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Rice Import Development in Indonesia

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Abstract

Rice consumption in Indonesia has risen as the population increasing rapidly. The structure of the young age population will influence the amount of per capita of rice consumption. The rice cultivating and production will also determine whether or not it will fulfil the needs. The present research aimed at analyzing Indonesian rice import within the last decade (2010 – 2019). The research method used was a literature review. The research result shows that within the last 10 years, the width of the rice cultivating and production area have been declining as much as 1,8% and 1.6% respectively. However, the rice productivity rate is still in positive number at 2.0%. Eventhough the household consumption declined as much as 2% annually, apparently this was not enough for Indonesia to fulfil the needs internally. In short term period, an import would be a solution to fulfil the needs for domestic rice consumption. On the other hand, for a longer term, an import can be a problem because the rice trade balance with be disrupted. A small number of rice export volume will result in a rice trade balance deficit in Indonesia.

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INTRODUCTION

Rice consumption in Indonesia has increased and rice import is required to fulfil the needs. An increase of population is one of the reasons for the raise volume of the consumption or a demand for rice. Based on a census in 2010, citizens in Indonesian was 237.6 million people (Central Bureau of Statistics, 2017) and is forecasted that it will increase into 305.7 million people in 2035 (Central Bureau of Statistics, 2018). If the pre capita rice consumption is 114.6 kg / year, then the demand for the rice nationally in 2010 which was 27,2 millions tons, and in the year of 2035 it is predicted that it would reach 35 million tons or increase by 29%. According to Sugiyanto (2006), the citizen of Indonesian who are in their younger age will influence the amount of per capita rice consumption. In Indonesia, there has not been found whether there was a pattern in the rice consumption between the group of people based on their age. According to Purwanto (2019), rice has been a better food image socially, so this commodity would influence vastly towards the national economy stability. At present, the rice demand in Indonesia has reached 2.3 – 2.4 million tons a month or 27.6 – 28.8 million tons annually.

The rice production in 2010 was recorded at 66.5 million tons, in the form of rice grains which increased by 5.3% into 79.4 million tons in 2016. The Central Bureau of Statistics, in 2019 mentioned that the rice production in 2017 – 2018 had grown 2.33%, but the productivity grew only 0.59%. This production changes was varied among regions. In Maluku province, there was an increase of 20.25 – 26.87%, and in Bangka Belitung province there increased by 23.74%. Despite the increase, East Java province still become the biggest rice producer in Indonesia, followed by West Java and Central Java respectively. Current national rice production reaches 31.31 million tons, decreases by 7.75% from last year production which was at 33.94 million tons.

Theoretically, a rice import is conducted if the domestic production is not enough to fulfil the domestic needs. But, data shows that the rice production is higher than its consumption. The fact that Indonesia is still importing rice up until today is an interesting topic for a research. Khudori (2019) states that the availability of the production data is significantly undermine the rice policing in Indonesia. This policy will influence the rice market as well as the welfare of the producers and consumers. The changes of the rice production data require more research in terms of the rice highest retail prices, the food task force involvement in the price stability and the readiness of the rice procurement team of Indonesian Logistics Bureau. Furthermore, Purwanto (2019), states that the long dry season would disrupt the rice production in Indonesia because the planting schedule shifted, while the cultivating and the production declined. More research by Kusumah (2019) and Alan (2019) about the rice import in Indonesia, politically speaking.

The novelty of the present research are to study and obtain answers about rice import in Indonesia, although the data shows that the rice production is higher than its consumption. This paper also aimed to study (1) the development of the rice production and consumption in Indonesia, (2) the pricing policy in Indonesia, 93) the rice policing in Indonesia and (4) the rice import: theoretical and practical approaches.

RESEARCH METHODS

The present research used a literature review method, that is a method conducted by gathering data from the previous researches which have been published in a journal, and statistical data as the guideline. The research aimed to see the real condition of the rice import in Indonesia. The data obtained then compiled and analyzed, where conclusion was made about the rice import condition in Indonesia. The literature review about rice has been done in various country. Xie and Artachinda (2014) for instance, have used this method to study the production policy and rice trading as well as its implication in China, Thailand, and Vietnam. Boateng et al. (2017) also used a literature review method to arrange an effective strategy to reduce the greenhouse gas emission as the impact of the rice cultivating. While Chaudhari et al. (2018) used this method to gather related information about nutrients and other substances contained in rice.

RESULT AND DISCUSSION

The Development of Rice Production and Consumption in Indonesia

Rice has always been produced in all seasons both rainy and dry. The rice field with a well-preserve water which available all the time has made it possible for the rice to be cultivated with three time intensity within the year. While the rice field where the irrigation is dependent on the amount of rainfall, can only be cultivated once for the season. Generally, rice is planted monoculturally. The width of cultivating area and production tend to be fluctuated from time to time.

Within 10 years time (2010 – 2019), the offer/rice production, has had a various rates of production and tend to be dropping by 1.6% (Table 1). The source of the increase in production is the cultivating area which also be various and tend to be dropping as much as 1.8%. the rice productivity development also fluctuated, but still positive at 2.0%. This shown that there has been an innovation at play in the rice cultivating technology. The study on rice cultivating technology has been done by Singh, et al. 2011 and its influence to the import (Adjao and Staatz, 2015). However, the cultivating and production area which grew negatively must be paid into attention by every party because the commodity is the main source of food to almost all of citizen in Indonesia. If it continuous, then there must be a shifting of main source of food along with the declining of the production, consistently. Other policies are to keep up with the innovation in the rice cultivating technology, an intensification, an extensification, remove the functional shift (mainly rice field), rice field rehabilitation as the result of intensification which causes a land damage, difficulty in cultivating and the reduce of the soil nutrient. Particularly for rice field extensification out in Java island, attention must be paid to the cost which balances between the land created with the result desired.

In 2019, it was recorded that: 1) the rice cultivating area was 10.68 million hectares where shown a decline as much as 700.05 thousand hectares or 6.2% from the previous year in 2018; 2) the rice production of 54.60 million tons which indicated that there was a declining as much as 4.60 million tons or 7.8 % from the previous year in 2018; 3) the grains production which is then to be converted into rice was 32.76 million tons, showed a declining as much as 2.63 million tons or 7.8 % from the previous year in 2018. What were the possible causes of these situations? Besides the land functional shifting from agriculture to non-agriculture (housing,

industry, social facility), there was also a cultivating pattern shifting from food (rice) to other kind of plants. Various of food self-sufficiency policies have contributed into these matters.

Table 1. The Rice Cultivating Area, Production, and Productivity from 2010 – 2019

Year	Cultivating Area (ha)	Production (tons)	Productivity (ku/ha)	Rice Equivalent (tons)
2010	13,253,450	66,469,394	50.153	39,881,636
2011	13,203,643	65,756,904	49.802	39,454,142
	(-0.4)	(-1.1)	(-0.7)	(-1.1)
2012	13,445,524	69,056,126	51.360	41,433,676
	(1.8)	(5.0)	(3.1)	(5.0)
2013	13,835,252	71,279,709	51.520	42,767,825
	(2.9)	(3.2)	(0.3)	(3.2)
2014	13,797,307	70,846,465	51.348	42,507,879
	(-0.3)	(-0.6)	(-0.3)	(-0.6)
2015	14,116,638	75,397,841	53.411	45,238,705
	(2.3)	(6.4)	(4.0)	(6.4)
2016	15,156,166	79,354,767	52.358	47,612,860
	(7.4)	(5.2)	(-2.0)	(5.2)
2017	15,712,015	81,148,594	51.647	48,689,156
	(3.7)	(2.3)	(-1.4)	(2.3)
2018	11,377,934	59,200,534	52.031	35,520,320
	(-27.6)	(-27.0)	(0.7)	(-27.0)
2019	10,677,887	54,604,033	51.137	32,762,420
	(-6.2)	(-7.8)	(-1.7)	(-7.8)
Growth Average (%)	**-1.8**	**-1.6**	**2.0**	**-1.6**

Source: Indonesian Bureau of Statistics, 2020 (processed)

( ): Numbers in the brackets shows the growth comparing to the previous year in %.

Conceptually, rice production (offer) is influenced by many kind of factors such as the rice pricing, input pricing, technology, the number of population, predicted pricing, and etc. Meanwhile, the rice consumption (demand) also influenced by many kind of factors such as the rice pricing, substitute produce (corn, cassava, tapioca, and other local source of food), the taste, per capita income, and etc. Subsequently, the balance of the price and quantity of the rice also influenced by those factors, aside from the government policy about rice. It is difficult to determine what would be the dominant factor because the research done previously was in a small scale. Even if there were some large scale researches, the conclusive results would be highly dependent on the availability of the data and how those data were measured based on the assumption implied.

Rice consumption per capita tend to be fluctuated for the last 10 years. As well as the total rice consumption. The data shown that from 2010 – 2019 (Table 2), the average rice consumption declined by 1.5% annually, while the total consumption also dropped by 0.3%. on the other hand, the number of citizen grow by 1.3% annually. This indicated that the government program about food diversification has been successfully implemented. It is obvious that the rice per capita consumption shift, has not gone along with, which could cause a total change in the consumption

towards the same result. In 2014, there has been a declining in the per capita consumption by 1 %, but the total consumption increased by 0.4% because of the number of the citizen increased by 1.3%.

Rice consumption in Indonesia, in majority has been coming from households. In a smaller scale, the decision to consume rice is made to maximize the satisfaction. With the available funding, consumers will choose to consume rice by considering a various kind of variables, such as the price, quality, the number of family members, and other consumable produces. The high and low of the rice consumption is influenced by other goods consumed, either long term or short term needs. Even so, the consumers is deemed to be capable of separating the two types of needs (the separability principle). Therefore, in determining rice consumption, the households only pay attention to the short term goods needed or daily needs (Sugiyanto, 2006).

Rice Pricing Decision in Indonesia

The price of rice as a commodity is a price which movement is constantly monitored and intervened by the the government. This is mainly because of the rice pricing contributing to the food durability, poverty, macro economy stability, and the nation economic growth. Up to this time, the movement of the rice pricing has been highly influenced by these three factors. The first factor is the rice availability which is coming from the production of the rice farmer in the most rice production area. The rice availability has also been influenced by the circumstances such as cultivating area, climate change, farmers productivity, the shifting of the cultivating and the season, as well as the pest attacking the plants. Furthermore, the rice availability at Indonesia Logistics Bureau (Bulog) will also influence the rice pricing, because the Bulog is capable of purchasing and selling the rice commodity in larger scale. The second factor is the demand factor. The demand shifting will influence the rice pricing mainly during the religious days of celebration, a panicking or worry from the consumers about the rice scarecity in the market, followed by the consumption pattern shifting, preferences and food diversification. The third factor is the distribution. The process of rice distribution requires a various kind of costs dependent on the distance from central production area to the consumption central area, and some other disruptions during the distribution process. On the other hand, the government policy will also influence the rice pricing movement such as the rice import and export policy, selling and purchasing of rice with a certain pricing, which is conducted by the Bulog (Yanuarti & Afsari, 2016; Purwanto, 2019).

The rice pricing control is conducted as part of the efforts to control the inflation, and the government involvement in the society, especially the low-income communities so they will be able to keep their basic needs fulfilled. One of the government intervention in the rice pricing control is in the from the offering that is by adding the supply through rice market operation. The market operation will be conducted through whole sale and retailing to control the price dropping. In a normal condition, the market operation usually is implemented in time of famine, where the price of the rice is soaring high due to a decrease in cultivation. If the supply is high enough at the Bulog, then the market operation will be considered as effective to control the price of the rice and the inflation.

Year	Citizen		Consumption per capita		Total Consumption	
	Number of (in thousands)	The growth (%)	Number of (tons)	The growth (%)	Number of (tons)	The growth (%)
2010	237,641.50		0.090		21,415,301.41	
2011	241,990.70	1.8	0.089	-0.7	21,656,231.72	1.1
2012	245,425.20	1.4	0.087	-2.7	21,376,534.92	-1.3
2013	248,818.10	1.4	0.085	-2.0	21,245,084.65	-0.6
2014	252,164.80	1.3	0.085	-1.0	21,321,038.17	0.4
2015	255,587.90	1.4	0.085	0.3	21,676,920.97	1.7
2016	258,496.50	1.1	0.087	2.3	22,420,952.42	3.4
2017	261,355.50	1.1	0.081	-6.2	21,269,110.59	-5.1
2018	264,161.60	1.1	0.080	-0.9	21,305,161.36	0.2
2019	266,911.90	1.0	0.078	-3.0	20,874,645.88	2.0
Average growth (%)		**1.3**		**-1.5**		**-0.3**

Source: Indonesian Bureau of Statistics, 2010-2019

The rice pricing in the market is influencing one variable to another. The rice pricing is highly determined by the rice production and the public rice consumption. While, the rice production in itself is influenced positively by the cultivating area and the rice pricing. The cultivating area tend to increase annually. The cultivating area also highly influenced by the production, while the rise of the price in rice grain and the edible rice will become the incentive for the farmers to increase the rice productivity (Ministry of Trade, 2014). Therefore, the rice pricing policy must be decided carefully because it involves two major and equally important economic players.

Before deciding the rice highest retail price, government will firstly create a government purchasing price policy as an instrument to protect the producers and the consumers from the market pricing turmoil (Suryana et al., 2014). The essence of the government purchasing price policy is to give incentives to the farmers by providing a price security guaranteed to be above the market clearing price (Maulana & Rachman, 2011). Generally, the policy about the rice and the grain pricing has been implemented by the government long enough in the society (Rachman et al., 2019).

The rice pricing itself in the last 10 years has been increasing (Figure 1) from Rp. 7.000,- in 2010 into Rp. 12.000,- in 2019. The average price increased annually is seen relatively small that was only 0.79%. This was the result of the rice policing created by the government for the time being which is run relatively effective, by looking at the purchasing ability of the consumers and the incentives for the farmers. However, if we look at the new monthly data, in 2019, there has been a decrease in the rice pricing. Few facts have been found (Ministry of Trade, 2019) about the rice pricing situation, nationally and internationally, as follow:

1. The rice pricing in domestic market in March 2019 decreased by -0.71% in February 2019 and decreased by -0.95% in March 2018.
2. The rice national pricing within the whole year from march 2018 to March 2019 relatively steady with the variant efficiency of the monthly price at 1.38%, but at the pricing level, it was relatively high which was at Rp. 14.040,- /kg.
3. The rice pricing disparity between region in February 2019, relatively steady with a variant coeficiency of the monthly price between cities at 11.44%, slightly lower than the previous month which was at 11.74%.
4. The rice pricing in the international market, especially in Thailand in March 2019 has seen a decrease. The rice pricing of Thai variant declined 5% and 15% respectively, which drop -1.28% (from US$ 390/ton into US$ 385/ton) and -1.31% (from US$ 380/ton into US$ 375/ton)

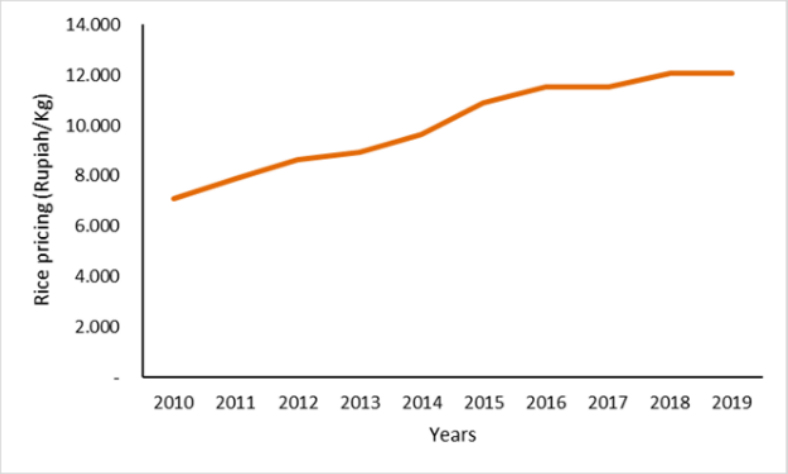

Figure 1. The Development of Rice Pricing in Indonesia in 2010 – 2019

Rice Policing in Indonesia

In Indonesia, a various kind of rice policing have been implemented since 1967. Those policies are divided into three phases (Ministry of Trade, 2014). The first phase (1967 to 1996): in this phase, the government controlled the price of the rice in the country through market intervention with a mean of supporting the rice production and to maintain the price stability. The intervention was conducted by processing a national rice supply through the Bulog, that is a government-owned institution in which deals with food distribution and price control. At that time, the import was strictly organized through an import and tariff controlling policy with a purpose to cover the gap between the national production and consumption. In 1984, Indonesia had succeeded to become food self-sufficiency, and from 1985 to 1987 became the rice exporter. But, afterwards, Indonesia went back to become a rice importer. Furthermore, in 1995, Indonesia joined the Word Trade Organization (WTO) and started the implementation of the Agreement on Agriculture (AoA) from the World Trade Organization. According to the agreement, Indonesian government was required to open a market for the products from other countries member, reduced and eventually removed the input subsidy in agriculture such as the fertilizer, pesticide, and seeds. Additionally, the line of the rice pricing was decided at 160% from the import c.i.f. and based on the AoA schedule, Indonesia had to open the access of the rice input with a minimum quota of 70.000 tons annually. With the fore

mentioned number of quota, the preferential tariff was determined at 90%. Indonesia then committed to reduce the export subsidy which was implemented from 1986 to 1990. The subsidy had resulted in a total export of 300.000 tons of rice annually with a value of US$ 28.000.000 annually. Since the AoA effectively implemented, Indonesia had stopped the rice export and went back to an importer. Since 1995, Indonesia opened the domestic market which overly surpassing the regulations of the World Trade Organization. From 1995 to 1997, there was no import tariff implemented, and the import quota was decided to be flexible up to the point it influenced the input of 3.1 million tons of imported rice in 1995, 1 million ton in 1996 and 400 thousand tons in 1997. The overall import had made Indonesia became the largest rice importer in the world from 1995 to 1997. Eventhough the volume of the import decreased gradually, Thailand, Vietnam, and the United States were the main supplier for Indonesia rice import during the period.

The second phase (1997 to 2000): in this phase, Indonesian government liberated the rice market, made the Bulog into a private company and removed the trading obstacles. All of these, were done by the government because the World Bank and the IMF forced Indonesian government to sign a Letter of Intent (LoI) as an effort to escape and overcome the devastating impacts of the Asian economic crisis. During the time, Indonesian food self-sufficiency program decreased, the dependence on the imported rice increased, and the price at the rice producers and consumers became unsteady. During this period, there was a dramatic jump in the volume of the rice import which was from 911 thousand tons from 1996 to 1997 into 3.8 million tons in 1998 to 1999. The government was unable to withheld the rice importing due to the trade liberalization and the relatively steady exchange rates (after 1998), which resulted in the price of the rice drop drastically (Sawit et al., 2007).

In 1997, the implementation of the AoA was overlapped with the structural adjustment policy in IMF and the World Bank which surpassing the WTO regulations. In the same year, Indonesia as well as the other Asian countries were suffering from a devastating economic crisis. By that context, the government removed or decreased all the agricultural subsidies in Indonesia, included the agriculture subsidy which played a significant role in developing the agricultural sector in Indonesia. The pricing policies in the domestic market was eventually stopped and the Bulog lost its import monopoly right. The import tariff was changed into 0% and an unlimited import came to Indonesia between 1998 and 1999.

The third phase (since 2001): the Indonesian government has gradually returned to implement the rice market controlling, but with a few modifications compare to the previous time before the liberalization in 1997. This policy was taken due to the negative impact of the market liberalization to the price at the level of rice producers and consumers. The previous policy was the basic price of the rice grains changed along with the government purchasing pricing to the highest price reached, but turned out ineffective. The government policy which was hoped to maintain a specific tariff and aimed to protect the farmers and to arrange the rice import was also failed (Sawit et al., 2007). The trading policy was especially aimed at stabilizing the rice grain price through the privatization of the Bulog. At that moment, the rice import tariff was at Rp. 400,-/kg as the form of protection to the farmers.

Today, the government is more focusing on the output pricing policy and agricultural input, also promoting food diversification as an effort to control the food

durability (rice), and to reach the food self-sufficiency target. The government has also been trying remarkably to control the rice price stability so the purchasing power of the society will be maintained. One of them is through the Ministry of trade Regulation No. 57 year 2017 about the highest price of the rice in retail, and No. 31/Ministry of Agriculture Regulation/130/8/2017 about the rice quality classification. The categorizing of the rice quality classification has been moderated, that uses the term of medium, premium and specialize rice. The medium and premium class of the rice is controlled by looking at the component of the degree of the aleuron separation from the rice grains, the water level, the grains (Ministry of Agriculture Regulation, 2016). However, the highest retail price of the medium class rice is at Rp. 9.450/kg and the premium price is at Rp. 12.800/kg. These have been responded by the rice milling business owner by seeling their most profitable rice (Rachman et al., 2019).

To provide incentives for the farmers, Indonesian government has determined the government purchasing price annually for the grains and rice available. Some considerable factors in making the government purchasing price are the average production per kg (grains and rice), farmer producers' margin, consumers purchasing power, and the potential impact towards inflation. In order to guarantee the effectivity of the government purchasing price, the Bulog is given a task to secure the policy by purchasing the grains during harvest moon at peak, when the price from the producers is commonly dropping.

Furthermore, in order to stimulate the farmers to implement a better use of technology in production and increase the productivity, the government also provide an input price subsidy, that is for the inorganic fertilizer (Urea, ZA, SP36, NPK) and organic fertilizer with the highest retail price at a subsidized fertilizer and premium seeds official retailers (rice, corn, soya bean) through a submission price at an official subsidized seed retailer. The productivity development is hoped to contribute significantly in the national production development while a few parts of the land are still available to be cultivated, where now more and more lands have been converted into a non-agricultural function (roads, housings, offices, hotels, factories, and etc.).

One of the main reasons of the incapability of being the food self-sufficient is the amount of consumption which keep increasing as the effect of a dramatic increase in population as well as the per capita income, which reflecting the public purchasing power which is getting higher. In order to slow down the consumption rate, some efforts have been implemented by the Indonesian government such as: (1) to lower the population rates by implementing a family planning program with a motto of small family, healthier and weathier; (2) rice diversification with other locals food (corns, cassavas, tapioca, and etc.); (3) "one day no rice" program which has been run in some regions; and (4) socializing about a healthier, more nutrient and safer food.

Rice Import: Theoretical and Practical Approach

Theoretically, the balance between offer and demand of a commodity will be the foundation of the needs for export and import of the related goods, as well as the rice. Indonesia has been exporting rice despite the small amount of rice production in comparison to the imported rice (Table 3). The declining of the households consumption by 2% and 1.6% in production respectively, has shown that the domestic rice production is capable of fulfilling the household consumption needs. Then, why does Indonesia is still taking a rice import? Is it to fulfil the consumption

needs in industrial sectors, or perhaps of some other precedent factors? If the import is higher than the export, then this will present negative impacts to the trading balance in Indonesia as stated by Pudjiastuti (Pudjiastuti et al., 2013); (Pudjiastuti, 2014) dan (Pudjiastuti and Kembauw, 2018). Therefore, the continuous of the rice import will create economic issues in Indonesia.

The rice export and import of Indonesia, have been fluctuated in the last 10 years. Although it has four-times as much of a positive increase, the volume of the exported rice is far lower than the imported rice. As an agrarian country with an abundance of produce in agriculture, especially rice, Indonesia is still importing rice and tend to witness an increase by 88.8% annually. The highest number of rice import of Indonesia in the last decade happened in 2011, 2016 and 2018.

This situation is happening because of the domestic and the world market fluctuation. From the data it is obvious that the domestic rice production is unable to fulfil Indonesian own needs. In the world market, the international price of the rice shown a downward trend since 2012. In December 2013, the international price of the rice suffers a decline of 3.14% for rice from Thailand (broken 15%) from November 2013. Meanwhile, the rice in Vietnam with broken 15%, saw an increase of 6.85%. Comparing to the same month in the previous year, the rice from Thailand (broken 15%) declined by 29.5% and the price of Vietnamese rice with a brown 15% quality dropped by 2.71%. These conditions have caused the exported price of the rice in Thailand to decrease (Reuters, 2013). The declining of the international price of the rice was unfortunately not responded by Indonesia right away and yet saw an increase of the rice import. The highest rice import happened one year before the international price of the rice decreased and two years afterwards.

Table 3. The Development of Rice Export and Import in Indonesia from 2010 – 2019

Year	Production (tons)	Household consumption (tons)	Rice Export		Rice Import	
			Volume (tons)	Value (US$1000)	Volume (tons)	Value (US$1000)
2010	39,881,636	21,415,301.41	810.00	560.00	687,581.50	360,785.00
2011	39,454,142 (-1.1)	21,656,231.72 (1.1)	1,065.00 (31.5)	1,272.00 (127.1)	2,750,476.20 (300)	1,513,163.50 (319.4)
2012	41,433,676 (5.0)	21,376,534.92 (-1.3)	263.00 (-75.3)	490.00 (-61.5)	810,372.30 (-70.5)	945,623.20 (-37.5)
2013	42,767,825 (3.2)	21,245,084.65 (-0.6)	525.00 (99.6)	474.00 (-3.3)	472,664.70 (-41.7)	246,002.10 (-74.0)
2014	42,507,879 (-0.6)	21,321,038.17 (0.4)	136.00 (-74.1)	225.00 (-52.5)	844,163.70 (78.6)	388,178.50 (57.8)
2015	45,238,705 (6.4)	21,676,920.97 (1.7)	152.00 (11.8)	265.00 (17.8)	861,601.00 (2.1)	351,602.10 (-9.4)
2016	47,612,860 (5.2)	22,420,952.42 (3.4)	84.00 (-44.7)	149.00 -43.8)	1,283,178.50 (48.9)	531,841.60 (51.3)
2017	48,689,156 (2.3)	21,269,110.59 (-5.1)	3,457.00 (4015.5)	3,098.00 (1979.2)	305,274.60 (-76.2)	143,641.70 (-73.0)
2018	35,520,320 (-27.0)	21,305,161.36 (0.2)	3,113.00 (-10.0)	1,336.00 (-56.9)	2,253,824.50 (638.3)	1,037,128.40 (622.0)
2019	32,762,420 (-7.8)	20,874,645.88 (2.0)	180.00 (-94.2)	367.00 (-72.5)	444,508.80 (-80.3)	184,254.10 (-82.2)

Average growth (%)	**-1.6**	**-2.0**	**428.9**	**203.7**	**88.8**	**86.0**

Source: Indonesian Bereau of Statistics (Bulog), 2010 – 2019 (precessed)

In January 2014 however, the international price of the rice (Thailand 15%) saw an increase and the price in Vietnam declined. The policy of the Thai government to delay the commitment in submission to sell the rice in a longer term due to political issue (general election) had been the cause of the rise in the price. Additionally, Vietnam was facing a tight competition in the international price of the rice because the supply for the year of 2014 had an increase which was sourced from Thailand and India. The increase of the Thai rice (broken 15%) price kept continuing, but Thailand could not increase the export since 2012. This could have happened to Indonesia as well, because Indonesia is just a small country among the international rice trading countries. The price of the rice in Indonesia witness an upward trend. This indicating that the rice in Indonesia had no bargaining power because the price per unit kept going up higher.

The tendency of an increase in production and supply of the rice in the world for the last 10 years had also seen as one contribution to the declining of the price. However, the increase of the consumption in the world, would cause the supply of the rice to drop. From 2013 to 2014, the consumption of the rice in the world increased by 2.5% from 478.3 million tons into 490.3 million tons, and in 2014 to 2015 it increased by 2.4% from 490.3 million tons into 502.3 million tons. This condition had an impact to the declining of the end supply for the world in 2014 – 2015 about 0.4%.

At the end of 2013, the rice export from Thailand was declining and the rice export in Vietnam increased. During 2014, the rice export in Thailand dropped because of a disruption in the production caused by the global climate change. Meanwhile th rice export in Vietnam increased. Yap (1996) states that the international trade had a significant impact to the rice economy in the world and positively effecting the developing countries. Adjao and Staats (2014) found that some factors which affecting the rice economy in Asia: (i) an increase in diversification because of the age structure shifting and the higher rate of growth; (ii) production pattern change; and (iii) production cost in respond to the high energy, water costs and technological changes.

Nuryanti et al. (2018) used the national annual data from the period of 2002 – 2014 to estimate the economic interests and the social welfare which were gone based on the elasticity value from the rice offer and demand. The result of the study shows that averagely, the economy interests existed reaching Rp. 6.37 trillion annually or about 18.54% from the food durability funding, meanwhile the social welfare which was gone was averagely at Rp. 0.90 trillion annually or 2.34% from the food durability funding. Evidently, this shows that the rice self-sufficiency program implemented by the Bulog was economically inefficient. The government needs to prepare a better agricultural infrastructure, re-study the government purchasing price, and stop the rice import in order to prevent a market failure. The rice policing should have paid more attention to the research results (Coulibaly et al., 2015), an increase on an import tariff up to 35% could decrease the rice import volume in order to protet the domestic industry in Voted Ivory and in Indonesia (Davidson, 2018), an increase on the bargaining power of the local rice produce would against the rice import (Demont

& Rizzotto, 2012), price volatility of the rice (Fulton and Reynolds, 2015), imported rice minimum quota of 180 thousand tons will cause the price of the imported rice from Japan to be lower than its domestic price (Gao et al., 2016), an omission of the design policy on rice field, has successfully increased the rice consumption, decreased the poverty line, increased the food durability and household nutrients in Vietnam (Giesecke et al., 2013), a relocation policy of the agricultural land due to climate change has been highly influencing the rice production (Mushtaq et al., 2014); (Scott et al., 2014); (Zheng et al., 2014), in order to raise the poor farmers welfare in Nigeria, it needs to focus on changing the rice sector (Doumbia et al., 2012), a high subsidy and protection to the rice commodity in the producer countries will expand the productivity gap between poor country and rich country (Rakotoarisoa, 2011), Qatar as the rice importer country must take caution against substances such as As, Zn, and Se which highly affecting human health (Rowell et al., 2014), a unique combination of factors like social, economy, political, history, and geography are all together affecting the rice production and have been identified in China as a point of rice "quality" (Zader, 2012), a protection to the farmers is required because of the price increase at the consumer level (Short et al., 2014), the government purposely transfer the income to the producers with a minimum cost would be achieved through a policy combination in Japan (Takahashi, 2012), the imported rice demand pattern in Malaysia is an implication of the food security policy implemented (Tey & Radam, 2011), up until today Singapore is still taking a rice import from various supplier and keep updating its new source of import as its diversification strategy (Tey & Brindal, 2013), and a study about rice production history will be useful to the agricultural planning in Indonesia (Panuju et al., 2013).

CONCLUSION

Today, Indonesia is still struggling with a target of becoming rice self-sufficient country because the width of the area for the rice production has been decreasing. From 2010 to 2019, the cultivating area and the rice production suffered a negative growth of 1.8% and 1.6% respectively every year. Even though the productivity grew 2.0% annually, this was not enough for the country to fulfil the domestic need of rice. As a result, an import is continuing with a fluctuated number where in 2011, 2014, and 2016 had been the highest import volume in the last decade. In short term, an import would be a solution to fulfil the domestic need of rice. However, in a longer term, an import could become an issue in itself because the rice trading balance with be disrupted. The rice export which is smaller than the import, will result in a deficit on the rice trading balance in Indonesia.

Some ways for the policy to be taken are 1) a national diversification campaign on food consumption which is based on the local food resource should be conducted not only at the center and region government, but also at an individual level, group of society and industry; 2) a program of national and regional food variety has to be harmonized, especially in order to develop the agriculture, fishery and food processing to push the production, distribution, and the consumption of the non-rice food resources, yet be independent from food import; 3) a food business development facilities through fresh food development, processed food and fast food industry by utilizing local-based resources or raw materials is required. Therefore, it needs a clearer and better-organized program to produce the local food well manner

and accordingly; 4) trading policy in the form of import duty rates for rice, as one of the quantitative protection for the agriculture and strategic food commodity in Indonesia is urgently needed. Furthermore, the trading policy of import duty rate is meant to slow down the per capita rice consumption rate as well as to push harder on the rice production rate, so the self-sufficiency program will be lightly achieved.

Other policies which equally important are as follow: 1. a continuous technological innovation and development must be in place regularly. It shall be based on the countryside circumstances, the social cultural and economy of farmers, along with an effective training and socialization program for the farmer producers, in order to push the productivity and the production process, so an efficiency will be increase; 2. an acceleration on the government purchasing price for the rice, shall be run to push a better production with technology implementation also to support the cultivating area expansion; 3. a reduction on the input subsidized pricing, and for the new premium seeds, organic and inorganic fertilizer (Urea, ZA, SP36, NPK) in order to push a better production within a better cultivating technology implementation; 4. a development and an improvement on the agricultural facilities, especially the link of irrigation, agricultural paths, bridges and sea ports. The link of irrigation is meant to fulfil the water requirement so the cultivating index and productivity could be increased; 5. rice field printing for must be bigger than its conversion; 6. agriculture paths needed to ease the transporting of the produce from the field/farm to the road outside the farm/field, while the main roads in the village, bridges and the sea ports are needed to ease the distribution process within the region and among regions (the connectivity aspect).The conclusion is written briefly and only answering the research goals or hypotheses — not repeating the discussion. Conclusions are written critically, logically and honestly based on facts, and author must be careful in making generalization. This section is written in paragraph form, not using numbering or bullet points. For the purpose of clarity in presentation, conclusions and recommendations are written separately.

RECOMMENDATION

This paper was compiled based on BPS time series data, where data on rice production for the last 2 years were obtained using different methods. In addition, rice consumption is calculated by the number of population multiplied rice consumption per capita. Future studies should use data collected in the same way and data on real rice consumption.

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