

# The Urgency of Food Estate for National Food Security in The Middle of The COVID-19 Pandemic


Journal of Government and Political Issues  
Volume 1, Issue 1, July 2021 (35-44)  
© The Author(s) 2021



Article reuse guidelines:  
[creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/)

DOI: 10.53341/jgpi.v1i1.8

[journal.mengeja.id/index.php/JGPI/index](http://journal.mengeja.id/index.php/JGPI/index)

Ahmad Nizami F <sup>1</sup>, Sisgianto, Mohammad Jafar Loilatu 

## Abstract

The Indonesian government developed the Food Estate program as one of the spearheads in a food security strategy during the COVID-19 pandemic. The Food Estate concept is a food development on a wide scale carried out in an integrated manner, including agriculture, plantations, and livestock in an area. This study uses descriptive and qualitative approaches to explain and analyze research problems. Data collection was obtained from the literature study regarding previous research and expert opinion. Overall, food estate development can increase per capita income and reduce the percentage of income for daily food needs, which is essentially very important if the government is to have more policy options in the event of a global food crisis due to COVID-19. However, there should be an improvement in the smooth distribution so that there is no longer a shortage of food, which impacts hoarding for consumer groups, causing shortages for other groups. The COVID-19 pandemic, of course, has taught the relationship between the health of the environmental system and the food system. Therefore, the synergy between food, ecological systems, and economic systems is an obligation.

## Keyword

covid-19; food estate; food security; pandemic

## Introduction

Since the emergence of a new virus called COVID-19, this has made the world uproar and restlessness, including Indonesia. COVID-19 is a new type of virus that spreads very quickly so that many parties are overwhelmed and do not understand how to deal with the virus ([Telaumbanua, 2020](#)). The case of COVID-19, which is a global pandemic, certainly raises concerns from various circles, especially the public. This concern is increasingly felt by seeing the rapid spike in cases and seeing the government's lack of readiness to fight the coronavirus ([Ristyawati, 2020](#)). The fourth paragraph of the 1945 Constitution states that "The Unitary State of the Republic of Indonesia protects the entire Indonesian nation and the entire homeland of Indonesia. This statement is a duty and commitment of the state to protect its citizens in order to live in prosperity and be resilient in managing disaster risk by continuing to consider the national interest in handling the COVID-19 pandemic disaster and paying attention to the universal people's defense and security doctrine to protect all the people and the spilled blood of Indonesia ([Hadi, 2020](#)).

Indonesia can view that the COVID-19 virus is only a health threat situation, but other perspectives need to be explored and deepened further. The country is expected to be more prepared and alert in dealing with the threat of outbreaks such as COVID-19 in the future ([Wren-Lewis, 2020](#)). The COVID-19 outbreak hit suddenly like a terrorist attack, even more powerful. There is no guarantee for a country with a strong economy, advanced health facilities, high educational status of its citizens to escape this deadly

---

## Corresponding author:

<sup>1</sup> Ahmad Nizami F, Department of Government Studies, Universitas Muhammadiyah Malang, Indonesia.  
E-mail: [ahmadnizami576@gmail.com](mailto:ahmadnizami576@gmail.com)

epidemic ([Wardhana, 2020](#)). The Indonesian government is trying to secure its people from the COVID-19 attack, including the Large-Scale Social Restrictions. These various efforts to limit the course have other implications for the country. These restrictions can undoubtedly affect the economy, the decline in state income, and many countries in a recession. In Indonesia, it is also feared that COVID-19 will interfere with the food security system.

With the spread of the COVID-19 pandemic, one of the most discussed issues is food security. The capacity and capability of food security are often one of the determining factors in the arena of strength accumulation and survival of a human community, especially when the situation has reached the level of conflict or war ([Basundoro & Sulaeman, 2020](#)). Without food security, people in a community experience insecurity in nutritional intake and can cause mass starvation. For Indonesia, COVID19 has seriously disrupted the national food system, especially at the beginning of the pandemic. Employment in agriculture is estimated to contract by 4.87%, including domestic agricultural production, estimated to shrink by 6.2% ([Dwiguna & Munandar, 2020](#)). Likewise, food imports are estimated to have decreased by 17.11%. Therefore, reduced domestic supply can result in food shortages.

Indonesia's commitment to realizing food security is stated in Law (UU) NO. 7 of 1996 concerning Food and Government Regulation of the Republic of Indonesia (PP) No. 68 on Food Security. Food security is defined as the fulfillment of good food conditions for households from the availability of sufficient food, quantity, and quality, safe, equitable, and affordable ([Mewa Ariani, 2004](#)). Global food security is a big issue and a big concern for several countries because it involves human survival and the environment ([Chawarika, 2016](#)). Food preparedness and security amid the COVID-19 pandemic is essential to be studied and studied in depth. This is important considering that the policies implemented by the government have implications for the potential for food supply instability to occur, resulting in food shortages and rising prices. At the same time, it automatically impacts the weakening of the economy, including the purchasing power of the people to meet their food needs ([Masniadi, Angkasa, Karmeli, & Esabella, 2020](#)).

Therefore, the Government of Indonesia has developed the Food Estate program as one of the spearheads in a food security strategy during the COVID-19 pandemic. The Food Estate concept is a food development on a wide scale carried out in an integrated manner, including agriculture, plantations, and livestock in an area ([Santosa, 2014](#)). Policies related to Food Estate have been legalized through Presidential Instruction No. 5 of 2008 concerning Plant Cultivation Business Focus as the legal basis for large-scale agriculture ([Masniadi et al., 2020](#)). The regulation explains that the maximum land area for food estates ranges from 5,000-10,000 hectares and has a business period, subsidies for business actors, provisions for credit facilities, and total share ownership for foreigners of 49%. So do not be surprised if the food estate is a large-scale food production development ([Khudori, 2010](#)).

President Joko Widodo mandated the Minister of Defense Prabowo Subianto to lead the development of the strategic program, with the cooperation and coordination of the Ministry of Public Works and Public Housing, Ministry of Agriculture, Ministry of Environment and Forestry, and Ministry of State-Owned Enterprises ([Basundoro & Sulaeman, 2020](#)). The food estate program will use 190 thousand hectares of land in Central Kalimantan, 120 thousand hectares in West Kalimantan, 10 thousand hectares in East Kalimantan, 190 thousand hectares in Maluku, and 1.9 million hectares in Papua ([Agam, 2016](#)). Food Estate is a food development concept carried out in an integrated manner, including agriculture, plantations, and even livestock in an area ([Dewi Wulandani & Anggraini, 2020](#)).

In such a situation, diversification of food consumption to encourage increased consumption of vegetables, fruit, and protein sources is an important program and strategy to improve the quality of food consumption. The COVID-19 pandemic with Large-Scale Social Restrictions (Indonesian: Pembatasan Sosial Berskala Besar, abbreviated as PSBB) resulted in the temporary suspension of various economic activities, especially in the tourism, hospitality, culinary, and various service industries. The Ministry of Manpower reported that as of June 2, 2020, around 3.05 million workers were affected by COVID-19 and estimated that the additional unemployment could reach 5.23 million ([Syahrial, 2020](#)).

The [LIPI, \(2020\)](#) results show that there has been a wave of layoffs and a decline in income due to disruption to business activities in most sectors. A total of 15.6% of workers experienced layoffs, and 40%

of workers experienced a decrease in income, of which 7% of workers' incomes fell to 50%. This situation has an impact on the survival of workers and their families. The occurrence of layoffs will lead to decreased income, purchasing power, and household access to food. For the upper-middle-income group, the COVID-19 pandemic may not affect the volume of food consumed, but variations in the types of food and ways of obtaining food have changed due to disruptions in food distribution and logistics; however, for low-income households.

The COVID-19 pandemic condition requires each individual to follow health protocols in their activities, maintain health, and increase body resistance to avoid COVID-19 attacks. So that a person can live a healthy life and the body has good immunity, it is necessary to consume good, varied, nutritious, and balanced food in quantity, variety, and composition. Some households, especially those with low incomes, have limited access to food due to declining incomes due to layoffs. Thus, strengthening the family-based economy by optimizing family resources for independent food supply will reduce household spending on food, a household adaptation strategy to face the COVID-19 pandemic.

Therefore, the government must be swift in handling this case, where food security for the Indonesian people is maintained in this pandemic era because not all people can handle this. Some Indonesians are in the middle and lower classes, for example, as with the PSBB. Some people will have difficulty meeting their daily needs because if the PSBB is implemented, people's income will automatically decrease, even if it does not exist. PSBB is used to prevent the spread of the COVID-19 virus. However, the impact of this PSBB is the Indonesian people, especially those who sell street vendors. As if the results of their daily needs come from selling on the street, many traders will automatically protest against this PSBB policy.

The government must maintain food security with a food estate system that must provide land for food availability because this pandemic can make the country a food crisis. Moreover, countries that usually import food may not import it to maintain the quality of domestic food. If the government can provide a food security policy, Indonesia will automatically have food reserves not to worry about and will not experience hunger. This is what makes this research interesting because almost every country is experiencing a food crisis caused by COVID-19. Therefore, this paper aims to determine the urgency of a food estate for national food security during the COVID-19 pandemic.

## **Food Security and Food Estate**

Food security is one of the strategic issues in developing a country ([Simatupang, 1998](#)). In order to achieve food security, the agricultural sector is vital because this sector is the leading food provider ([Sumastuti, 2010](#)), especially in developing countries. After all, they have a dual role, namely as one of the main targets of development and one of the main instruments of economic development. The function of food security as a prerequisite for ensuring access to food is the primary determinant of innovation in science, technology, and productive labor, and the function of food security as one of the determinants of a stable and conducive economic environment for development. Every country is always trying to build a solid food security system. Therefore, it is very rational and natural for Indonesia to make the program to strengthen national food security its main development priority. As an agricultural country with a high potential for the agricultural sector, Indonesia is still experiencing problems with food availability. It is related to the problem of rural development and the agricultural sector. As in Slovakia, agriculture has always been one of the essential parts. The promotion of sustainable commercial and employment activities for rural areas is essential to improve the quality of life and maintain the density of the rural population ([Nagyová, Holienčinová, Rovný, Dobák, & Bilan, 2016](#)).

The corporate-based food estate is an integrated investment from upstream to downstream to increase food production for the people of Indonesia ([Basundoro & Sulaeman, 2020](#)). The development of food estate is a program and synergy of all components in the central and regional governments with supervision and financing. The synergy starts from upstream, on-farm, downstream systems to market distribution to increase capacity and diversify food production ([Nagyová et al., 2016](#)). Furthermore, [Dewi Wulandani & Anggraini, \(2020\)](#) agricultural equipment and machinery (alsintan) are needed to support the development of food estates. Food commodities from this Food Estate will also be diverse, not only rice and corn. Production facilities and agricultural infrastructure will also be built, such as reservoirs,

irrigation, and modern postharvest facilities.

Food Estate is one of the government's efforts to maintain Indonesia's food security in synergy with the local government's goal of creating regional economic activities through the involvement of investors and the community ([Asti, Priyarsono, & Sahara, 2016](#)). Food Estate is a food development concept carried out in an integrated manner, including agriculture, plantations, and even livestock in an area ([Dewi Wulandani & Anggraini, 2020](#)). The development of a Food Estate can increase income and reduce income for daily food needs. Food Estate is a food product development concept carried out in an integrated manner, including agriculture, plantations, and livestock in an extensive public area. Food Estate is a form of business in integrated food agribusiness, between food, livestock, and plantations.

## Methods

This study uses a descriptive and qualitative approach to explain and analyze the research problem. Data collection was obtained from literature studies regarding previous research and expert opinion. Data can be obtained from books, journals, and articles related to research problems to support this research. The analysis of previous research is used as analysis or supporting data to strengthen the analysis of research problems related to the urgency of the Food Estate for national food security during the COVID-19 pandemic. It is undeniable that aspects of food security, national security, & human security are concepts that are, of course, closely related, and if there is a disturbance and one of them, the other aspects will also be affected.

Given the news that is still very new, this activity focuses on the latest data & variables on food security in Indonesia. This includes Indonesia's food reserves for at least the last five years ([Yestati & Noor, 2021](#)). Food Estate Development to Improve National Food Security and Independence by Edi Santosa ([Santosa, 2014](#)). Food Estate is claimed as a wide-scale, modern agricultural activity with the concept of agriculture as an industrial system based on science, capital, organization, and modern management and put forward local wisdom in environmental management and agricultural cultivation techniques ([Simamora, Lubis, & Arini, 2021](#)).

Meanwhile, the largest employment provider is dominated by agriculture at 27.33%. It is followed by trade at 18.81%, and the processing industry by 14.96% ([kominform.go.id, 2019](#)), so that the characteristics of positivism are emphasized by using empirical data to fulfill the objectives of this activity. It is to confirm support for food estate project policies and advise relevant agencies to prioritize food security as a non-conventional strategy in dealing with food security that reacts to future pandemics.

## Results and Discussion

Food security in this era of the COVID-19 pandemic must also be considered; food security is also a crucial thing that must be maintained amid the COVID-19 pandemic. Recently, we heard that the country of North Korea is experiencing a food crisis. Indonesia itself is a country that is rich in abundant natural resources, but if it is not appropriately managed, it is very likely to experience a food crisis. Because in this pandemic era, all countries are experiencing the impact. So the government must be alert in seeing the situation in Indonesia. To improve food security in the food estate concept, the government must implement policies that can focus on the food estate concept. The development of a food estate that can employ in the non-agricultural sector can reduce the national poverty rate, where economic growth driven by the agricultural sector is more effective in reducing poverty than the leadership of the construction and manufacturing sectors.

President Joko Widodo and Vice President Ma'ruf Amin target Indonesia's economic growth of 5.3%, but the results on the ground are very different. The economy dropped to minus 5.3% in the second quarter of 2020 ([Rizal, 2020](#)). This was caused by the coronavirus or COVID-19 pandemic, which suddenly appeared in various countries, including Indonesia. The food estate program has so far been running. Moreover, it is growing in three provinces in Indonesia. Each is located in the Districts of Pulau Pisau and Kapuas, Central Kalimantan, West Sumba District, East Nusa Tenggara and Humbang Hasundutan District, North Sumatra. The plan is that this program will be distributed evenly to every province in Indonesia. Through this food estate program, it is hoped that it will adequately support food security in Indonesia.

**Table 1. Job Structure**

No	Employment Sector	Total %
1	Agriculture	27.33%
2	Trading	18.81%
3	Processing Industry	14.96%

Source: [kominfo.go.id](http://kominfo.go.id), (2019)

The agricultural sector plays an essential role in reducing the negative impact of COVID-19—first, the most significant job provider. The occupation structure is dominated by agriculture at 27.33%, followed by trade at 18.81%, and the processing industry by 14.96% ([kominfo.go.id](http://kominfo.go.id), 2019). Food security comprises three subsystems: food availability, food accessibility, and food consumption ([Saputri, Lestari, & Susilo, 2016](#)). UU No. 18/2012 concerning food states that the state is obliged to realize the availability, affordability, and fulfillment of food consumption that is sufficient, safe, quality, and nutritionally balanced, both at the national and regional levels to individuals evenly throughout the territory of the Unitary State of the Republic of Indonesia at all times by utilizing the resources, institutions, and local culture.

To make food security in the modern agricultural sector, the government is encouraged to develop innovative farming 4.0 based on artificial intelligence. Smart farming 4.0 will encourage farmers' work so that farmers or agricultural cultivation become efficient, measurable, and have integrity. Because smart farming 4.0 makes farmers grow rice not depending on the season but through mechanization. The planting process can be done accurately, starting from labor, planting time, and harvesting. Several innovative farming technologies such as Blockchain which can facilitate the traceability of the supply chain of agricultural products for Off-Farm Modern agriculture, Agri Drone Sprayer (drones spray pesticides and liquid fertilizers), Drone Surveillance (drones for land mapping), Soil and Weather Sensors, Smart Irrigation System, Agriculture War Room (AWR), Siscrop (Information System) 1.0 have been implemented in several areas. The various levels of education of farmers, the aging phenomenon of farmers, the high cost of intelligent farming technology tools are the biggest obstacles for farmers in implementing smart farming. FAO predicts that by 2050 the world's population will increase to 9.6 billion. Agricultural production must increase by 70% in order to be able to meet the needs of such a large population ([Budiharto, 2019](#)). If not fulfilled, the world will be threatened with a food crisis. Another critical issue is the difficulty of labor regeneration in agriculture. Facing the threat of a food crisis, the government needs to strengthen the production of agricultural products and the availability of local food to replace imported food commodities with smart farming or smart farming 4.0.

Smart farming is a technology-based innovative farming method that uses artificial intelligence to make it easier for farmers to do their jobs ([Rachmawati, 2021](#)). Various studies have shown that artificial intelligence and robots will carry out various tasks in agriculture faster with much better precision than humans. Digitalization in agriculture has entered the 4.0 revolution era. Smart farming 4.0 has excellent potential to increase farmers' income and contribute to agricultural sustainability. Smart farming can increase accuracy in providing inputs for crops and agricultural land ([Knierim et al., 2019](#)). The agricultural revolution 4.0, which consists of the internet of things, artificial intelligence, human-machine interfaces, robotic and sensor technology, and 3D printing technology, has encouraged agricultural innovation development after increasing information and communication technology in agriculture. Autonomous machines using robots have been developed for agricultural purposes such as mechanical weed removal, fertilizer application, or fruit harvesting. The development of aerial machines, commonly called drones with very light engines and camera support, can calculate biomass development and crop fertilization status, providing recommendations for farmers. Furthermore, drones can advise farmers to distinguish various types of plant diseases based on the physiological appearance of the plant so that they can take appropriate pesticide application actions.

Furthermore, drones can advise farmers to distinguish various types of plant diseases based on the physiological appearance of the plant so that they can take appropriate action on the application of pesticides. Autonomous (unmanned) machines using robots have been developed for agricultural purposes such as mechanical weed removal, fertilizer application, or fruit harvesting. The development of unmanned aerial machines, commonly called drones with very light engines and camera support, can calculate biomass development and crop fertilization status, providing recommendations for farmers.



The increase in this technological revolution will result in significant changes to the practice of agricultural cultivation. Smart farming is currently developing in developed countries; amid the incessant flow of information and technology (such as mobile phones and internet usage), several developing countries have used the intelligent farming method. Dramatic changes in agricultural practices are an opportunity to increase agricultural productivity and be a big challenge considering that many farmers are not familiar with it ([Rachmawati, 2021](#)).

Land and water are the primary needs in agricultural cultivation, especially rice. Rice production depends on the area planted and its productivity, influenced by land and water's quality and carrying capacity. From data, it can be seen that in 2019 Indonesia's raw rice field area was 7.42 million ha. This raw rice field area has referred to a single data system from the Ministry of Agriculture, the Central Bureau of Statistics, and the Ministry of Agrarian and Spatial Planning ([Gunawan, Sumaryanto, & Ashari, 2020](#)). If we look at the data on the common area of rice fields per province, the three largest provinces are located on the island of Java, namely East Java, Central Java, and West Java. The rest are outside Java, namely South Sulawesi, South Sumatra, Lampung, North Sumatra and South Kalimantan. From these data, it can be seen that the island of Java still dominates the area of rice fields which in turn will affect the national rice production. Rice production depends on the area harvested and its productivity ([Gunawan et al., 2020](#)). Data from [Badan Pusat Statistik, \(2020\)](#) shows that in the period 2000-2019, rice harvested area in Indonesia varies and tends to decrease. If this condition is left unchecked, it will disrupt the sustainability of national rice production. Special efforts are needed to maintain raw rice fields and harvested areas from land conversion, one of which is through the implementation of Law Number 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land.

In 2018, the rice harvested area in Indonesia (calculated using the Area Sample Framework-KSA method) was around 10.9 million Ha. The average productivity (in the form of dry milled grain - GKG) is around 51.85 kg/Ha, so that the total production is around 56.5 million tons of GKG ([Badan Pusat Statistik, 2020](#)). Specifically for rice, data in early March 2020 showed inventories exceeding 3.5 million tons. Rice production is estimated for three months, from March to May 2020, to reach 12.3 million tons; at the end of May 2020, rice consumption is around 7.6 million tons, and rice stock is 7.03 million tons ([Badan Pusat Statistik, 2020](#)). It is estimated that the area of rice fields in 2020 will be around 7.4 million Ha. Of the total area, technical/semi-technical irrigated rice fields are about 4.8 million Ha.

Not all rice farmers make business as their main farming business. In total, the participation rate of farmers in rice farming reached 54%, but those who positioned rice farming as the main farming business were 43%. Not all rice farmers make rice farming their main farming business. In total, the participation rate of farmers in rice farming reached 54%, but those who positioned rice farming as the main farming business were 43%. Meanwhile, [Sumaryanto, \(2013\)](#) shows that most rice farmers (about 69.6%) are at a moderate adaptation to environmental pressures due to climate change. The proportion of farmers with strong adaptability is only 13.9%. Therefore, it is necessary to increase the ability of rice farmers to adapt to environmental pressures due to climate change.

The United Nations World Food Security Committee defines food security as a situation in which all people and under all circumstances have physical, social, and economic access to food, sufficient and safe, and nutritious. The food must also meet daily dietary needs and preferences according to operational and healthy living standards. Considering the case of the COVID-19 pandemic, we can learn that a country's food security is threatened if there is a global food crisis that affects food prices and supply on the international market. Then the country has a low per capita income, the percentage of income for food is above 35%, and the inability of food security policymakers to adapt to global turmoil.

Food Estate is not a new idea. In 2007 the government launched the Merauke Integrated Food and Energy Estate (MIFEE) in Merauke Regency, Papua covering 1.2 million hectares. MIFEE is planned to be completed in approximately 25 years and will be realized in 2032, consisting of short, medium, and long-term food estate developments. The food commodities developed are rice, corn, soybeans, sugar cane, and cattle. The trial results obtained high production, namely rice reaching 7 tons/Ha GKP, soybean two tons/Ha, sugarcane 40 tons/Ha, and corn five tons/Ha dry shell. The government has prepared a grand design, and the total investment for MIFEE has reached Rp 50-60 trillion by 2014.

After 2014, the production will be 2 million tons of rice and corn, 0.2 million tons of soybeans, 2.5 million tons of sugar, 1 million tons of CPO, and 64 thousand tons of beef per year. This production is a concrete contribution to improve national food security. In addition to MIFEE, three food estate locations are notified nationally, namely Peatland Development (PLG) of 1 million hectares in Central Kalimantan, Delta Kayan Food Estate in Bulungan Regency, East Kalimantan with an area of 0.5 million hectares, and Jungkat Agri Complex in Kuburaya Regency, West Kalimantan covering an area of 0.25 million Ha. The feasibility study of a food estate in Ketapang Regency, West Kalimantan, covering 4,482 Ha produces 1,662,261 Kg of rice - 20,845,766 Kg, absorbing 50 HOK per hectare of labor per growing season.

The COVID-19 pandemic impacts the health and social aspects of the community and has economic consequences. Many people have lost their jobs due to the temporary cessation of various economic activities, especially industry, culinary services (restaurants and restaurants), tourism and hotel services, decreasing household income. This decline in income certainly affects people's purchasing power, including food. This has caused several groups of people to change their food consumption patterns. However, this is still based on a simulation with decreased chicken meat and red chili, causing the demand to increase. It is suspected that the decline in chicken meat price and red chili commodities was due to oversupply at the time of the harvest that occurred at the beginning of the COVID-19 pandemic.

They were entering 2021, the year where many types of COVID-19 appear. The situation, which became very severe, required the government to re-implement the lockdown system for several regions, especially Java. Food security is, of course, back in the spotlight where the disruption of the domestic food supply chain and the food production process is caused by the recommendations for social restrictions and regional lockdowns. Not to mention that many layoffs occurred during the COVID-19 pandemic. With so many layoffs, of course, the unemployment rate increases and can reduce people's purchasing power and increase food and nutrition insecurity. In this case, the food estate is expected to become a solution in supporting the food security of the Indonesian state.

People's lifestyles have also changed due to the COVID-19 pandemic, automatically changing public demand as food consumers. Of course, it can lead to changes in prices for food products. One prominent example that can be seen is when many restaurants and cafes are closed, the demand for food also decreases. Moreover, in the end, foodstuffs that have already been produced in large quantities experience a decline in selling value. The number of SMEs that eventually had to go bankrupt during the pandemic situation and the number of workers being laid off also affected the people's economic access to food, where the purchasing power of the people decreased.

The COVID-19 pandemic, of course, really highlights the food system in Indonesia and the urgency of handling food security problems, which is not only focused on the dimension of food availability. A Food Estate development that ignores these challenges will only lead to the same failures of the past. Therefore, there should be an improvement in the smooth distribution so that there is no longer a shortage of food, which impacts hoarding for consumer groups, causing shortages for other groups. The COVID-19 pandemic, of course, has taught the relationship between the health of the environmental system and the food system. Therefore, the synergy between food, ecological systems, and economic systems is an obligation.

The availability of various resources of land, water, and farmers alone is not enough to increase rice production without the support of government policies. Several supporting policies that the government has carried out include (1) financing to increase grain production by 58.50 million tons of GKG; (2) construction of four new dams and maintenance of 43 units of on-going dams; (3) rehabilitation of increasing irrigation canals covering an area of 51 thousand Ha. In the 2015-2019 period, the government plans to build 65 reservoirs and create 1 million Ha of new paddy fields, including surface irrigation (0.58 million Ha), swamp irrigation (0.35 million Ha), pond irrigation (0.043 million Ha), and groundwater irrigation (0.028 million Ha). The rehabilitation target was directed at 3 million Ha of irrigated land in the same period, including (same order as above) 12,022; 0.829; 0.1; and 0, 04 million Ha (Directorate General of PSP 2013). Another policy currently being implemented is developing a food estate in Central Kalimantan covering 165 thousand Ha. The urgency of this program is to anticipate the possibility of a food crisis due to the COVID-19 pandemic, anticipate the dry season, and restrict food exports. In addition, the government continues to provide food needs and access to Indonesia's 267 million people.

The Ministry of Agriculture is currently running a program to attract young farmers, namely the Millennial Farmer Program. If we only talk about innovation, facilities, and infrastructure, including policies and regulations, agricultural development alone is not enough. Efforts to increase the interest and ability of human resources are significant in order to be able to implement innovations, facilities, and infrastructure appropriately and correctly and to be able to propose policies and regulations that support agriculture. In addition, the government is committed to providing financing for agriculture and smallholder aspects through KUR. In 2020 the Ministry of Agriculture provides a KUR ceiling of IDR 50 trillion, which is expected to increase working capital for agricultural businesses during the COVID-19 pandemic to carry out their business activities still to increase production and income. In addition, efforts to expand agricultural areas are also carried out through the Food Estate Program in Central Kalimantan and North Sumatra. The program provides new openings for agriculture through an extensification program ([Sianipar & G Tangkudung, 2021](#)).

## Conclusion

The COVID-19 pandemic that has hit Indonesia since March 2, 2020, can harm food security. The Ministry of Agriculture's BKP predicts that by August, there will be at least 4,444 strategic food supplies to meet domestic needs. FAO warns that a food crisis will occur between August 2020 and 2022. One solution is to address the types of food insecurity. To achieve 4,444 food security after the COVID-19 pandemic is to build 4,444 food barns. The Indonesian government developed the Food Estate program as one of the spearheads in a food security strategy during the COVID-19 pandemic. The concept of Food Estate is the development of food on a large scale carried out in an integrated manner, including agriculture, plantations, and livestock. Overall, food estate development can increase per capita income and reduce the percentage of income for daily food needs, which is essentially very important if the government is to have more policy options in the event of a global food crisis due to the COVID-19 pandemic. Given the case of the COVID-19 pandemic, it can be learned that a country's food security is threatened if there is a global food crisis that affects food prices and supply in the international market, and then the country has a low per capita income.

From the food estate and its relationship with the National Food Security Strategy, especially in the era of the COVID-19 pandemic, several things can be concluded: First, the pandemic is a multi-sectoral event that can weaken various strategic sectors, including the food security of a country. Many case studies show that epidemics and threats to food security are two problems that cannot be separated. If these two events coincide, they will have a tremendous impact. However, it is necessary to increase the smoothness of distribution so that there is no more food scarcity, which impacts hoarding for consumer groups, causing scarcity for other groups. The COVID-19 pandemic has undoubtedly taught the relationship between the health of the environment and food systems.

## References

- Agam, S. (2016). Food Estate: Pangan Melimpah, Harga Lebih Murah. Retrieved July 29, 2021, from [indonesiabaik.id](http://indonesiabaik.id) website: <http://indonesiabaik.id/infografis/food-estate>
- Asti, Priyarsono, D. S., & Sahara. (2016). Analisis Biaya Manfaat Program Pembangunan Food Estate dalam Perspektif Perencanaan Wilayah: Studi Kasus Provinsi Kalimantan Barat. *Jurnal Agribisnis Indonesia*, 4(2), 79-90. <https://doi.org/10.29244/jai.2016.4.2.79-90>
- Badan Pusat Statistik. (2020). Luas Panen, Produksi, dan Produktivitas Padi Menurut Provinsi 2018-2020. Retrieved July 1, 2021, from [bps.go.id](https://www.bps.go.id) website: <https://www.bps.go.id/indicator/53/1498/1/luas-panen-produksi-dan-produktivitas-padi-menurut-provinsi.html>
- Basundoro, A. F., & Sulaeman, F. H. (2020). Meninjau Pengembangan Food Estate Sebagai Strategi Ketahanan Nasional pada Era Pandemi Covid-19. *Jurnal Kajian Lemhannas RI*, 8(2), 28-42.
- Budiharto, W. (2019). Inovasi Digital di Industri Smart Farming: Konsep dan Implementasi. *Prosiding Seminar Nasional Lahan Suboptimal 2019*, 978-979. Retrieved from <http://conference.unsri.ac.id/index.php/lahansuboptimal/article/view/1669/899>



- Chawarika, A. (2016). Food Security and the Developing World-Emerging Issues. *Munich Personal RePEc Archive*, (6461), 1-17.
- Dewi Wulandani, B. R., & Anggraini, W. (2020). Food Estate Sebagai Ketahanan Pangan Di Tengah Pandemi Covid-19 Di Desa Wanasaba. *SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan*, 4(1), 386-390. <https://doi.org/10.31764/jpmb.v4i1.3062>
- Dwiguna, A. R., & Munandar, A. I. (2020). Analisis Naratif Kebijakan Pangan Nasional Melalui Program Food Estate Narrative. *Jurnal Administrasi Pembangunan Dan Kebijakan Publik*, 11(2), 273-284.
- Gunawan, E., Sumaryanto, & Ashari. (2020). Potensi Sumber Daya dan Simpul Kritis Peningkatan Produksi Padi pada Era Pandemi Covid-19. In A. Suryana, I. W. Rusastra, T. Sudaryanto, & S. M. Pasaribu (Eds.), *Dampak Pandemi Covid-19: Perspektif Adaptasi dan Resiliensi Sosial Ekonomi Pertanian* (pp. 173-192). Jakarta: IAARD Press. Retrieved from <https://pse.litbang.pertanian.go.id/ind/index.php/layanan-publik/publikasi/buku-tematik/662-dampak-pandemi-covid-19-perspektif-adaptasi-dan-resiliensi-sosial-ekonomi-pertanian>
- Hadi, S. (2020). Pengurangan Risiko Pandemi Covid-19 Secara Partisipatif: Suatu Tinjauan Ketahanan Nasional terhadap Bencana. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 4(2), 177-190. <https://doi.org/10.36574/jpp.v4i2.109>
- Khudori. (2010). Kondisi Pertanian Pangan Indonesia. *Pangan*, 19(3), 211-232. Retrieved from <http://jurnalpangan.com/index.php/pangan/article/view/141/127>
- Knierim, A., Kernecker, M., Erdle, K., Kraus, T., Borges, F., & Wurbs, A. (2019). Smart Farming Technology Innovations - Insights and Reflections from the German Smart-AKIS hub. *NJAS - Wageningen Journal of Life Sciences*, 90-91, 100314. <https://doi.org/10.1016/j.njas.2019.100314>
- kominfo.go.id. (2019). Dominasi Sektor Pertanian, Jumlah Orang Bekerja Naik 2,50 Juta. Retrieved July 2, 2021, from Kementerian Komunikasi dan Informatika Republik Indonesia website: <https://kominfo.go.id/content/detail/22584/dominasi-sektor-pertanian-jumlah-orang-bekerja-naik-250-juta/0/berita>
- LIPI. (2020). Survei Dampak Darurat Virus Corona terhadap Tenaga Kerja Indonesia.
- Masniadi, R., Angkasa, M. A. Z., Karmeli, E., & Esabella, S. (2020). Telaah Kritis Ketahanan Pangan Kabupaten Sumbawa dalam Menghadapi Pandemi Covid-19. *Indonesian Journal of Social Sciences and Humanities*, 1(2), 109-120.
- Mewa Ariani. (2004). Penguatan ketahanan pangan daerah untuk mendukung ketahanan pangan nasional. *Pusat Analisis Sosial Ekonomi Dan Kebijakan Pertanian*, 1999(70), 23-37.
- Nagyová, L., Holienčinová, M., Rovný, P., Dobák, D., & Bilan, Y. (2016). Food Security Drivers: Economic Sustainability of Primary Agricultural Production in the Slovak Republic. *Journal of Security and Sustainability Issues*, 6(2), 259-274. [https://doi.org/10.9770/jssi.2016.6.2\(6\)](https://doi.org/10.9770/jssi.2016.6.2(6))
- Rachmawati, R. R. (2021). Smart Farming 4.0 untuk Mewujudkan Pertanian Indonesia Maju, Mandiri dan Modern. *Forum Penelitian Agro Ekonomi*, 38(2), 137-155. <https://doi.org/10.21082/fae.v38n2.2020.%25p>
- Ristyawati, A. (2020). Efektifitas Kebijakan Pembatasan Sosial Berskala Besar dalam Masa Pandemi Corona Virus 2019 oleh Pemerintah Sesuai Amanat UUD NRI Tahun 1945. *Administrative Law and Governance Journal*, 3(2), 240-249. <https://doi.org/10.14710/alj.v3i2.240-249>
- Rizal, J. G. (2020). Setahun Jokowi-Ma'ruf, Berikut Ini Catatan dari Sektor Ekonomi. Retrieved July 1, 2021, from Kompas.com website: <https://www.kompas.com/tren/read/2020/10/20/160757265/setahun-jokowi-maruf-berikut-ini-catatan-dari-sektor-ekonomi?page=all>
- Santosa, E. (2014). Percepatan Pengembangan Food Estate Untuk Meningkatkan Ketahanan Dan

- Kemandirian Pangan Nasional. *Risalah Kebijakan Pertanian Dan Lingkungan*, 1(2), 80-85. <https://doi.org/10.20957/jkebijakan.v1i2.10290>
- Saputri, R., Lestari, L. A., & Susilo, J. (2016). Pola Konsumsi Pangan dan Tingkat Ketahanan Pangan Rumah Tangga di Kabupaten Kampar Provinsi Riau. *Jurnal Gizi Klinik Indonesia*, 12(3), 123-130. <https://doi.org/10.22146/ijcn.23110>
- Sianipar, B., & G Tangkudung, A. (2021). Tinjauan Ekonomi, Politik dan Keamanan Terhadap Pengembangan Food Estate di Kalimantan Tengah Sebagai Alternatif Menjaga Ketahanan Pangan di Tengah Pandemi Covid-19. *Jurnal Keamanan Nasional*, 6(2), 235-248. <https://doi.org/10.31599/jkn.v6i2.479>
- Simamora, B., Lubis, K., & Arini, H. (2021). *Analisis Asumsi-Asumsi pada Program Food Estate di Papua*. 10(2), 293-300. <https://doi.org/10.31289/perspektif.v10i2.4267>
- Simatupang, P. (1998). Analisis Kritis Terhadap Paradigma dan Kerangka Dasar Kebijakan Ketahanan Pangan Nasional. *Forum Penelitian Agro Ekonomi*, 25(1), 1-19. <https://doi.org/10.21082/fae.v25n1.2007.1-18>
- Sumaryanto, N. (2013). Estimasi Kapasitas Adaptasi Petani Padi Terhadap Cekaman Lingkungan Usahatani Akibat Perubahan Iklim. *Jurnal Agro Ekonomi*, 31(2), 115. <https://doi.org/10.21082/jae.v31n2.2013.115-141>
- Sumastuti, E. (2010). Jiwa Entrepreneurship untuk Mewujudkan Ketahanan Pangan. *JEJAK: Jurnal Ekonomi Dan Kebijakan*, 3(1), 83-89. <https://doi.org/10.15294/jejak.v3i1.4667>
- Syahrial. (2020). Dampak Covid-19 terhadap Tenaga Kerja di Indonesia. *Jurnal Ners*, 4(23), 21-29. Retrieved from <https://journal.universitaspahlawan.ac.id/index.php/ners/article/view/1022>
- Telaumbanua, D. (2020). Urgensi Pembentukan Aturan Terkait Pencegahan Covid-19 di Indonesia. *QALAMUNA: Jurnal Pendidikan, Sosial, Dan Agama*, 12(01), 59-70. <https://doi.org/10.37680/qalamuna.v12i01.290>
- Wardhana, D. (2020). Kajian Kebijakan dan Arah Riset Pasca-Covid-19. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 4(2), 223-239. <https://doi.org/10.36574/jpp.v4i2.110>
- Wren-Lewis, S. (2020). The Economic Effects of a Pandemic. In N. Akbulaev, I. Mammadov, & V. Aliyev (Eds.), *Economics in the Time of COVID-19*. London: CEPR Press. Retrieved from <https://voxeu.org/content/economics-time-covid-19>
- Yestati, A., & Noor, R. S. (2021). Food Estate dan Perlindungan Terhadap Hak-Hak Masyarakat di Kalimantan Tengah. *Morality: Jurnal Ilmu Hukum*, 7(1), 52-73. <https://doi.org/10.52947/morality.v7i1.190>