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The Role of The Agricultural Sector in Driving Sustainable Economic Development

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Abstract
The agricultural sector plays a strategic role in Indonesia's economic development through its contributions to Gross Domestic Product (GDP), employment absorption, and national food security. This study analyses the role of the agricultural sector in promoting sustainable economic development in Indonesia using secondary data from Statistics Indonesia (Badan Pusat Statistik, BPS) and the Ministry of Agriculture covering the period 2020–2024. A descriptive analysis method is employed to describe the agricultural sector's contribution to the national economy. The results show that the agricultural sector contributed 12.4% to national GDP in 2022, with a value reaching Rp1,134.5 trillion in 2023. The Farmer Terms of Trade (Nilai Tukar Petani, NTP) shows a positive trend, with the highest recorded value of 120.97 in February 2024, indicating improved farmer welfare. Rice production reached 53.63 million tonnes in 2023, with a harvested area of 10.20 million hectares. The agricultural sector has proven to be a resilient economic pillar, particularly during the pandemic period, recording growth of 1.84% in 2021. Agricultural technology development, production diversification, and improvements in competitiveness are identified as key factors in strengthening the agricultural sector's role in sustainable economic development.

INTRODUCTION

As an agricultural country, Indonesia possesses significant potential in the agricultural sector, which serves as the backbone of the national economy. The agricultural sector not only contributes to meeting the population's food needs, but also makes substantial contributions to Gross Domestic Product (GDP), employment, and poverty reduction (Mellor, 2017; Modi, 2018). With over 70% of Indonesia's land area comprising agricultural land and approximately 60% of the population dependent on this sector, agriculture plays a strategic role in national economic development. Indonesia's agricultural sector encompasses various subsectors, including food crops, horticulture, plantations, livestock, fisheries, and forestry (Arifin et al., 2019; de Brauw et al., 2021; Khairiyakh & Mulyo, 2015). This diversity provides significant opportunities to optimise economic potential through production diversification and the enhancement of added value (De Roest et al., 2018; Mihrete & Mihretu, 2025; Yoshida et al., 2019). Data from the Central Statistics Agency (Badan Pusat Statistik, BPS) show that in 2022, the agricultural sector contributed 12.4% to national GDP, with a value reaching Rp1,134.5 trillion in 2023, demonstrating its substantial role in the national economy.

Sustainable economic development requires a sector capable of delivering long-term growth while preserving natural resources (Scheel, 2016; Scheel et al., 2020). The agricultural sector possesses unique characteristics that enable it to contribute to sustainable economic development through the utilisation of renewable natural resources, the creation of broad employment

opportunities, and its contribution to national food security. Furthermore, the agricultural sector generates a multiplier effect that can stimulate growth in other sectors, including manufacturing, trade, and services (Ferreira et al., 2022; Mardalena et al., 2019; Pfunzo, 2017). Technological developments and innovations in agriculture present significant opportunities to increase productivity and efficiency (Abiri et al., 2023; Karunathilake et al., 2023). The adoption of digital technology, biotechnology, and agricultural mechanisation can increase production yields while reducing dependence on manual labour, which is consistent with the vision of modern economic development that integrates traditional practices with advanced technology (Wu et al., 2023; Xue, 2024).

The urgency of this research is underscored by the agricultural sector's proven resilience during economic shocks — such as the COVID-19 pandemic — and its critical role in achieving national food security and sustainable development goals. Understanding the sector's contributions and challenges is essential for formulating effective policies that can accelerate agricultural transformation and support Indonesia's vision of becoming a developed nation by 2045. The National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional, RPJMN) 2025–2029 positions the agricultural sector as a central pillar in Indonesia's inclusive and sustainable economic transformation, emphasising institutional strengthening through cooperatives, digitalisation of the agricultural sector, and downstream processing of food commodities.

The novelty of this research lies in its comprehensive analysis of the agricultural sector's role in sustainable economic development, employing a multi-indicator framework that encompasses GDP contribution, farmer welfare measurement through the Farmer Terms of Trade (Nilai Tukar Petani, NTP) and the Urban Farmer Terms of Trade (Nilai Tukar Usaha Pertanian, NTUP), production performance of primary commodities, and food security status — all analysed using the most recent available data for the period 2020–2024.

The agricultural sector also faces a range of challenges that require serious attention. Global climate change, land degradation, limited access to capital and technology, and fluctuating commodity prices are all factors that can impede the sector's development. Appropriate strategies are therefore needed to optimise the agricultural sector's role in sustainable economic development. This research analyses in depth the role of the agricultural sector in driving sustainable economic development in Indonesia, encompassing the sector's contribution to GDP, employment, food security, and social welfare. Furthermore, the research identifies factors influencing the performance of the agricultural sector and offers policy recommendations to optimise its role in national economic development.

RESEARCH METHODS

This study employs a quantitative approach with descriptive analysis methods to illustrate the role of the agricultural sector in sustainable economic development in Indonesia. The data used are secondary data obtained from the Central Statistics Agency (BPS), the Ministry of Agriculture, and other official sources for the period 2020-2024. The types of data collected include agricultural sector GDP, the agricultural sector's contribution to national GDP, the number of agricultural enterprises, production of main commodities (rice, corn, soybeans), the Farmer's Exchange Rate (NTP), and other supporting data relevant to the agricultural sector's role in the national economy.

The data were collected from official BPS publications, such as Statistics Indonesia, Agricultural Indicators, and publications specifically for the agricultural sector.

The data collection method involved documentary studies from various secondary data sources published by official government institutions. Data were collected systematically and organized by category and time period to facilitate the analysis process. Data validity was ensured through the use of official data sources that have been verified and validated by authorized institutions. The data analysis technique used was descriptive analysis with a time series approach to examine the development of agricultural sector indicators over time. Descriptive analysis includes calculating averages, growth trends, and the proportion of the agricultural sector's contribution to various economic indicators. Data are presented in tables, graphs, and narratives explaining the phenomena.

The variables analyzed include the agricultural sector's contribution to GDP, measured in nominal value and as a percentage of total national GDP. Agricultural sector productivity is analyzed using production data per hectare for primary commodities. Farmer welfare is measured using the Farmer Exchange Rate (NTP) indicator, which reflects farmers' purchasing power for needed goods and services. The analysis is conducted by comparing data across time periods to examine trends and development patterns in the agricultural sector. Furthermore, a comparative analysis is conducted between agricultural subsectors to identify those making the largest contributions. Data are presented in an easily understood format using appropriate visualizations.

This study's limitations lie in the use of secondary data, which is limited by the availability of official sources. The analysis period is limited to 2020-2024 due to the availability of complete, up-to-date data. Furthermore, the analysis is descriptive in nature, thus unable to fully explain causal relationships between variables. To ensure the quality of the analysis, data triangulation was performed using several different data sources for the same indicator. Inconsistent data will be further investigated to ensure information accuracy. The analysis process is carried out in stages, starting with data exploration, pattern identification, and interpreting the results to answer the research questions.

RESULTS AND DISCUSSION

Contribution of the Agricultural Sector to the National Economy

The Indonesian agricultural sector plays a significant role in the national economy through its contribution to Gross Domestic Product (GDP). Statistics Indonesia (BPS) data show that in 2022, the agricultural sector contributed 12.4% to national GDP, reaching IDR 1,134.5 trillion in 2023. This contribution demonstrates that the agricultural sector remains a key pillar of the Indonesian economy, despite experiencing a decline in proportion in line with the development of the industrial and service sectors. The agricultural sector's contribution to GDP has shown a relatively stable trend in recent years. In the third quarter of 2023, the agricultural sector experienced growth of 1.46% year-on-year, contributing 13.57% to GDP. During the COVID-19 pandemic, the agricultural sector demonstrated resilience, posting positive growth of 1.84% in 2021, higher than many other sectors that experienced contraction.

The agricultural sector's economic structure consists of various subsectors that provide diverse contributions. The food crops subsector still dominates, contributing the largest share, followed by the plantation, livestock, fisheries, and forestry subsectors. This subsector diversification provides stability to the agricultural sector because it is not dependent on a single commodity. It also

demonstrates significant potential for further development through optimization of each subsector. The 2023 agricultural census data recorded that the number of individual agricultural businesses reached 29,342,202 units, although this figure decreased compared to 2013. Meanwhile, the number of agricultural households increased to 28,419,398 in 2024. This data demonstrates that despite business consolidation, the agricultural sector remains a source of livelihood for millions of Indonesian families.

Production Performance of Primary Commodities

Indonesia's production of primary food commodities has shown significant progress in recent years. Rice production, a strategic commodity, reached 53.63 million tons of dry milled grain (GKG) in 2023, with a harvested area of approximately 10.20 million hectares. Despite a 2.05% decrease compared to 2022, this production is still sufficient to meet domestic demand and even achieve a surplus of 7.5 million tons, according to the national food forecast. Indonesia's rice productivity continues to increase through the use of superior varieties and the application of modern technology. The Sukamandi Rice Research Center has produced the Inpari 32 and Inpari 42 varieties, with a yield of up to 12 tons per hectare. This achievement demonstrates significant progress in agricultural technology research and development that can support increased national production.

For corn, Indonesia has performed quite well, with production continuing to increase. Based on the 2023 Ubinan Survey, approximately 75.92% of corn farming households cultivate non-rice paddy fields using a monoculture system (79.36%). The majority of farmers (70.75%) use hybrid varieties, which offer higher productivity than local varieties. Indonesian soybean production continues to face various challenges, with production projections trending downward. Data shows that domestic soybean production is projected to reach 613,300 tons in 2023 and will decline to 558,300 tons in 2024. This situation highlights the need for special attention to increasing soybean productivity and planting area to reduce dependence on imports.

Diversification of agricultural commodity production contributes to the economic stability of the agricultural sector. In addition to primary food commodities, Indonesia has significant potential in horticultural and plantation commodities such as palm oil, rubber, coffee, and cocoa. Developing these high-value commodities can increase farmers' incomes and the agricultural sector's contribution to the country's foreign exchange reserves.

Table 1. Performance of Major Food Crop Commodities in Indonesia, 2023

Commodities	Produces 2023	Harvested Area	Productivities
Rice	53.63 million tons of GKG	10.20 million hectares	5.26 tons/ha
Corn	Data available in BPS publications	75.92% non-rice paddy land	Dominant hybrid varieties
Soybeans	613,300 tons	Decreased	Needs improvement

Farmer Welfare and Farmer Exchange Rates

The Farmer's Exchange Rate (NTP) is a key indicator for measuring farmer welfare in Indonesia. Statistics Indonesia (BPS) data show that the NTP fluctuated throughout 2023-2024, with a positive trend. In February 2024, the NTP peaked at 120.97, indicating relatively good farmer welfare, as agricultural product prices rose more than the prices of goods and services consumed by farmers. The NTP showed interesting dynamics throughout the 2023-2024 period. Starting from

110.20 in May 2023, the NTP gradually increased, reaching 118.27 in January 2024. A significant spike occurred in February 2024, reaching 120.97, before declining to 116.79 in April 2024. These fluctuations reflect the dynamics of the agricultural commodity market, which is influenced by various factors such as harvest season, weather, and market demand. The subsectors that contributed positively to the increase in the NTP were food crops, particularly rice, corn, tomatoes, and rubber. The NTP increase in the food crops subsector reached 1.66% in January 2024, driven by a 1.92% increase in prices received by farmers. This indicates that food crop farmers experienced a significant increase in purchasing power during the period. However, not all subsectors experienced an increase in the NTP. The horticulture subsector experienced a 4.47% decrease in the NTP due to a 4.14% decrease in the price index received by farmers, while the price index paid by farmers increased by 0.35%. This condition indicates that horticultural farmers face greater economic pressures than farmers of other commodities.

The Agricultural Business Exchange Rate (NTUP) also showed a positive trend, increasing 0.28% to 120.03 in January 2024. An NTUP above 100 indicates that agricultural businesses are profitable because income from agricultural products exceeds production costs. This provides an incentive for farmers to continue working in the agricultural sector and even increase production investment. Variations in the NTP (Farmer Farmer Price Index) between provinces reflect differences in the welfare of farmers across Indonesia. In April 2024, out of 38 provinces, 22 experienced an increase in the NTP, while 16 experienced a decrease. West Sulawesi recorded the highest increase in the NTP at 6.81%, while Banten experienced the largest decrease at 6.31%. These differences reflect the specific conditions of each region, influenced by local factors such as dominant commodity types, weather conditions, and market access.

Food Security and Self-Sufficiency

Indonesia has achieved rice self-sufficiency in recent years as a result of various consistently implemented government programs. This achievement is inseparable from the application of innovative rice technology, agricultural infrastructure development, and appropriate policy support. Between 2019 and 2021, Indonesia successfully maintained rice self-sufficiency and received an award from the International Rice Research Institute for achieving a resilient agri-food system. The Food Supply and Price Stabilization (SPHP) program through the State Logistics Agency (Bulog) plays a role in maintaining rice availability at affordable prices. The national rice surplus of 7.5 million tons in 2022 demonstrates that Indonesia is not only capable of meeting domestic demand but also has adequate reserves to anticipate production fluctuations. This achievement provides a strong foundation for national food security. Food diversification is a strategy that is increasingly being strengthened to reduce dependence on rice as the primary carbohydrate source.

The development of alternative food commodities such as corn, cassava, and sago is receiving serious attention in the food security program. Furthermore, the development of horticulture to meet the community's nutritional needs is also a focus in creating a diverse and nutritious food system. Agricultural infrastructure continues to be developed to support national food security. The construction of dams, reservoirs, irrigation systems, and modern rice milling units is a long-term investment that will provide significant benefits for stable food production. These investments not only increase productivity but also reduce the risk of crop failure due to weather and climate factors. Modern agricultural technology is increasingly being integrated into the national food production

system. The application of the Internet of Things (IoT), construction robots, and Artificial Intelligence (AI) through the Agriculture War Room (AWR) supports decision-making and production monitoring. Agricultural automation also helps increase efficiency and reduce reliance on manual labor.

The Role of Technology and Innovation

Technological developments and innovations in Indonesia's agricultural sector have shown significant progress in recent years. The use of superior varieties developed through domestic research has significantly contributed to increased productivity. Agricultural research centers continue to develop varieties that are adaptive to climate change and have high productivity to meet the growing demand for food. Agricultural digitalization is a key focus in modernizing the agricultural sector. The integration of digital technology, including mobile applications, geographic information systems, and e-commerce platforms, enables farmers to access valuable information about markets, weather, and cultivation techniques. A specific example of this is the i-Pubers application, which allows farmers to redeem subsidized fertilizer, thereby enhancing their access to essential production inputs.

Agricultural mechanization continues to be developed to address labor shortages and increase production efficiency. The adoption of modern tractors, planting machines, and harvesting machines has increased among farmers, especially in regions with larger land areas. The government provides support through agricultural tools and machinery assistance programs to accelerate the adoption of mechanization technology. Agricultural biotechnology is also experiencing rapid development, with a focus on breeding plants that are resistant to pests and diseases and adaptable to climate change. The development of drought-resistant rice varieties and high-yielding corn varieties is a research priority to anticipate the impact of climate change on agricultural production. Precision agriculture systems have been introduced in Indonesia as an approach to optimizing the use of production inputs. GPS technology, sensors, and drones are used to monitor land and crop conditions in real time, enabling farmers to make informed decisions in farm management. This approach can reduce fertilizer and pesticide waste while increasing land productivity.

Government Policy and Program Support

The Indonesian government has demonstrated a strong commitment to supporting the development of the agricultural sector through various strategic policies and programs. Budget allocations for the agricultural sector continue to increase, focusing on improving productivity, farmer welfare, and food security. In 2024, the government increased the subsidized fertilizer budget by IDR 14 trillion, equivalent to 2.5 million tons, to ensure adequate fertilizer availability for farmers. The subsidized fertilizer program is one policy intervention that has a direct impact on farmers' production costs. In 2024, 14.3 million farmers received subsidized fertilizer, totaling 5.2 million tons. This program not only reduces production costs but also ensures the availability of affordable fertilizer throughout Indonesia. The implementation of the i-Pubers application also simplifies the redemption process and reduces subsidy abuse.

The People's Business Credit (KUR) program for the agricultural sector provides easy and affordable access to financing for farmers and agricultural businesses. This program helps farmers develop their businesses, purchase production inputs, and adopt new technologies. KUR's low

interest rates and simplified procedures make it an effective financing instrument for boosting agricultural productivity. Social assistance programs, such as the 10-kilogram rice subsidy for low-income families, play a vital role in ensuring stable food consumption. This initiative not only provides support to impoverished households but also helps maintain stable rice prices in the market through government intervention by the Logistics Agency (Bulog). The sustainability of this program depends on the state budget (APBN) and an evaluation of its impact on community welfare. Agricultural extension is a crucial instrument in transferring technology and knowledge to farmers. Systematic and sustainable extension programs help farmers adopt new technologies, implement good agricultural practices, and access market information. Agricultural extension workers act as a bridge between research and field practice.

Economic and Social Impact

The agricultural sector has a broad economic impact through its multiplier effect on other sectors. Increased agricultural production drives growth in processing, trade, transportation, and other supporting services. This creates a long value chain and provides broader economic benefits to society. Employment in the agricultural sector remains significant, with millions of people relying on it as their primary source of livelihood. Despite structural economic transformation, the agricultural sector remains the largest employer, especially in rural areas. It plays a crucial role in alleviating the pressures of urbanization and ensuring a balance between urban and rural development. The agricultural sector significantly contributes to poverty reduction, as most of the poor live in rural areas and rely on this sector for their livelihoods.

Increased productivity and income from the agricultural sector directly improve the welfare of rural communities and reduce poverty levels. Farmer empowerment programs also contribute to improving the capacity and skills of rural communities. The agricultural sector also plays a role in maintaining environmental sustainability through environmentally friendly agricultural practices. The development of organic farming, agroforestry systems, and land conservation provides the dual benefits of food production and natural resource conservation. These practices are becoming increasingly relevant in addressing the issue of global climate change. Stable food prices generated by the agricultural sector have a broad social impact by maintaining people's purchasing power. Controlled food price fluctuations will maintain inflation stability and public purchasing power, especially among low-income groups. This contributes to long-term social and political stability.

CONCLUSION

The agricultural sector has proven to play a strategic and fundamental role in driving sustainable economic development in Indonesia. The agricultural sector's contribution to national GDP, which reached 12.4% in 2022 and reached IDR 1,134.5 trillion in 2023, demonstrates its continued role as the backbone of the national economy. The resilience of the agricultural sector during the pandemic, with positive growth of 1.84% in 2021, demonstrates its resilience in the face of economic shocks. Achieving rice self-sufficiency with a surplus of 7.5 million tons and rice production reaching 53.63 million tons in 2023 demonstrates Indonesia's success in maintaining national food security. The increase in the Farmer's Exchange Rate, which peaked at 120.97 in February 2024, indicates improvements in farmer welfare and the competitiveness of the agricultural

sector. However, fluctuations in the NTP (National Farmer's Trade) demonstrate the need for market stabilization and consistent policy support.

Technological innovation and agricultural digitalization offer significant opportunities to increase productivity and efficiency in the agricultural sector. The development of superior varieties with yields of up to 12 tons per hectare, the implementation of mechanization, and precision farming systems are key to transforming the agricultural sector into the modern era. Government support through the allocation of a Rp 14 trillion subsidized fertilizer budget and the People's Business Credit (KUR) program demonstrates a commitment to developing the agricultural sector. The multiplier effect of the agricultural sector on other sectors and its role in employment and poverty reduction make it an effective instrument for economic development. Production diversification and agribusiness development provide opportunities to increase added value and competitiveness in the global market. Therefore, optimizing the role of the agricultural sector through increased productivity, institutional strengthening, and technological development is key to driving sustainable economic development in Indonesia.

REFERENCES

Abiri, R., Rizan, N., Balasundram, S. K., Shahbazi, A. B., & Abdul-Hamid, H. (2023). Application of digital technologies for ensuring agricultural productivity. *Heliyon*, *9*(12).

Abiri, R., Rizan, N., Balasundram, S. K., Shahbazi, A. B., & Abdul-Hamid, H. (2023). Application of digital technologies for ensuring agricultural productivity. *Heliyon, 9*(12).

Arifin, B., Nuryartono, N., Pasaribu, S. H., Yasmin, F., Rifai, M. A., & Kurniadi, R. (2019). *Profitability and labor productivity in Indonesian agriculture*.

Badan Pusat Statistik. (2023). *Luas panen dan produksi padi di Indonesia 2023 (angka sementara)*. Jakarta, Indonesia.

Badan Pusat Statistik. (2024a). *Analisis produktivitas jagung dan kedelai di Indonesia 2023 (hasil survei ubinan)*. Jakarta, Indonesia.

Badan Pusat Statistik. (2024b). *Indikator pertanian 2023*. Jakarta, Indonesia.

Badan Pusat Statistik. (2024c). *Nilai tukar petani April 2024*. Jakarta, Indonesia.

Badan Pusat Statistik. (2024d). *Produk domestik bruto Indonesia triwulanan 2020–2024*. Jakarta, Indonesia.

de Brauw, A., Herskowitz, S., Ambler, K., Sayaka, B., Pasaribu, S. M., Dabukke, F., Suhartini, S. H., Suryani, E., Suwarno, A., & Moyes, T. (2021). *Agricultural value chain finance in Indonesia*. International Food Policy Research Institute.

De Roest, K., Ferrari, P., & Knickel, K. (2018). Specialisation and economies of scale or diversification and economies of scope? Assessing different agricultural development pathways. *Journal of Rural Studies, 59*, 222–231.

Ferreira, V., Almazán-Gómez, M. Á., Nechifor, V., & Ferrari, E. (2022). The role of the agricultural sector in Ghanaian development: A multiregional SAM-based analysis. *Journal of Economic Structures, 11*(1), 6.

Karunathilake, E., Le, A. T., Heo, S., Chung, Y. S., & Mansoor, S. (2023). The path to smart farming: Innovations and opportunities in precision agriculture. *Agriculture, 13*(8), 1593.

Khairiyakh, R., & Mulyo, J. H. (2015). Contribution of agricultural sector and sub sectors on Indonesian economy. *Ilmu Pertanian (Agricultural Science), 8*(3), 150–159.

Mardalena, M., Adji, A., Suhel, S., & Andaiyani, S. (2019). How leading economic sectors stimulate economic growth, income and labor absorption? Input-output approach. *International Journal of Economics and Financial Issues, 9*(1), 234–241.

Mellor, J. W. (2017). *Agricultural development and economic transformation: Promoting growth*

with poverty reduction. Springer.
Mihrete, T. B., & Mihretu, F. B. (2025). Crop diversification for ensuring sustainable agriculture, risk management and food security. *Global Challenges, 9*(2), 2400267.
Modi, R. (2018). The role of agriculture for food security and poverty reduction in sub-Saharan Africa. In *The Palgrave handbook of contemporary international political economy* (pp. 391–410). Springer.
Pfunzo, R. (2017). *Agriculture's contribution to economic growth and development in rural Limpopo Province: A SAM multiplier analysis* (Master's thesis). Stellenbosch University.
Scheel, C. (2016). Beyond sustainability: Transforming industrial zero-valued residues into increasing economic returns. *Journal of Cleaner Production, 131*, 376–386.
Scheel, C., Aguiñaga, E., & Bello, B. (2020). Decoupling economic development from the consumption of finite resources using circular economy: A model for developing countries. *Sustainability, 12*(4), 1291.
Wu, F., Wang, X., & Liu, T. (2023). Sustainable development goals, natural resources and economic growth: Evidence from China. *Resources Policy, 83*, 103520.
Xue, M. (2024). Natural resource performance for a green economic growth: From short-term to long-term quality. *Resources Policy, 91*, 104654.
Yoshida, S., Yagi, H., Kiminami, A., & Garrod, G. (2019). Farm diversification and sustainability of multifunctional peri-urban agriculture: Entrepreneurial attributes of advanced diversification in Japan. *Sustainability, 11*(10), 2887.