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The Impact of Climate Change on Indonesia's Food Security Strategy Undertaken by Bulog in 2023

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Abstract: Climate change affects food security because it causes a shift in the rainy or dry season, which greatly affects the pattern and timing of planting food crops. A decrease in agricultural production will trigger an increase in food prices, which in turn will lead to a decrease in household food purchasing power. Bulog, in this case as the party appointed by the government to carry out activities to maintain the Basic Purchase Price for grain, stabilize prices, especially basic prices, distribute rice for social assistance (Bansos) and manage food stocks, has several strategies to overcome this problem. This study aims to identify the impact of climate change on Indonesia's food security strategy undertaken by Bulog in 2023. The research methodology is based on secondary data that includes a literature review of, articles, e-books, open access e-journals, and previous research. The results showed the influence of climate change on the strategy of Bulog in maintaining food security despite declining production by 1) encouraging subsidiaries by Badan Usaha Milik Negara (BUMN) to increase domestic rice production, 2) building 10 rice milling centers, 7 rice processing centers to its logistics, 3) Distribution of rice assistance of 10 kg per month for low-income groups Program, 4) Stabilization of Food Price Supply (Stabilisasi Pasokan Harga Pangan), which supplies more than 1 million tons of rice at a lower price than the market price. The implication of this research is the importance of strategies to increase domestic food production, strengthen food distribution infrastructure, and pay attention to low-income groups in food assistance programs to overcome the impact of climate change on Indonesia's future food security.

Keyword: Climate Change, Food Security, Agriculture, Stabilize Prices, BULOG, Distribution of Rice

INTRODUCTION

Climate change is a threat to people who are crop farmers and threatens a country's food security (Government of Republic of Indonesia, 2007; UNFCCC, 2007). Climate change affects food security because it causes a shift in the rainy or dry season, which greatly affects the pattern

and timing of planting food crops. Climate change is characterized by higher temperatures and reduced and erratic rainfall (Brida, 2023).

A decline in agricultural production will trigger an increase in food prices, which in turn will lead to a decline in households' food purchasing power. This situation will increase the number of food-insecure areas, which in turn will lead to cases of extreme food hunger. To overcome this problem, a policy is needed to encourage increased food production, among others; a) Preparation of food supply planning by taking into account: agroecosystems, market needs, and alternative food import substitutes, b). Strengthening food stocks/reserves and strengthening Bulog as food logistics hub, c) Strengthening food sovereignty and independence, d) Strengthening food stocks/reserves, e) Promotion and education to accelerate diversification of quality and practical food consumption, f) Strengthening the food logistics system and promoting education to reduce food loss and waste. This policy is expected to realize food sovereignty through availability, affordability, food consumption and nutrition and food safety both at the national and regional levels evenly throughout time by utilizing local resources, institutions and culture (Brida, 2023).

Climate change has also had a direct impact on the decline of rice production in Indonesia. Floods inundated several rice production centers in Java, threatening crop failure. Erratic rainfall has hampered the grain drying process. The grain drying process still uses solar power, because grain that is wet from rain cannot be dried directly by machine. This will make the grain broken and the rice yellow. Bulog is a State-Owned Enterprise (BUMN) that carries out activities to maintain the Basic Purchase Price for grain, stabilize prices, especially basic prices, distribute rice for social assistance (Bansos) and manage food stocks.

In 2023, Bulog is wary of agricultural land droughts due to the impact of El Nino. Food insecurity that occurs due to the impact of El Nino, affects price fluctuations at the consumer level. Therefore, Bulog is committed to realizing the fulfillment of Government Food Reserves to anticipate it. The vigilance is carried out through guaranteeing the provision of food stocks by absorbing rice massively. Bulog guarantees that the rice supply spread across all Bulog warehouses in Indonesia is at a safe amount.

This paper will analyze the impact of climate change on food crop production with a focus on rice commodities, as well as climate change adaptation strategy initiatives and supporting policies by Bulog in maintaining food security and stability in Indonesia.

METHOD

The method of writing this Literature Review article is a descriptive qualitative method and literature research, sourced from online articles, Google Scholar online applications, Mendeley and other online academic applications. Literature study is one of the techniques the author uses to obtain appropriate and accurate data. According to Nazir in (Yahya, 2015), literature study is a data collection technique by conducting a study of books, literature, and reports that have to do with the problems that will be the object of research.

RESULT AND DISCUSSION

The phenomenon and impact of climate change on the performance of agricultural production is inevitable in the form of changes in temperature, rainfall, seasonal shifts, the occurrence of droughts, floods and the emergence of Plant Disturbing Organisms (Pests). The impact of climate change in Indonesia is categorized into planting delays due to seasonal delays, and a decrease in the planting area during the growing season, both of which cause a reduction in the planting area and net harvest area which results in reduced rice production (Naylor, et al., 2007). Rising temperatures will shorten the lifespan of rice and reduce yields, while irrigated land has less impact than rainfed rice fields which experience a decrease in rice yield of 11.1%/OC and 14.4%/OC respectively (Yuliawan & Handoko, 2016).

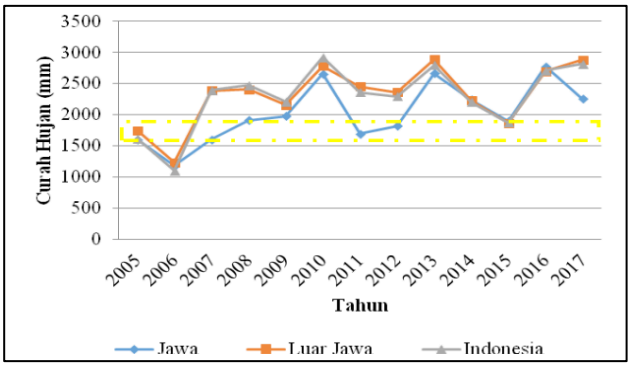

Figure 1. ***Rainfall in Indonesia 2005-2017***

During October and December 2023, Indonesia experienced below normal rainfall compared to the long-term average. A significant decrease in rainfall between October and December occurs in most provinces. As presented in the graph below, drier-than-normal conditions occurred in Java, Bali, Nusa Tenggara, Sulawesi, Maluku, as well as parts of Sumatra, Kalimantan and Papua (Buletin Pemantauan Musiman October-December Q4 2023).

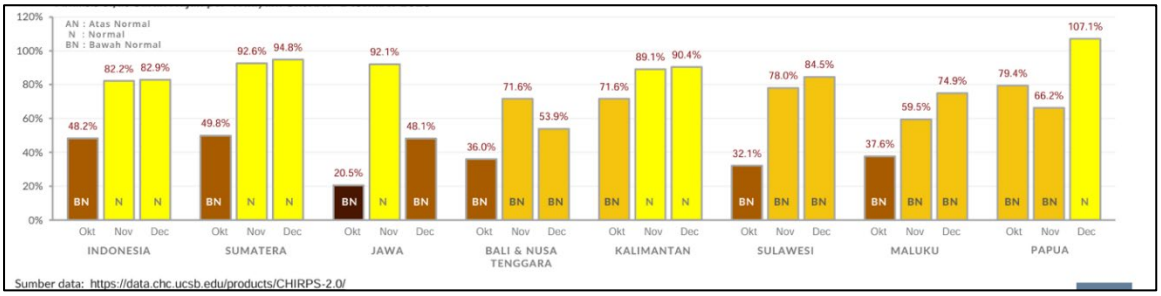

Figure 2. ***Analysis of Rainfall Properties per Region: October - December 2023***

Based on BNPB data, 331 floods have been recorded or about 44 percent of the total incidents in 2023 (January-March 2023). The floods have caused crop failure, estimated at 5,469 hectares in 20 provinces. According to the Ministry of Agriculture, floods have disrupted the growth of rice plants from October to December 2023. Aceh was the most affected area, with floods impacting more than 7500 hectares of paddy fields in December 2023, causing more than 1800 hectares of crop failure (Buletin Pemantauan Musiman October-December Q4 2023).

The 2021 Food Security Index states that 70 districts and 4 cities in Indonesia have low scores. Indonesia's rice production has fluctuated in recent years. Some areas in Indonesia are often hit by drought in the dry season due to El Nino, which has a strong effect on rainfall, and air temperature, which will affect the growth of agricultural crops (Fahrezi, Dimas Satrio Budi; 2023).

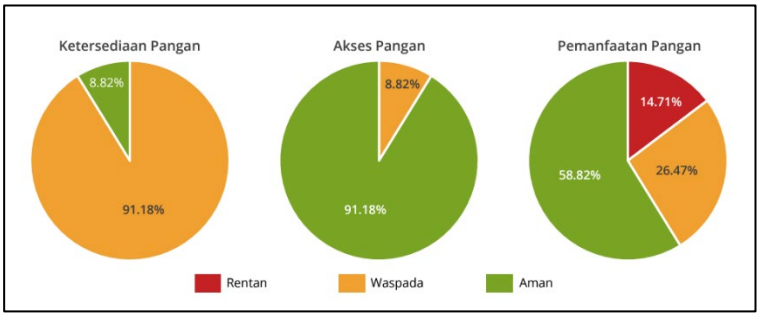

Figure 3. ***Analysis of Food Availability Status December 2023***
Source: Buletin Pemantauan Musiman Oktober– Desember Q4 2023

More than 90% of provinces fall into the alert category in terms of food availability, which is one of the three pillars of food security. Analyzed in December 2023, about 60% of provinces are in the safe category. However, 25% of provinces are in the alert category and 15% are in the vulnerable category.

The domino effect of the El Nino condition is the soaring price of rice in the country. The government was asked to take action to reduce rice prices, including by importing and distributing rice aid to the community. The strategy to reduce the price of rice carried out by Bulog is the distribution of rice aid to 21.3 million Beneficiary Families (KPM). The rice continues to be distributed as much as 10 kg per month during September-November 2023 (Erlina F. Santika, 2023).

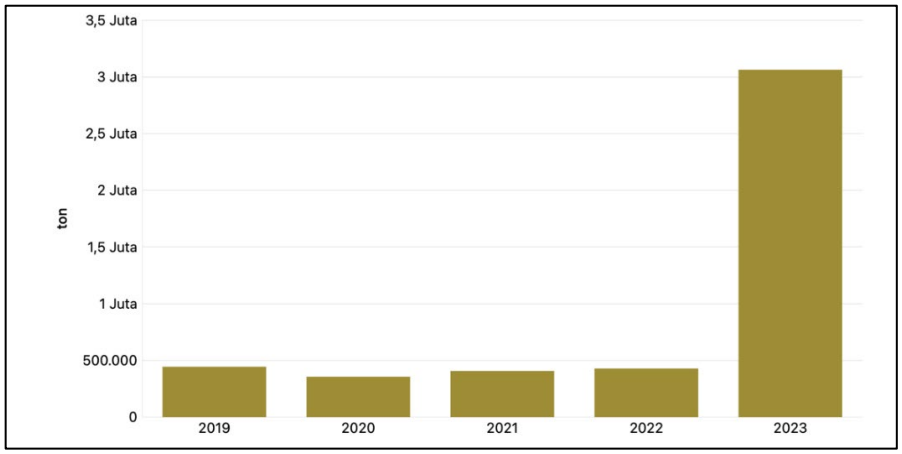

Figure 4. ***Trends in Indonesia's Rice Import Volume (2019-2023)***
Source: Badan Pusat Statistik data impor beras 2019-2023

Perum Bulog is given the mandate as the agency tasked with maintaining national food security national food security thus ensuring the availability and the Government Food Reserve. In addressing the impact of climate change on rice production, Bulog has undertaken several strategies in the last 3 years to reduce importation rates by: 1). encouraging the subsidiaries of State-Owned Enterprises (BUMNs) to increase domestic rice production, 2). building 10 rice milling centers, 7 rice processing centers, and their logistics, 3). Allocating budget from the state budget for low-income groups through a rice aid distribution program of 10 kg per month. 4). Stabilization of Food Price Supply (SPHP), which supplies more than 1 million tons of rice at a lower price than the market price.

The first solution can be done by creating food independence and releasing import dependence, because food is important for the sustainability of life. The Minister of BUMN for the 2019-2024 period said that the role of BUMN in realizing food independence was carried out through three things, namely building a good agricultural ecosystem. Furthermore, building access to capital for the community, especially in villages and for farmers, and encouraging housewives to get access to capital to help improve the standard of living of families in the village.

To facilitate farmers in accessing capital, which supports increased production can be done through cooperation with all parties, one of which is BUMN (Arinal Djunaidi, 2022). According to him, BUMN as an offtaker can be synergized with regional programs, one of which is through the Berjaya Farmer Card (KPB). Through this KPB program, local governments and SOEs can also help each other in increasing agricultural production to improve the welfare of farmers through easy access to capital through people's business credit (KUR).

In addition, rice production must be increased. One of the keys is the selection of superior

seeds to increase rice productivity in extreme weather. Agricultural BUMNs carry out various transformations such as planting patterns to digitalization to meet national rice productivity (CNBC Indonesia, 2023).

The second solution is that Bulog currently has 10 Modern Rice Milling Plant (MRMP) built in several regions in the country. President Joko Widodo said that 7 of them are already operating, including in Sragen. This rice milling center will strengthen Bulog's strength in absorbing grain from farmers with a very large capacity (Kominfo, 2023). The Minister of Agriculture said that there has been a solution strategy to help the condition of the rice mills. He said that flooding the market with rice from Bulog, including to rice mills, was the fastest step. Bulog's commercial rice stock of 200 thousand tons will be disbursed directly to rice mills nationwide. This step is to complement the government's intervention efforts that have been intensified so far to accelerate the decline in rice prices that are still above the Highest Retail Price (HET).

Figure 5. Modern Rice Milling Plant Bulog di Kendal Jawa Tengah
Source: Bulog

The third solution carried out by Bulog is to support the government program in allocating budget from the state (APBN) for low-income groups through the rice aid distribution program of 10 kg per month as Direct Cash Support from the impact of El Nino. President Joko Widodo emphasized that the rice assistance is a response to the increase in staple food prices due to the prolonged summer.

The distribution of this rice assistance is a continuation of the program to distribute food assistance to 21.353 million KPM with a total subsidy rice of 640,000 tons which has been completed in 2023 and will be extended until June 2024. The amount of rice food assistance is 10 kg per recipient which will be disbursed in three stages, so that each KPM will receive 30 kg of rice. The subsidy is sourced from the Government Rice Reserve (CBP) managed by Perum Bulog.

Figure 6. President Joko Widodo delivers 10 kilograms of rice to residents in South Tangerang
Source: Antara

Head of Bapanas (National Food Agency) Arief Prasetyo Adi said that the distribution of

food aid at the end of 2023 will have a positive impact on strengthening people's purchasing power and controlling inflation. The government is aware of the potential increase in demand for food during the Christmas and New Year period, where the increase must be anticipated so as not to have an impact on food price spikes. This food aid has spurred Bulog to continue absorbing rice to increase stocks through domestic and foreign procurement. However, he emphasized that the priority of rice procurement comes from domestic production (Bulog, 2023).

The fourth strategy is Food Price Supply Stabilization (SPHP). SPHP is a government program implemented in accordance with the mandate of Law No. 18/2012 on Food Article 55 paragraph (1). The SPHP program aims to protect the purchasing power and affordability of food prices for consumers. The National Food Agency (Bapanas) is the government agency that organizes the SPHP program in accordance with the predetermined strategic targets. Bapanas issued Regulation of the National Food Agency of the Republic of Indonesia No. 15 of 2022 on the Stabilization of Supply and Prices of Rice, Maize, and Soybeans at the Consumer Level as the legal basis for the SPHP program.

Perum Bulog is assigned by Bapanas to implement the SPHP program in accordance with the Letter of the Head of Bapanas Number 02/TS.03.03/K/1/2023 regarding the Assignment of Stabilization of Food Supply and Prices (SPHP) of Rice at the Consumer Level in 2023. The distribution of rice in the context of SPHP Rice at the Consumer Level is carried out by Perum Bulog either directly through the Task Force channel, or indirectly through Retailers, Modern Retailers, Distributors,and Market Operations in collaboration with the Regional Government. The distribution of rice in the implementation of SPHP Medium Rice at the Consumer Level in 2023 was carried out in record markets, modern markets (supermarkets) and locations close to consumers with a total of 1,196,728 tons of rice distributed.

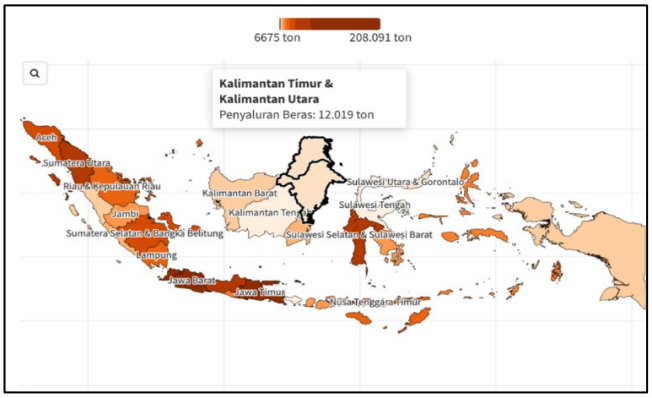

Figure 7. ***Distribution of SPHP Rice Distribution Realization in Indonesia (data 7 November 2023)***
Source: Bulog

Based on Bulog's report, the realization of rice distribution for food supply and price stabilization (SPHP) reached 905,939.58 tonnes by 7 November 2023. The volume reached 83.50% of the 2023 target of 1.09 million tons.

In 2024 Bulog was again assigned by the government based on Letter of the Head of Bapanas Number 455/TS.02.02/K/12/2023 regarding the Assignment of Rice SPHP Implementation Year of Rice SPHP at the Consumer Level in 2024 with a target of 1.2 million tons of rice distribution (Bulog, 2023). Since the first phase of rice food assistance was rolled out in the period January to March 2023, rice inflation has decreased from 2.63% in February 2023. It then dropped to 0.70% in March 2023. The decline continued to 0.55% in April 2023 and 0.02% in the following month. Meanwhile, the CBP (government rice reserve) phase II, which was distributed from September to December, was able to maintain the rate of increase in rice prices at the end of the year, which usually rises high. This can be seen from the significant decline in rice inflation from 5.61% in September 2023 to 0.43% in December 2023.

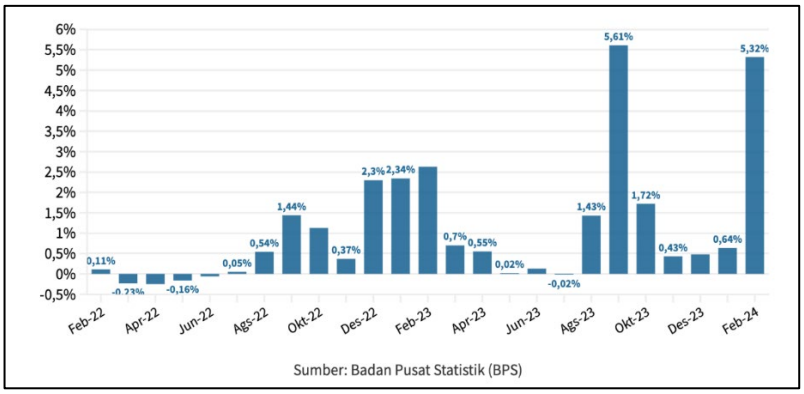

Figure 8. Rice Inflation Trend (m-to-m) Feb 2022-Feb 2024

CONCLUSION

The conclusion of this study is that the impact of climate change in Indonesia greatly affects national food security, especially the availability of rice, which in this case ultimately affects the government's strategy and also Bulog as a traffic controller of rice prices and availability in 2023. The implementation of the strategy taken by Bulog has a positive impact characterized by declining rice inflation from 2023, although it is still unable to reduce rice prices until early 2024 due to the increase in rice production prices.

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