototypes of agricultural tools and machinery (suntan) engineered by Balitkabi is expected to overcome agricultural labour's rare and challenging problems and save soybean farming costs. Using machines can also reduce the post-harvest yield loss of soybeans to 2 to 4 per cent. It is also necessary to implement the mechanisation of smart farming agriculture to anticipate various challenges of global crises, climate change, natural disasters, geopolitical conflicts, or pandemics that can be a threat to food security.

Smart farming speeds up the cultivation process; for example, spraying fertilisers and herbicides with drones can save labour and time effectively and efficiently (IK. Tastra et al., 2013). Modern harvest mechanisation tools can be distributed to farmers through groups. Previously, farmers had been accompanied for human resource training and technology development in practical farming. Inviting millennials or Generation Z to
participate in increasing soybean productivity through the assistance of soybean mechanisation technology and comparative study scholarships to developed countries for the introduction of the implementation of soybean cultivation technology

**Conclusion**

Policy recommendation steps can be carried out by determining import tariffs using an open and closed system following domestic production conditions, forming small analysis teams that observe, accompany and engage directly in the sub-division of soybean issues, synergy and compatibility of legal products in the central government related to import excise tariffs according to WTO standards and rigid subsidy prices below import prices. BULOG must regulate commerce with digital public service innovations based on the E-Agriculture Government. In addition, the government needs to cooperate with the private sector to increase soybean production as a priority commodity in the context of more modern agricultural innovation, providing social-health security protection, harvest insurance, unsecured KUR loans by looking at the production potential and productivity of smallholder land in strategic areas of soybean self-sufficiency and assistance in the application of intelligent farming agriculture to anticipate global challenges.
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References


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