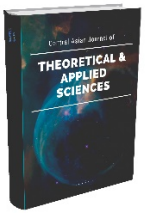

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Impact of Population Growth on Food Security

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Abstract: *Indonesia is a country with the fourth-largest population in the world. This will have an impact on the high demand for clothing, housing, and food, especially in Indone-sia's current food consumption is rice consumption per capita by the Indonesian population reaching 139 kg per capita per year and continues to increase every year. The total population of Indonesia is 265 million people, which indicates the need for rice per year based on a rough calculation, which is 33,470,400,000 kg (33,470 mil-lion tons) per year in 2017. The agricultural survey recorded that 81.3 million tons of rice per year were needed for Indonesian citizens. The Central Statistics Agency (BPS) said that rice production in 2017 reached 70.83 million tons of dry milled unhulled rice (GKG), this figure decreased by 450 thousand tons or 0.63 percent compared to 2013. Very large declines in rice production took place on the island of Java to 830 thousand tons, on the other hand outside Java experienced a depreciation of 390 thousand tons. Rice production decreased due to a decrease in the harvested area of 41.61 thousand hectares (ha) or 0.30 percent and a decrease in productivity of 0.17 quintals or ha (0.33%). It can be said that the real purpose of rice production in Indonesia is experiencing a sizable surplus, but what is feared is the shrinking of agricultural land which continues to be used for housing or other uses. The rapid development of the population and the failure of family planning programs in several countries make it a serious challenge in the context of providing food for the world's population in the future. The problem of this large population is not only an economic, social and environmental issue but is also related to political issues. Politically, a large population without serious action and predictions, especially those related to food, energy, environment, learning, health, and employment will have implications for the threat to national sovereignty and national security. The pace of the political crisis, which is currently accompanied by an economic crisis, poses a threat of starvation due to lack of food and energy supply and the environment has the potential to destroy the existence of a country.*

Key Words: *food security, population growth, population, environment*

INTRODUCTION

Based on world-historical records regarding the increase in population, Malthus (1803) is the first person in the world to seriously discuss the impact of the world's "population explosion" (Brown *et al*, 2004). faster than the increase in food supplies (Crist *et al*, 2017). Population growth also causes symptoms of dredging of land and land in various natural resources by humans (Daolji *et al*, 2004). In connection with this, there are various problems in meeting the needs of the population such as food, housing and shelter

needs, job opportunities, health facilities, nutrition, learning, and clothing. If with human rights, it is similar to the right to food, the right to healthy air, the right to a decent life, after that it gave birth to the population theory.

Food needs are basic human needs (Scanlon *et al*, 2004). In terms of consumption, food is the largest expenditure for households (Ivanova *et al*, 2016) which must be met by the government for every citizen. As mandated by Law No. 7/1996 on food. The law states that the government organizes regulation, guidance, control, and supervision, while citizens carry out the process of creating and providing, trading, distributing, and working as consumers who are entitled to food in quantity and quality, comfortable, nutritious, diverse, and affordable by they are purchasing power. Food security is strongly influenced by climate change and weather (Al *et al*, 2008). This results in disruption of food production and availability and this is a problem faced in the national scope, especially in Indonesia. If the nature of production that is vulnerable to climate change is not accompanied by strong food policies, it will be very detrimental to producers and consumers, especially to small-scale producers and low-income consumers (Tacoli, 2003).

Characteristics of food commodities that are easily damaged, farmers' production land is limited; Inadequate agricultural supporting facilities and infrastructure, as well as weak harvest and post-harvest control, urge the Government to implement interventions by realizing food security policies.

With the consideration of the food case mentioned above, the national food policy must be able to accommodate and balance the supply/production and demand aspects. The management of these aspects must be able to realize strong national food security to cope with all the turmoil. The management must be tried to the maximum considering the two aspects can be incompatible or contradictory. The objectives and benefits to be achieved include: 1) Know what is meant by population growth; 2) Provide information on population growth and food availability; and 3) Provide knowledge and insight about the factors that affect food security and measures to overcome them.

METHODS

The author uses the method of writing a literature study, with steps to collect data or scientific works related to population and environmental ecology.

FINDINGS

Population growth is a change in population over time and can be calculated as a change based on the number of individuals in a population using "per unit time" to measure the scale of population development growth (Hambarsari & Inggrit, 2016). A book entitled The Population Bomb (Ehrlich, 1968) predicts a humanitarian disaster due to the large population and population explosion. Thomas Malthus in An Essay on the Principle of Population (1803), if the rate of population development is exploring exponential growth and will exceed the food supply which will cause starvation. For example: if one of them is not fulfilled or there is a shortage of stock, it is possible for an increase/increase in prices to occur and of course it will be more burdensome for people with middle to lower economic status.

When all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and food needs. active and healthy life (Mwaniki, 2006). The definition of food security according to Law No. 18/2012 concerning Food is "the condition of fulfilling food for the state to individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and does not conflict with religion, belief, and culture of the community, to be able to live a healthy, active and productive life in a sustainable manner". The essence of food security is access to healthy food and optimal nutrition for all. Access to food is closely related to the food supply, so that food security depends on a healthy and sustainable food system. Based on this definition, it can be concluded that food security has five elements that must be

met, namely household and individual-oriented, time dimension whenever food is available and accessible, emphasizing on household and individual food access, both physical, economic, and social i.e., oriented to the fulfillment of nutrition, and aimed at living a healthy and productive life.

Food security is defined as the condition of sufficient food for households based on the availability of sufficient or quality food, comprehensive and affordable (Kuwornu *et al*, 2013). National food security still describes a strategic issue for Indonesia (Sains *et al*, 2013) considering that the adequacy of food production, distribution, and consumption has a very broad size and is tied to social, economic, and political measures. In terms of food security, rice is the main commodity for Indonesia (Tarumingkeng & Manuwoto, 2016). With rice still being one of the staple food commodities for the Indonesian population, it illustrates that a strategic commodity for national development in the country shows that rice shortages greatly affect the stability of national development (Ayu, 2018).

Not only at the national, regional, and household levels, but also at the international level, where the impact of the shortage of rice food supplies is visible. Considering that the Indonesian population is mostly farmers, the issue of food security is a significant issue that must be resolved. Poor food security will cause social threats to increase (Fonta *et al* 2013). The existence of good food security indicates the movement of the agricultural sector in Indonesia, and according to Adelman, in theory, a good agricultural sector indicates economic development (Rusdi, 2013). In other words, it can be concluded that weak food security indicates a weakness in the agricultural sector. Weaknesses in the agricultural sector can cause economic development and growth to fail which will result in social inequality. Social inequality that is left unchecked can cause stability and security to falter and an event called social inequality arises and can threaten human life.

Several factors affect food security in Indonesia, which are as follows: 1) Food availability factors consist of markers of village population density, normative consumption ratio, and soil type; 2) Socio-economic factors consist of markers of the number of households without access to electricity, the number of poor households, and the number of occurrences of LBW; 3) Factors due to health consist of markers of the number of events of malnutrition and poor nutrition and also the rate of population development; and 4) The natural form factor consists of a marker for the number of natural disaster events, the area of the Fuso, the category of the main village route, and the height of the village.

Due to the large increase in population development, especially the birth rate, which cannot be suppressed so that a larger composition of the young population will be formed, it is predicted that in 2030 the productive age will be more than 60%, thus worrying about the formation of a population explosion in the future. This will have an impact on the high demand for clothing, housing, and food, especially in Indonesia's current food consumption is rice consumption per capita by the Indonesian population reaching 139 kg per capita per year and continues to increase every year. The total population of Indonesia is 265 million people, which indicates the need for rice per year based on a rough calculation, which is 33,470,400,000 kg (33,470 million tons) per year in 2017. The agricultural survey recorded that 81.3 million tons of rice per year were needed for Indonesian citizens. The Central Statistics Agency (BPS) said that rice production in 2017 reached 70.83 million tons of dry milled unhulled rice (GKG), this figure decreased by 450 thousand tons or 0.63 percent compared to 2013. Very large declines in rice production took place on the island of Java to 830 thousand tons, on the other hand outside Java experienced a depreciation of 390 thousand tons. Rice production decreased due to a decrease in the harvested area of 41.61 thousand hectares (ha) or 0.30 percent and a decrease in productivity of 0.17 quintals or ha (0.33%).

It can be said that in fact, rice production in Indonesia has a sizable surplus, but what is feared is the shrinking of agricultural land which continues to be used for housing or other uses. The Director of Urban

and Rural Affairs of the Ministry of National Development Planning, 2019 said the reality is that as many as 110,000 hectares of agricultural land are threatened with being converted into non-agricultural land every year. If this problem continues without any change, it is feared that irrigated agricultural land will continue to shrink from 7.3 million hectares at present to 4.3 million hectares. In rural areas, the number of cases of land-use change, from irrigated agricultural land areas, converted to non-agricultural land areas reaches 110 thousand hectares per year. It can be estimated that in the future irrigated agricultural land in rural areas will only be left with 4.3 million hectares of land that can be used properly by 2030, which will cause food creation to decline and Indonesia is threatened with a food crisis.

Population growth has consequences for increases and developments that have an impact on urban areas, industrial development, and tourism that eliminate agricultural land (Geyman & Baz, 2008). context of providing food for the world's population in the future. The problem of this large population is not only an economic, social and environmental issue but is also related to political issues. Politically, a large population without serious action and predictions, especially those related to food, energy, environment, learning, health, and employment will have implications for the threat to national sovereignty and national security. The pace of the political crisis, which is currently accompanied by an economic crisis, poses a threat of starvation due to lack of food and energy supply and the environment has the potential to destroy the existence of a country.

The development and growth of a large population require the fulfillment of very large food as well (Cleland *et al*, 2006). The magnitude of the number of population developments is directly related to the amount of food availability. It takes at least 130 kg of rice per person per year. The provision of rural food is not yet maximal, which is indicated by the large import of food needs at this time, so it is a serious sign for us to have concern for the problem of food supply in this beloved country. Based on the current condition of Indonesia with a population growth of 1.49% and the availability of land for rice cultivation of 7.7 ha, based on this is very unprofitable because it can require food production to exceed population growth, so it can be predicted if one day agricultural land in Indonesia will disappear. This is due to the rapid growth in the clearing and use of land for residential areas and the increasing need for food.

RESULTS AND DISCUSSIONS

Indonesia's large population (more than 230 million) and continues to increase requires food products in increasing quantities (an increase in national food needs 1-2% each year) so that the existence of rice fields in sufficient and appropriate quantities to support food availability and security necessary. In addition, efforts to increase food production (especially rice) are needed for a prolonged period. Relying on imported food for national food security is risky for various aspects of life, including the national economy, society, and politics.

Efforts to increase the amount of production must be balanced with an increase in income for farmers, ease of consumer accessibility, and also the actualization of food stability security. On the other hand, non-food commodities which are usually commercial are required to have great competitiveness to be able to achieve maximum global market share. Therefore, high productivity, the efficiency of the production system, and increasing the quality and added value of finished products are the main focus in protecting national food security. To achieve various goals in realizing national food security and to maintain food security and national bioenergy development, strategies and policies for the use and management of land resources are needed, both agricultural land (rice fields that have been used at this time or reserve land).

The strategies are: 1) Optimizing the use of existing land resources to be more productive and sustainable both in quantity and quality, namely by intensifying and increasing planting intensity, developing technological innovations, and controlling land conversion; 2) Expansion of agricultural area, similar to

extensification by using potential land; 3) In accelerating the provision and implementation of various policies and institutional regulations to protect agricultural land.

The Indonesian government's efforts to improve the quality of food security in Indonesia are as follows: 1) There is an increase in food quality which is supported by various parties, especially State-Owned Enterprises (BUMN) which have responsibilities in managing the food sector; 2) Food SOEs as development agents must be able to produce food price stability. So that food price fluctuations that often occur do not become difficult to handle; 3) With the creation of an increase in food quality and food price stability, it is also necessary to control the development of nutrition revisions so that there are no more mentions of malnutrition that occur in the population; 4) Mitigation of barriers to food also needs to be tried. This food is very vulnerable to weather, therefore it is necessary to include a plan to mitigate barriers to food; 5) To produce an increase in food quality, the increase in the welfare of food farmers also needs to be observed. Given that farmers are the spearhead of increasing the food supply.

CONCLUSIONS

The result of these studies found: 1) Food security is one of the many national defense systems, when the food security of a country is threatened, it can result in the survival of a nation is at stake; 2) Indonesia is a country with a population growth that is so large that it has an impact on food supply which is a complex problem; 3) The level of population development is closely related to the availability of food because the inability to provide food can be a very serious threat to human survival; 4) Overcoming this food problem can be overcome through several fields such as agriculture, marine and fisheries, forestry, energy, and mineral energy sources, and the environment.

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