

IMPLEMENTATION OF FERTILIZER SUBSIDIES: IMPACT ON AGRICULTURE AND FOOD SECURITY IN INDONESIA (A CRITICAL REVIEW)

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Abstract

Fertilizer subsidies are an essential economic policy affecting Indonesia's agricultural sector and food security. This article critically reviews the implementation of fertilizer subsidies and its impact on agricultural economic growth. We analyze changes in policies and approaches implemented in recent years and their impact on resource allocation efficiency and agricultural productivity. By considering the interactions between government policies, agricultural markets, and economic dynamics, this Research identifies factors that influence the success and failure of fertilizer subsidy programs from an economic perspective. The results provide in-depth insight into the impact of fertilizer subsidy policies on economic growth in the agricultural sector and food security in Indonesia and provide a basis for improving more efficient and sustainable policies.

Keywords: Food production, Policy implementation, Social Impact

1. INTRODUCTION

Fertilizer subsidies are an essential economic tool to provide food for a growing population. Based on current estimates, Indonesia's population in 2023 will reach 276,817,670 people. Projections then show that 2067, Indonesia's population will peak at 337.38 million. Indonesia's population growth rate has reached 1.17% (Central Statistics Agency, 2023). This condition, of course, affects the availability of food to meet public consumption. Subsidies aim to increase crop yields and increase food production. The effectiveness of the use of subsidized chemical fertilizers in food production has been assessed by comparing crop yields between developed and developing regions. It has been found that countries with more economic resources tend to have higher fertilizer subsidies, leading to increased crop production. However, the design and implementation of fertilizer subsidy programs have faced challenges, resulting in unintended negative impacts (Famela et al., 2023; Holden & Holden, 2018; Sane et al., 2021; Scholz & Geissler, 2018).

Problems with the application of subsidized fertilizer in Indonesia include inadequate availability at the farm level, inaccurate planning of fertilizer demand, sub-optimal monitoring, which causes distribution below target, and differences between subsidized and non-subsidized fertilizer prices in the market (Rachman & Sudaryanto, 2016). The regressive nature of fertilizer subsidies, with larger farms benefiting more, is also challenging. Excessive fertilizer use has hurt yield, indicating the need for

appropriate dosage management (Conway & Barbier, 1995). The government has plans to change the distribution mechanism from indirect subsidies to direct subsidies to farmers/farmer groups to overcome this problem (Warr & Yusuf, 2014). In addition, government agricultural policies, including input subsidies, have implications for environmental Sustainability and degradation (Sahim et al., 2018). The effectiveness of fertilizer subsidies in achieving the goal of self-sufficiency in rice has been compared with output protection, with fertilizer subsidies proving to be more effective in reducing poverty and achieving self-sufficiency. Government policy, supervision, distribution reliability and innovation factors influence the implementation of subsidized fertilizer supply chain management.

The government has implemented various policies to support the agricultural sector and increase agricultural production. However, there are several challenges and implications associated with these subsidies. The increase in fertilizer prices, influenced by raw material costs, global market conditions, and export restrictions, has impacted production costs and farmers' socioeconomic conditions (Famela et al., 2023). Government budget allocations for fertilizer subsidies could be affected, and the availability and affordability of fertilizer for farmers could be disrupted, leading to reduced production and productivity (Mulyono et al., 2023). In addition, the impact of reduced production can have consequences on food security, poverty levels, living standards and social stability (Rachmadhan et al., 2020). Evaluation of fertilizer subsidy policies shows mixed results, with several studies showing that implementing subsidized fertilizer policies does not significantly affect the production of certain crops, such as white sugar plantation (Poernomo, 2018). Overall, the politics of fertilizer subsidies in Indonesia involves balancing the need for agricultural support with the challenges and implications associated with such subsidies.

The fertilizer subsidy budget in Indonesia is very significant and plays a vital role in supporting small-scale farmers and the fertilizer industry. The government provides fertilizer input subsidies to farmers with land areas of less than 2 hectares, which accounts for 89% of land-using households in Indonesia (Mulyono et al., 2023). The subsidy policy aims to increase poor farmers' purchasing power, agricultural productivity and income (Priyanto et al., 2023). However, there is a need to increase fertilizer use efficiency and maintain the volume of subsidized fertilizer due to the limited subsidy budget (Conway & Barbier, 1995). Efforts should be made to target subsidies more effectively and efficiently, perhaps by converting them into direct payments targeted at small-scale farmers (Widowati et al., 2014).

Several studies have examined the impact of fertilizer subsidies on agricultural growth and crop production (Utibayeva, 2023; Yovo & Ganiyou, 2022). The results show that the impact of fertilizer price subsidies on agricultural growth is limited, and factors such as expenditure, fertile land, and labour play a significant role in agricultural growth. To increase the efficiency of fertilizer subsidies, alternative options should be explored, such as targeting subsidies to poorer and more marginal farmers. In addition, subsidized fertilizer prices should be closely monitored to keep pace with government purchasing crop prices (Ashari et al., 2021; Sane et al., 2021). Efforts should also be made to encourage organic fertilizers in developing regions where poor soil quality and high food demand pose challenges to food production (Rahmanta et al., 2019).

Food production in Indonesia is crucial to ensure food security and farmer welfare. Increasing food production has significantly impacted farmers' social welfare and health (Syaekhu et al., 2023). Therefore, studies on implementing fertilizer subsidies are essential in the government's efforts to increase agricultural productivity and achieve national food security. By providing a critical review of the impact of this program, this Research helps evaluate the effectiveness of this policy. It identifies the factors that influence the success and failure of the fertilizer subsidy program from a theoretical economic perspective and is complemented by the results of empirical studies from previous Research.

2. IMPLEMENTATION METHOD

This research reviews secondary information originating from various sources that have been previously published. These sources include scientific articles published in journals, conference proceedings, and annual reports from national and local government institutions and international organizations. The Research also includes newspaper articles and secondary data from the Annual Report of the Ministry of Agriculture and the Indonesian Central Bureau of Statistics. Using these various sources, Research can build a solid theoretical and empirical framework to support the stated research objectives.

3. RESULTS AND DISCUSSION

This section explains four essential things related to the study of subsidized fertilizers in Indonesia based on the perspective of economic theory and empirical studies of previous Research related to the implementation of subsidized fertilizers in various countries. First, the subsidy economy is why the government implements the fertilizer subsidy policy. Second, the application of fertilizer subsidies in Indonesia and its relation to agricultural productivity, especially the main food crop, rice. Third, the role of the agricultural sector through the fertilizer subsidy program as a pillar of economic growth. Fourth, empirical findings from various countries find factors that influence the success of fertilizer subsidy programs in each country.

3.1. Fertilizer Subsidies in an Economic Perspective

In economic perspective, subsidized fertilizer is a government policy providing financial support to farmers or consumers to keep fertilizer prices low or affordable. This policy is often implemented to encourage growth in the agricultural sector, increase productivity, and achieve domestic food security. The subsidized fertilizer policy can improve community welfare and increase agricultural productivity (Fikriya et al., 2022). However, there are challenges in distributing subsidized fertilizer, including convoluted distribution flows, delivery delays, and limited supply (Gufroniah & Sugiono, 2022). Lack of socialization and knowledge among farmers regarding fertilizer allocation and pricing also hinders the effectiveness of this policy (Larasati et al., 2022). Despite these challenges, distribution of subsidized fertilizer from distributors to farmers has proven effective in several areas, with a positive impact on reducing production costs and

increasing farmer incomes (Wang et al., 2023). Implementing measures to improve agricultural nutrient management efficiency and increase soil N uptake efficiency can reduce fertilizer use and N losses while maintaining food security (Ashari et al., 2021). Overall, subsidized fertilizer policies have the potential to encourage agricultural growth, increase productivity, and achieve domestic food security, but effective distribution and proper implementation are critical to its success.

The policy of setting maximum prices for subsidized fertilizers is a vital aspect to consider to ensure the efficiency and effectiveness of fertilizer use. Various studies have highlighted the need for a targeted and efficient approach to distributing subsidized fertilizer (Ashari et al., 2021). Non-price policies, such as improving fertilizer use efficiency and addressing deficiencies in agricultural Research, extension, credit, and supply systems, play an essential role in accelerating growth in fertilizer consumption (Desai, 1986). It has been observed that the current fertilizer subsidy system involves large government expenditures, and there are discussions about eliminating or reducing subsidies (Anderson, 1983). The impact of government-funded fertilizer subsidies on national fertilizer use has been examined, and it has been found that policymakers need to be aware of the potential displacement of commercial sales when introducing subsidy programs (Ricker-Gilbert & Jayne, 2008). According to the Decree of the Minister of Agriculture Number 734 of 2022 concerning Determination of the Highest Allocation and Retail Price of Subsidized Fertilizer for the Agricultural Sector for Fiscal Year 2023, the total allocation of subsidized fertilizer for next year is set at 9,013,706 tonnes consisting of 5,570,330 tonnes of urea fertilizer, Nitrogen fertilizer, Phosphorus and Potassium (NPK) 3,232,373 tons, as well as unique formula NPK 211,003 tons. In terms of price, the HET is set at IDR 2,250 per kg for urea fertilizer, IDR 2,300 per kg for NPK fertilizer, and IDR 3,300 per kg for NPK fertilizer for cocoa, or what is also known as unique formula NPK.

Subsidies in the agricultural sector can be seen as changes in the relative prices of goods, services and production factors. In line with Bosch (1985), Agricultural subsidies are government-induced changes in the relative prices of goods, services, and factors of production in the agricultural sector. This indicates that the government intervened to change prices in the agricultural sector. Salunkhe (2012) explains the forms of financial support provided by the government to farmers and agribusinesses to increase their income and influence the costs and supply of agricultural commodities. Subsidies can take various forms, such as cash payments, reduced tax liabilities, low-interest government loans, or government equity participation (Varga & Tibor, 2004). The impact of subsidies on agricultural production and the allocation of workers across sectors has become a significant topic in agricultural economics (Ding & Rebessi, 2020). Eliminating subsidies could lead to small increases in efficiency and corresponding increases in the prices of agricultural goods (Henningsen et al., 2009). Subsidies can have economic, environmental, and social benefits, and governments use them to achieve specific policy goals.

3.2. Fertilizer Subsidies in Indonesia and Relationship to Agricultural Productivity

Agricultural input subsidies are essential in increasing agricultural productivity and raising living standards in developing countries. These subsidies, such as subsidized fertilizer and improved seeds, have led to an average increase of 18 per cent in yields and 16 per cent in agricultural household income (Ebadi et al., 2023). In addition, input subsidies and agricultural extension services have effectively increased agricultural labour and land productivity, especially in plots planted with corn (Nguyen et al., 2023). However, implementing agricultural input subsidy programs can face challenges like corruption, political influence, and failure to reach intended beneficiaries (Malimi, 2023). The effect of agricultural subsidies on fertilizer application intensity varies across farmers with different scales of operation and cropping structures, with smallholder farmers and commercial crop growers experiencing more significant reductions in fertilizer application (Wakaabu, 2023). Overall, agricultural input subsidies have the potential to contribute to increased productivity and food security, but careful implementation and targeting are needed to ensure their effectiveness.

Agricultural fertilizer subsidies in Indonesia have positive and negative impacts. On the positive side, subsidies for fertilizer and agricultural machinery have been found to increase rice productivity, leading to higher rice production (Mulyono et al., 2023). In addition, the use of subsidized fertilizer has played a role in increasing national rice production and maintaining profitability for lowland rice farming (Priyanto et al., 2023). On the negative side, the increase in fertilizer prices due to global factors has led to a decrease in fertiliser availability and affordability for farmers, resulting in a decrease in production and productivity (Conway & Barbier, 1995). Additionally, fertilizer use has been linked to environmental degradation, such as erosion and pollution, which government policies on input subsidies can influence. Overall, the impact of agricultural fertilizer subsidies in Indonesia is complex and depends on various factors, such as the specific crop and region involved.

Fertilizer policy in Indonesia involves various factors and strategies. The government has implemented a subsidized fertilizer policy to ensure adequate fertilizer supplies and support farmers' income and welfare (Fardiansyah & Sidjaga, 2021; Gufroniah & Sugiono, 2022). However, the implementation process has faced challenges, such as inaccurate planning and less than optimal monitoring, leading to the distribution of subsidized fertilizer below the target (Rachman & Sudaryanto, 2016). To overcome this, the government plans to change the distribution mechanism from indirect subsidies to direct subsidies to farmers or groups of farmers (Warr & Yusuf, 2014). In addition, agricultural input subsidies, particularly on fertilizers, have been used to stimulate agricultural production and achieve self-sufficiency in staple foods, such as rice (Rahmanta et al., 2019). The effectiveness of fertilizer subsidy policies has been analyzed, considering factors such as appropriate price, quantity, time, place and type of fertilizer. Overall, the politics of implementing fertilizer policy in Indonesia involves balancing the goals of self-sufficiency, poverty reduction, and environmental management. Table 1 shows the development of fertilizer production and consumption in Indonesia during 2017-2022.

**Table 1. Fertilizer Production and Consumption in Indonesia, 2017-2023
(Jan-Jun)**

Year/Type	Urea (Tons)		Percentage (%)	NPK (Tons)		Percentage (%)
	Production	Consumption		Production	Consumption	
2017	6,838,063	5,970,397	87.31	3,282,957	2,597,586	79.12
2018	7,444,697	6,265,196	84.16	3,159,966	2,802,246	88.68
2019	7,722,799	5,425,657	70.26	2,923,452	3,088,176	105.63
2020	7,983,042	5,994,437	75.09	3,023,235	3,159,311	104.50
2021	7,968,504	5,738,365	72.01	3,169,211	3,301,209	104.17
2022	7,467,194	5,813,004	77.85	3,424,685	3,257,054	95.11
2023 Jan – Jun	3,966,056	2,920,818	73.65	1,685,059	1,463,498	86.85

Source: PT. Pupuk Indonesia (2023)

Currently, there are several policy changes that the wider community, especially farmers, need to pay attention to. Previously, more than 60 types of commodities received subsidies. However, based on Minister of Agriculture Regulation No. 10 of 2022, the distribution of subsidized fertilizer is focused on nine primary commodities: the country's basic food needs. These nine primary commodities include Rice, Corn, Soybeans, Chilies, Shallots, Garlic, Coffee, Sugarcane and Cocoa, with a maximum land limit of 2 Ha per farmer. Apart from that, there have been changes in the number of types of subsidized fertilizer. Initially, six types of fertilizer were subsidized, namely ZA, Urea, SP-36, NPK, Organic Fertilizer and Liquid Organic Fertilizer. However, currently, only two types of fertilizer receive subsidies, namely Urea and NPK. These two types of fertilizer are considered necessary because they contain essential macronutrients needed in plant metabolic and biochemical processes. Therefore, Urea and NPK are prioritized and are considered sufficient to increase the productivity of the nine primary commodities that receive subsidies.

From 2017 to the first semester of 2023, production and consumption of Urea and NPK fertilizers in Indonesia have experienced significant fluctuations. This data illustrates the dynamic relationship between production and consumption. In 2017, Urea production exceeded consumption, creating a fertilizer surplus, while in 2018, consumption exceeded production, indicating a potential supply shortage. Significant changes occurred in 2019, where Urea consumption fell drastically, while NPK experienced the opposite, with consumption exceeding production. However, in 2020, Urea and NPK consumption will almost balance production. The following years, namely 2021 and 2022, again show an imbalance, with consumption exceeding production. Data for the first half of 2023 shows that the imbalance continues. These fluctuations demonstrate the importance of efficient fertilizer supply management to ensure adequate supply and price stability in the market, which directly impacts the agricultural sector and food security in Indonesia.

In food security, the government and relevant stakeholders must monitor changes in rice harvested area and production and take necessary steps to maintain adequate food availability for the Indonesian population. This includes good agricultural planning, management of agricultural resources, support for farmers, and efforts to increase the

efficiency and productivity of the agricultural sector sustainably. Currently, the implementation of fertilizer subsidy policies in Indonesia faces several challenges. Planning for fertilizer demand needs to be more accurate, causing inadequate fertilizer availability at the agricultural level (Rachman & Sudaryanto, 2016). Apart from that, supervision of the distribution system could be more optimal so that subsidized fertilizer is distributed below the target (Malahayati & Masui, 2018). Farmers who manage less than 0.5 hectares of land receive only a portion of the subsidy, and most farmers purchase subsidized fertilizer at a price higher than the highest retail price (Wisnubroto et al., 2021). To overcome these challenges, the government plans to change the subsidy distribution mechanism from indirect subsidies to direct subsidies to farmers or groups of farmers (Warr & Yusuf, 2014). This change is expected to increase the availability of subsidized fertilizer, reduce price gaps, improve cultural practices, increase subsidy efficiency, and increase farmers' income and welfare (Ekaputra & Yuhendra, 2008).

Table 2. Fertilizer Price Ratio (HET) to HPP for Paddy (unmilled rice) in Indonesia, 2017-2023 (Jan-Sept)

Year	Rice HPP (Rp/kg)	Fertilizer HET (Rp/kg)		Fertilizer HET/Rice HPP ratio	
		Urea	NPK	Urea	NPK
2017	3,750	1,800	2,300	0.48	0.61
2018	3,750	1,800	2,300	0.48	0.61
2019	3,750	1,800	2,300	0.48	0.61
2020	4,125	1,800	2,300	0.44	0.56
2021	4,250	2,250	2,300	0.53	0.54
2022	4,250	2,250	2,300	0.53	0.54
2023 Jan-Sept	4,817	2,250	2,300	0.47	0.48

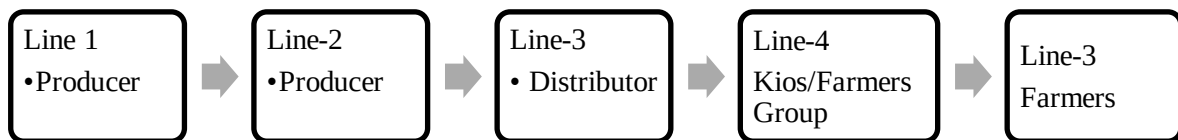
Source: Minister of Agriculture Regulation No. 47 of 2017, 2018 and 2020

Table 2 explains that the ratio of fertilizer prices (HET) to rice prices (HPP Padi) in Indonesia from 2017 to the first semester of 2023 reflects changes in price policies and agricultural market conditions. From 2017 to 2019, this ratio was stable, with the price of subsidized fertilizer being lower than that of rice. 2020, the ratio decreased, indicating a faster increase in rice prices. 2021 and 2022 witnessed an increase in COGS for Paddy, while fertilizer prices remained stable, leading to a higher ratio. Data for the first semester of 2023 shows an even lower ratio, indicating a faster increase in rice prices than fertilizer prices. Changes in this ratio affect farmers' purchasing power and can impact the Sustainability of the agricultural sector and food security in Indonesia. Table 2 explains the ratio of fertilizer prices (HET) to rice prices (HPP Padi) in Indonesia during the period 2017 to the first semester of 2023.

Currently, the highest retail price for subsidized fertilizer in Indonesia has been the topic of study in several research papers. This study has analyzed the dynamics of subsidized fertilizer policy, the development of the highest retail price for subsidized fertilizer (HRP), and the impact of changes in subsidy prices on rice production. The research results show that the proportion of fertilizer input costs to the total cost of

cultivating lowland rice is around 10.25% (Fahmid et al., 2022). The development of subsidized fertilizer prices is relatively small compared to government rice purchasing prices (Ashari et al., 2021). Efforts must be made to increase fertilizer use efficiency and maintain the volume of subsidized fertilizer amidst a limited subsidy budget (Wildayana et al., 2018). The government plans to change the subsidy distribution mechanism from indirect to direct subsidies to farmers or groups of farmers [4]. This change aims to increase the efficiency of using government subsidies and increase farmers' income and welfare (Hedley & Tabor, 1989).

According to Rachman & Sudaryanto (2016), Based on Ministry of Trade Regulation No.07.M-DAG/PER/2/2009, this system aims to ensure fertilizer supplies reach farmers who are the target recipients of fertilizer subsidies. Currently, the distribution of subsidized fertilizer in Line IV (fourth line) is carried out through retailers or fertilizer kiosks. However, if there are groups of farmers who qualify to become fertilizer dealers or retailers, they can also be involved in distribution. This fertilizer distribution mechanism involves several levels:



Source: modified from Rachman & Sudaryanto (2016)

Figure 2. Subsidized Fertilizer Distribution Mechanism in Indonesia

This mechanism reflects an effort to provide subsidized fertilizer to farmers in an organized and structured manner. It also provides flexibility by engaging groups of qualified farmers as dealers or retailers. The aim is to ensure that subsidized fertilizer reaches farmers who need it to support agricultural production and food security.

3.3. Factors influencing the success of the Fertilizer Subsidy Program

Factors influencing the success of Fertilizer Subsidy Programs in various countries include program design and implementation, targeting criteria, and the extent to which the program increases fertilizer use. The second generation of targeted input subsidy programs in Sub-Saharan Africa (SSA) suffered from design and implementation failures, ignoring clear exit strategy principles and resulting in unintended negative impacts (Holden & Holden, 2018). In Kenya, the fertilizer subsidy program's targeting criteria did not focus on reaching households that had not previously purchased commercial fertilizer, leading to the effect of eliminating and reducing the use of commercial fertilizer (Mather & Jayne, 2018). Participation in the Ghana Fertilizer Subsidy Program (GFSP) increases the intensity of Sustainable Intensification Practices (SIP) adoption and gross agricultural inputs, highlighting the importance of access to the program and enabling factors such as mutual aid schemes and farmer cooperatives (Nuhu et al., 2023). In Egypt, a fertilizer subsidy program led to excessive nitrogen fertilizer application, negatively impacting soil, water and environmental health (Kurdi et al., 2020). It is essential to consider factors such as culling, diversion, and program design to accurately assess the benefits and costs of

fertilizer subsidy programs (Jayne et al., 2013). Table 3. Shows empirical results related to factors influencing the success of Fertilizer Subsidy Programs in various countries, including program design and implementation, targeting criteria, and the extent to which programs to increase fertilizer use can be grouped.

Table 3, empirical results show that several factors influence the success of the Fertilizer Subsidy Program in Indonesia. First, the increase in fertilizer prices due to various factors such as higher raw material prices, geopolitical events, and climate change has an impact on the availability and affordability of fertilizer for farmers, leading to a decrease in production and productivity (Mulyono et al., 2023). Second, government policies, including supervision, distribution reliability, and innovation, play an essential role in implementing subsidized fertilizer supply chain management (SCM), which in turn influences the success of the program (Sahim et al., 2018). In addition, the level of government intervention and subsidy distribution mechanisms also influence program outcomes (Conway & Barbier, 1995; Rachman & Sudaryanto, 2016). Overall, factors related to fertilizer prices, supply chain management, post-harvest handling, and government policies determine the success of the Fertilizer Subsidy Program in Indonesia.

Table 3. Determining factors for the success of subsidized fertilizer programs in several countries

No.	Defining factor	Description	Research result
1.	Program Design and Implementation	- Failure to design a fertilizer subsidy program could result in undesirable negative impacts. - The inability to manage the program well can result in inefficiency and misuse of funds.	Sub-Saharan
2.	Targeting Criteria	Ineffective targeting occurs when the program is unsuccessful in reaching households that have yet to purchase commercial fertilizer; the program can result in the elimination or reduction of commercial fertiliser use.	Kenya
3.	Increased Fertilizer Use	The importance of access to fertilizer subsidy programs influences the intensity of adopting sustainable agricultural practices and agricultural performance.	Ghana
4.	Environmental Impact	Uncontrolled fertilizer subsidy programs can result in excessive fertilizer use and negative impacts on soil, water and environmental health.	Egypt
5.	Supply Chain Management	Increases in fertilizer prices, monitoring, distribution reliability, and innovation in subsidized fertilizer supply chain management can affect the availability and affordability of fertilizer for farmers.	Indonesia, Mozambique, Nepal, West Africa
6.	Intervention Level and Subsidy Distribution Mechanism	Government policy regarding the level of intervention and distribution mechanism for fertilizer subsidies also plays a vital role in the program's success.	Indonesia, Egypt
7.	Fertilizer Prices	External factors such as fluctuations in raw material prices, geopolitical events, and climate change can affect fertilizer prices, which in turn can affect the availability and affordability of fertilizer for farmers.	Indonesia

Source: Adapted by the author from various sources (2023)

Apart from Indonesia, several other countries, Mozambique (Panta, 2018) and Nepal (Benson & Mogues, 2018) are experiencing problems with subsidized fertilizer supply chain management, as well as West African countries including Ghana, Mali, Nigeria and Senegal (Zavale et al., 2020). In Mozambique, constraints on the fertilizer value chain include liquidity challenges, limited awareness, and high transaction costs (Asekunowo, 2009). Nepal faces problems such as an unfavourable policy environment, ineffective regulations, and illegal trade (Bumb et al., 2011). West African countries, including Ghana, Mali, Nigeria, and Senegal, need more efficiency in their fertilizer supply chains, leading to high costs and fiscal burdens. These countries have considered implementing fertilizer subsidies, but subsidies could exacerbate inefficiencies.

In the Indonesian context, these factors also apply. The success of the Fertilizer Subsidy Program in Indonesia is influenced by increasing fertilizer prices, efficient supply chain management, good post-harvest handling practices, and government policies that support the program. Combining all these factors determines how much fertilizer subsidy programs can achieve their goals, such as increasing rice production and food security. Careful evaluation of these factors is important to improve the effectiveness of fertilizer subsidy programs in Indonesia.

4. CONCLUSION

Implementing fertilizer subsidies has a significant impact on Indonesia's agricultural sector and food security. From the results of a critical review, we can conclude that fertilizer subsidies affect farmers' production costs, help them reduce the economic burden, and increase the competitiveness and Sustainability of agricultural businesses. However, the impact is not limited to farmers alone; Fertilizer subsidies also affect fertilizer availability on the market. Effective subsidy policies must ensure adequate fertilizer supplies to support agricultural growth. More importantly, there is a close link between fertilizer subsidies and food security. Good subsidies can increase agricultural productivity, the central pillar of national food security. Therefore, it is essential to critically evaluate fertilizer subsidy programs, manage fertilizer supplies, and focus on policies that support food security. Strong oversight and transparency in implementing fertilizer subsidies are needed to prevent misuse of funds and ensure the benefits reach farmers. Through this critical review, policy improvements and corrections can be identified and implemented continuously to ensure that fertilizer subsidies provide optimal agriculture and food security benefits in Indonesia.

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