



# The Role of Agricultural Sector in Food Security and Poverty Alleviation in Indonesia and Turkey

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## Authors' contributions

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## ABSTRACT

This study aims to analyze the role of the agricultural sector in food security and poverty alleviation in Indonesia and Turkey. The data analysis method was descriptive data analysis, while the data were secondary. The results of this study show that the Indonesian agricultural sector provides basic food needs for the population in the form of rice, corn, and cassava production. When considered in terms of Turkey, the agricultural sector shows that products such as wheat, sugar beet, and barley provide the basic food needs for the population. In some cases where food needs cannot be fulfilled by domestic production, importing food products from other countries becomes an option. Import is expected to be able to maintain the stability of domestic food prices and availability. In addition, the agricultural sector plays a role in providing employment and income for the population in Indonesia and Turkey. By doing this, the agricultural sector can provide food and alleviate poverty in both countries.

*Keywords: Food security; poverty; agricultural sector; employment; income.*

## 1. INTRODUCTION

The agricultural sector is an important sector that supports the sustainability of national

development. From time to time, the agricultural sector still gives hope for the availability of employment. The ability of the agricultural sector to provide job opportunities makes it a savior of

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the national economy. However, along with the dynamics of the global economy, the development of the agricultural sector has stagnated and its contribution to the national economy has declined as well. Economic globalization has caused the market share of domestic agricultural commodities to be replaced by agrarian commodities from other countries. If this condition continues to exist, there will be diminishing marginal productivity in the agricultural sector.

Indonesia's economic growth from 2014 to 2018, which was about 5.34%, still offers hope that Indonesian people can achieve social justice and prosperity. This growth was supported by agricultural sector output which reached an average of 14.19% in the period 2014-2018. The provision of food independently and sustainably was responsible for this achievement. The dynamics of the national economy were marked by an increase in annual per capita GDP (at current prices), from 37 million Indonesian Rupiah in 2014 to 56 million Indonesian Rupiah in 2018. The increase in per capita GDP will drive higher consumption levels. Indonesia's poverty rate in the first semester of 2014 reached 11.25% and in the first semester of 2018, the poverty rate was 9.82%. On the other hand, Indonesia's population based on the 2010 census data reaches 237,641,326 people or experiences growth, and the growth is estimated to reach 271 million people in 2020 [1].

All over the world in Turkey, agricultural production is an economical activity, that largely depends on natural conditions, and has a high level of risk and uncertainty. Due to its subject characteristics, all countries have been specially interested in agriculture and defined their agricultural policies. Especially developed countries have considered the agricultural sector among the prioritized sectors to guarantee their food safety, they have promoted this sector, and they have never nourished their people to the initiative of other countries. For this reason, all developed countries' agriculture is advanced. In other words, there is not any developed country, not proceeded in agriculture [2]. When considered from the point of Turkey the agricultural sector has achieved a significant growth trend in the last 15 years. Despite the drought and natural disasters during this period, it grew in 11th of 14 years between 2003 and 2016 and showed sustainable development. In 2016, the agricultural sector contracted by 2.6% due to the adverse effects of drought and natural

disasters on certain crops. However, it re-entered the growth process in 2017 [3].

An increase in per capita income, accompanied by a large population, will ultimately require adequate food availability. Increasing food demand has wide impacts on the economy of a country. The impacts include aspects of price stability policies, labor absorption in the agricultural sector, purchasing power, food import, and poverty alleviation. The availability of adequate food for the population will be a strong foundation for the development of a country. In this case, a large population, in addition, to be related to the need for a large quantity of food, is also related to the poverty rate. The agricultural sector, which is an endowment factor based on natural resources in developing countries, plays a dual role. The role is to provide food and employment and to reduce poverty.

A study conducted by [4] has shown that food security contributes to poverty reduction in Malawi, but food security cannot reduce the poverty rate there. Yet, still, food security is an important prerequisite for poverty reduction. The results of the study by [5] have also shown that the production of food commodities must be increased substantially to reduce food insecurity which will ultimately contribute to poverty alleviation. In their research, [6] have emphasized the importance of interventions in the agricultural sector to overcome food insecurity in Ghana. The interventions included input supply, market access, infrastructure development, value-added and processing, and capacity building.

Based on the explanation above, this study aims to describe the role of the agricultural sector in food security and poverty alleviation in Indonesia and Turkey. The agricultural sector has been experiencing important developments in developing countries that are rich in natural resources. Ownership of natural resources can increase prosperity through the food supply and poverty alleviation.

## 2. LITERATURE REVIEW

The agricultural sector is one of the important sectors in developing countries. The agricultural sector generally plays a role in creating food security, foreign exchange earnings from exports, rural development, and economic development [7] and [8]. Products of the agricultural sector provide food for the population

and the availability of food can guarantee sustainable food availability. Sustainable food availability itself is the condition for food security. According to [9] food availability has standards that need to be set, such as sufficient average supply of feed energy, average amount of food production, portion of feed energy, tubers, protein supply of animal origin. Furthermore, agricultural products can also be exported to other countries. Export activities can increase the foreign exchange earnings of a country. The development of the agricultural sector can also encourage development in rural areas. Increasing agricultural production and stable food prices will attract economic actors to develop businesses in other sectors. In the end, the agricultural sector can encourage economic growth and poverty alleviation, especially in developing countries (Least-Developed Countries).

In the context of development according to the Millennium Development Goals (MDG1) and the Sustainable Development Goals (SDG 2), poverty and food insecurity have a strong correlation [10]. In a new era of development that is oriented to the quality of human resources, the development of the agricultural sector is intended to create food security and also alleviate poverty. Natural resources for the agricultural sector are abundant [11]. The abundance of natural resources can facilitate the community to do agricultural activities properly. The development of the increasingly competitive agricultural sector will be able to encourage economic growth. In this case, the results of research conducted by [12] have emphasized that the growth of value added in the agricultural sector is obtained mainly from increased investment, which is mainly supported by job opportunities. However, productivity growth in the agricultural sector does not have a positive impact on the growth of value-added.

The development of the agricultural sector will be able to help to achieve food security. This is because the products of the agricultural sector can be diverse so that they can meet the food needs of the population. Sustainable availability of food can create food security within a country. In this case, according to the global food security index, food security is defined as the state in which people at all times have physical, social, and economic access to sufficient and nutritious food that meets their dietary needs for a healthy and active life. This definition is an international agreement at the 1996 World Food Summit [13].

According to [14] factors that affect food security include availability, accessibility, and absorption. [15] have stated that food security does not only refer to food aggregate supply but also refers to the condition in which everyone at all times has physical and economic access to the basic food supply. The ability to access food can facilitate people get out of poverty. This notion has been confirmed by research conducted by [16] which has found that development in the agricultural sector will be able to increase agricultural sector production. The increase in production will then strengthen food security. According to this research, the availability of adequate food has contributed to reducing poverty in Nigeria. Research by [17] has also concluded that food security can alleviate the poverty rate in the area around forests in Kediri Regency, East Java Province, Indonesia.

### 3. METHODS

This research is exploratory research which is research that explores data and theories that are relevant to research problems. This type of research was chosen because of limited information about food security in the Indonesian and Turkish economies. Information about dimensions, factors, indicators, conditions, policies, and impacts on the economy is not always available. The data used in this study were secondary in the period 2012-2018 which were obtained by conducting document analysis. The relevant data sources for Indonesia are Statistics Indonesia [1], the Food and Agricultural Organization ([www.fao.org](http://www.fao.org)), and the food security index [13]. The data used included gross domestic product (GDP), the GDP of the agricultural sector, and job opportunities in the agricultural sector.

Data about agricultural sector production, farmer exchange rate, area of agricultural production, food security index, and poverty rate were also employed. These data were collected by documentation technique with literature study, data compilation, and tabulation. In the meantime, data analysis used the descriptive method, namely through the presentation of data, explanation of the development of data, explanation of phenomena, and conclusions. The relevant data sources for Turkey Turkish Statistical Institute, [7] the Ministry of Development, and [13].

### 4. RESULTS AND DISCUSSION

Based on data and information, it can be said that the agricultural sector is an important sector

for the economy of Indonesia. The geographic and climate conditions of Indonesia provide broad opportunities for the development of the agricultural sector. The topography of Indonesia, which is an archipelago and tropical country, makes Indonesia suitable for developing agriculture and aquaculture. Therefore, it is not surprising that the agricultural sector in Indonesia plays a dual role both as the cornerstone of employment and as a food needs supplier for the domestic market. This condition characterizes a dual economy in which the modern sector and traditional sector develop in tandem with economic activities. The modern sector is characterized by the use of technology in manufacturing industries. This sector mostly develops in urban areas. Meanwhile, the traditional sector is characterized by the agricultural sector which is developed by people living in rural areas. A dual economy causes differences in productivity and income in many sectors and regions. In the end, a dual economy produces different income elasticity of demand for its output [18].

The agricultural sector in Indonesia is largely developed by people living in rural areas. The majority of those people's occupations are farmers and fishermen. Therefore, the contribution of the agricultural sector to the gross domestic product of Indonesia is significant even though it has declined over time. Large production in the agricultural sector can be intended to meet domestic needs and also for exports. However, based on the data obtained, there was still a trade deficit for food and live animals. Trade deficit indicates that domestic production cannot meet domestic demand. This fact, the agricultural sector has an important role in increasing the GDP of Indonesia. FAO (2002) and [8] have emphasized the importance of the agricultural sector in creating food security and boosting foreign exchange earnings, rural development, and economic development. A well-developed agricultural sector can encourage a country's economic development.

This study has found that the development of the agricultural sector in Indonesia is also followed by an improvement in farmers' welfare. This is evidenced by the increase in the farmer exchange rate. From 2012 to 2018, the farmer exchange rate was more than 100 [1]. It means that the level of income of farmers is more than the level of expenditure of farmers. This high level of income is the impact of product development both in key commodities, such as

rice, corn, coffee, freshly-caught fish, and other agricultural commodities developed by Indonesian farmers.

A significant development in the agricultural sector has an impact on domestic food security and poverty alleviation. Agriculture in Indonesia is mostly used to meet domestic consumption. The increasing population over time has resulted in increasing food needs. Increasing food needs is an opportunity for the development of the domestic agricultural sector. The development of the agricultural sector in Indonesia nowadays has been able to increase Indonesia's food security index from 50.3 in 2013 to 54.6 in 2018 [13]. Increasing the food security index means that people have physical, social, and economic access to sufficient and nutritious food that meets their food needs for a healthy and prosperous life.

In addition to improving food security, the development of agricultural sector in Indonesia also plays an important role in alleviating poverty. In the period 2012-2018, Indonesia's poverty rate declined from 10.7 to 9.66 [1]. Agricultural sector has provided broad access to job opportunities so that people can work and earn income. Economic activities in the agricultural sector include production, product processing, marketing, post-harvest handling, land maintenance, maintenance of production tools, and exporting and importing activities. The more growing agribusinesses will encourage economic value added. Value added can increase per capita income which in turn, can reduce poverty. Other than because of increasing farmers' incomes, poverty rate is now lower because people can access food needs at affordable prices. The results of this study are relevant to the findings of [16] and [17] in which development in agricultural sector will be able to improve food security and food availability and reduce poverty rate. In addition, the results of this study have also confirmed the importance of the agricultural sector as a vital sector for job opportunities, food security, and poverty alleviation [19]. For developing countries, agricultural sector offers hope for the creation of a prosperous society in the order of the global economy and in the development of dual economy in each country.

It is given in Table Global Food Security Index 2012-2018 years between Turkey and Indonesia country. With the Global Food Safety Index, 105 countries were first evaluated in 2012. While

Turkey was ranked 36<sup>rd</sup> and Indonesia ranked 63<sup>rd</sup> among these countries. In 2018, Turkey's Food Security Index declined to 48<sup>rd</sup>. In Indonesia, the Food Safety Index rose to 63<sup>rd</sup>. In 2018, high-income countries (Singapore, Ireland, United Kingdom, United States) rank first, while countries with lower incomes than high incomes (Turkey, Colombia, Azerbaijan, Kazakhstan) are in the middle of the index. Among the reasons for high-income countries to be at the top of the list are wide food supply, relatively low food expenditure and significant investments in R & D. Sub-Saharan African countries (Chad, Congo, Burundi) are in the last place in the index [13].

Turkey due to geographical location and favorable climate, is a very suitable country for agricultural production. In Turkey, it is an unexpected result that the poorest are rural. It is possible to combat poverty in rural areas with the correct and feasible agricultural policies. Having a young population of Turkey is an important element in the fight against poverty. Turkey, which has a population of young and crowded, in terms of the potential labor force is advantageous compared to many other countries. Due to the favorable climatic conditions, all of which have a large production base design can be grown agricultural products in Turkey. Turkey has a strategic position geographically. At the same time, it has an important advantage in terms of export due to its proximity to many countries. Therefore, if policies are implemented to encourage the cultivation of agricultural products to certain quality and standards, there is an opportunity to provide a large amount of foreign currency inflow to the country. In previous years in Turkey is considered as agricultural land, agricultural producers dealing with for many years are very experienced in rural areas. In order to increase the income of peasants and farmers, it is possible to produce and implement policies that encourage the inclusion of new branches of

production. Turkey, rural tourism due to its location and climate is quite favorable. With the investments to be made in this direction, it will be possible to increase the income in rural areas.

Agricultural industry is well developed in Turkey. Therefore, it is possible to increase the income in rural areas if it is encouraged to evaluate the new cases of agricultural products which increase the added value by processing rather than the raw state. If the policies are determined and implemented in accordance with the agriculture of the country, it has the possibility to become a self-sufficient country in all of the basic agricultural products [20]. Turkey favorable climatic conditions and soil structure, ensure the precocity in producing, developing agricultural technology, agricultural labor is intense, has great potential in terms of agricultural production reasons experienced manufacturer of agricultural issues. The agricultural sector is the leading sector in Turkey and the effects of economic crisis it is observed. It plays a driving role in economic shocks in other sectors and contributes greatly to the survival of the national economy [21]. Based on the data, poverty rate average in Turkey decrease from 13.63% in 2014 to 11.63% in 2017 [22].

The ability of nations to ensure food security consistently is directly related to agricultural policies pursued. Developed countries with good food security levels have historically supported the agricultural sector by using high-budget facilities and tried to keep it away from the liberalization process. However, in most developing countries, structural adaptation programs of organizations such as the World bank, International Monetary Fund, and World Trade Organization are the main determinants of agricultural policies rather than meeting the needs of the country and solving the problems of the sector [23].

**Table 1. Global food security index comparison in Turkey and Indonesia Year 2012-2018**

Years	Countries			
	Turkey		Indonesia	
	Rank	Score	Rank	Score
2012	36	63.7	64	46.8
2013	38	62.9	66	45.6
2014	39	63.8	72	46.5
2015	39	66.0	74	46.7
2016	45	63.6	71	50.6
2017	49	61.1	69	51.3
2018	48	64.1	63	55.2

Source: Global Food Security Index Overall Rankings, (processed)

## 5. CONCLUSION

The agricultural sector plays an important role in Indonesia's economic development. Geographical, topographic, and tropical climate conditions make land and waters in Indonesia suitable for agricultural activities. Those conditions also support the production of main commodities of Indonesia's agricultural sector, such as rice, corn, coffee, and fresh fish. These commodities can increase national food availability and food security. Additionally, business development in the agricultural sector can provide employment and increase incomes for farmers. Employment and incomes for farmers cause the agricultural sector to play a role in reducing poverty in Indonesia.

The agricultural sector has strategic importance in terms of food security, despite the high potential in Turkey, it has not been possible to benefit from this sector to the desired extent. In the agricultural sector; unqualified labor, inadequate capital use, fragmented and small production units, agricultural policies that are pursued are far from solving the problems and insufficiencies in technology use are among the structural problems. On the other hand, the rise in input prices led to an increase in costs, while the increase in yield remained limited due to insufficient input. Cost increases and low yields in agricultural production lead to a decrease in the profitability of production, while there have been significant breaks in agricultural production.

The food security problem in Turkey is a priority in agricultural production problems. Concerning the results of this study, the government needs to maintain the agricultural sector so that it can continue to develop sustainably in the order of the global economy. Indonesia's participation in the open economy has a consequence in the free trade of agricultural commodities. To improve the preeminence of the national agricultural sector, maintain food security, and alleviate poverty, several policies are needed to be made. Sustainable food security in Turkey should be the primary objective of food and agriculture policies. Due to the strategic importance of food, measures that will increase agricultural production and productivity and encourage agricultural production are important for the future of food security in our country. Furthermore, cooperatives that will provide bargaining and competitiveness to Turkish agriculture should be supported. Turkey for the supply of food security to prevent crises in the

supply and climate change due to global price increases for meat, particularly cereal, milk powder, sugar, and fat in products such stocks should be increased. Based on the explanation, the agricultural sector can provide food and alleviate poverty in both countries.

Policy recommendations based on the results of this study are as follows: mapping food commodities that are vulnerable to foreign price volatility, providing affordable fertilizers for farmers, and providing farm loans during pre-production. Policies aiming to increase the income and welfare level of rural areas should be given priority when determining agricultural policies. In this context, first of all, education conditions in rural areas should be improved and the existing unskilled labor should be transformed into a qualified labor force and made ready for employment. Labor-intensive projects should be developed in rural areas, especially for export-oriented production. Policies for eliminating infrastructure problems should be determined and put into practice for rural welfare.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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