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Assessing the impact of limiting Indonesian palm oil exports to the European Union

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Abstract

The latest challenge faced by the Indonesian palm oil industry concerns the Delegated Act that has been adopted to limit the use of palm oil in biofuels because palm oil is considered to not support the sustainable development program. The objective of this article is to assess the suspension of Indonesia's palm exports to the European Union in terms of Indonesia's economic conditions. The Global Trade Analysis Project (GTAP) model is used to assess the impact, and the results indicate that the suspension will not create significant impacts on the economic growth, GDP, macro-welfare, and exports and imports of Indonesia.

Keywords: Palm oil, European Union, Import

1 Introduction

Indonesian exports reached US$ 168.8 billion in 2017, an increase of 16.8% compared to the previous year (UN Comtrade 2018). One of the largest contributors to these exports is palm oil, amounting to 13.6% in 2017. Indonesian palm oil exports in 2017 reached US$ 22.97 billion, an increase of 26% compared to the value in 2016 (UN Comtrade 2018). In 2017, Indonesia exported approximately 29 million tons of palm oil, with the largest destination countries including India, with a market share of 25.37%; followed by the European Union, with 14.35%; and China, with 12.39% (UN Comtrade 2018). Different from India and China, which directly consumed its palm oil, European market besides consumed directly it also serve as a trade hub for other countries in the region (Rifin 2013).

For a long time, countries of the European Union, particularly the Netherlands, have been the major market destination for Indonesian palm oil as well as being countries that connect Indonesia and other European countries. However, there have been many instances in the last several years where oil imports, mainly from Indonesia, have been hindered from entering European countries. Several issues, including health, environment, and animal protection, have been considered to hamper the entrance of Indonesian palm oil to Europe. This is confirmed by the Report on Palm Oil and Deforestation on Rainforests, which stated that palm oil is a very large problem related to the issue of corruption, child labor, violation of human rights, omission of the rights of indigenous people, and a trigger to deforestation and habitat

destruction (European Parliament 2017). One of resolutions and recommendations given is to stop Crude Palm Oil (CPO) imports (including from Indonesia) in 2021. Moreover, the framework of the Renewable Energy Directive (RED) regulates renewable energy use in the European Union, where CPO is phased out as the source of biofuel due to its high emission level, although it is yet to be finalized. On the other hand, the data of Indonesian palm oil exports to the European Union showed that the need and demand for Indonesian palm oil continued to increase through the years. In 2016–2017, demand for Indonesian palm oil in the European Union market increased by 15%, and during 1996–2016, palm oil consumption in the European Union increased by 31% (UN Comtrade 2018). This condition indicates that European Union countries necessarily need palm oil for their industry. In addition, in May 2019 the European Commission has adopted the Delegated Act to limit the use of biofuels from palm oil which has indirect land-use change (ILUC) risks.

Indonesia has tried to undertake various diplomatic approaches to explain this problem, yet issues regarding palm oil continue to appear and develop. Therefore, the discourse to halt Indonesian palm oil exports to European countries ultimately prevails. By suspending Indonesian palm oil exports to European countries, Indonesia will escape criticism from many parties in Europe and can focus on developing a sustainable palm oil system based on the national law and sustainable development goals (SDGs). Based on this background, it is important to conduct a study aimed to observe and discuss the impact of palm oil export suspension to European Union on Indonesia.

Several previous studies showed that palm oil has an important contribution to the Indonesian economy; therefore, disruption in this sector will affect the other sectors. Susila (2004) specifically analyzed the Indonesian palm oil sector and found that it contributed to economic growth, poverty alleviation, and income distribution within society. The contribution of the palm oil sector was shown by the growth, investment, output, and foreign exchange earnings; it has also contributed to household revenue, playing a role in increasing household assets. In terms of poverty alleviation, the palm oil sector has contributed to income distribution within the society. The same result was obtained by Edwards (2015), who showed that expansion of palm oil's share of land in the ten districts that experienced the largest expansion would decrease poverty rate and narrow the income gap. Edwards (2019) estimates that the palm oil industry has succeeded in lifting 2.6 million rural Indonesians from poverty. At the regional level, Gatto et al. (2017) showed that contracts between smallholder palm oil farmers and private or state-owned companies significantly contributed to the regional economy especially at the village level in the form of infrastructure built by the companies; these not only benefited contract farmers but also noncontract farmers.

Perwitasari and Sari (2013) analyzed the impact of palm oil to the Indonesian economy using Input–Output table. The authors reveal that palm oil output multiplier is higher compared to the average of all sectors meanwhile the income, labor and value-added multiplier are lower compared to the average of all sectors.

Susila et al. (2007) analyzed the role of the plantation industry on the growth and economic inequality using the social accounting matrix (SAM) approach. The authors showed that the palm oil and cooking oil sectors were found to be the largest sectors contributing to economic growth, employment, and income distribution.

Susila and Munadi (2008) showed the impact of the development of the CPO-based biofuel industry on poverty. The development of the CPO-based biofuel industry will decrease the number of poor people, particularly those who live around the oil palm plantation. However, the development of CPO-based biofuels will also increase the price of cooking oil consumed by poor people, thus increasing their number.

At a micro-level, Rist et al. (2010) used primary data to show that small farmers will be able to gain profit through a high rate of return from land and labor by doing business in oil palm commodities. Feintrenie et al. (2010) also showed that oil palm was more beneficial compared to rubber and rice.

A number of researchers also analyzed the impact of decreasing number of exports on the economy of Indonesia. Wibowo (2013) showed that declining exports in the mining and industrial sectors significantly impacted the absorption of labor in the agricultural sector despite increasing exports in the agricultural sector. Based on this scenario, an 8%increase in agricultural exports, a 9.6% decrease in the mining sector and a 4.9% decline in the industrial sector will reduce the labor absorption of 210 thousand people in agricultural sector, higher than any other sector.

The Ministry of Industry (2018) analyzed the impact of the CPO ban in the European Union market on the Indonesian economy using a computable general equilibrium (CGE) model. The authors simulated two situations of the export ban, namely, the CPO ban causing decreased exports and the CPO ban followed by investment in economic activities downstream of the palm oil sector. In the first simulation, the ratio between trade and GDP decreased by 0.18%, increased the real wages by 0.26%, maintained the real GDP, decreased the imports by 0.04% and decreased the exports by 0.42%. In the second simulation, the ratio of trade to GDP increased by 0.25%, increased the real wages by 0.7%, increased the real GDP by 0.42%, decreased the imports by 0.15% and increased the exports by 0.17%. In this simulation, the ban on CPO exports had positive effects compared to the former since the increase in investment in the downstream industries of palm oil is assumed to eventually have a positive effect on ratio between trade and GDP as well as GDP and export.

Rifin (2011), using the social accounting matrix (SAM), analyzed the impact of palm oil exports to the economic sector, production factor and household. First, the decrease in palm oil exports by Rp 1 will decrease the economic output by Rp 2.27 with the largest decrease in output in the palm oil sector itself, 61.69% of the total decrease. Second, the impact of the decline in exports of palm oil products will have more influence on labor in rural areas compared to those in urban areas. Last, the decline in exports of palm oil products will also have a greater impact on the land ownership of households in rural areas.

From the perspective of the EU, Europe Economics (2014) reported the effects of the EU prohibiting imports of palm oil; these effects can be classified into three types: GDP effects, employee effects and tax effects. Prohibiting the import of palm oil will impact the resulting rise in demand by the following figures: the EU's GDP of 2.7 billion by 5.8 billion, 1.2 billion in tax revenue by 2.66 billion, and 67,000 jobs by 117,000.

Several researchers also have analyzed the impact of the import ban such as in the case of European Union ban on shrimp imports from Bangladesh in 1997 (Yunus 2009; Alam and Pokrant 2009) and the Russian embargo on several agricultural products in

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2014 (Boulanger et al. 2016; Kutlina-Dimitrova 2017). In 1997, the European Union banned shrimp imports from Bangladesh due to infrastructural deficiencies and problems related to hygiene standards; the ban lasted for 6 months until the country's shrimp industry complied with the HACCP (Hazard Analysis of Critical Control Point) (Alam and Pokrant 2009). The ban resulted in a short-term loss of exports by US$ 25 million and US$ 5 million of long-term costs, while Bangladesh's compliance with the HACCP gained an additional export value of US$ 18 million in the short term and US$ 35 million in the long term annually (Yunus 2009). While only the impact on Bangladesh is analyzed, the impact is analyzed on both sides using the CGE approach in the case of the Russian embargo. The embargo cost to Russia resulted in a high-income loss (€ 3.4 billion) (Boulanger et al. 2016), while other countries, such as those in the EU, the USA, Canada and Australia, suffered only limited losses in aggregate. There are, however, two sectors that suffered a two-digit decline, namely, vegetable and fruits as well as other meat and dairy products (Kutlina-Dimitrova 2017).

The objective of this research is to analyze the impact of suspending Indonesian palm oil exports to the EU, so Indonesia can better prepare for and mitigate the effects of the suspension. In addition, this article analyzes the impact on Indonesian economy and not only on the palm oil sector.

2 Research methods

To analyze the impact of the import ban, the computable general equilibrium (CGE) method is utilized. According to Oktaviani (2011), the general equilibrium model is a macroeconomic model that integrates micro- and macroeconomics. The structural model of CGE is built upon the basics of economic theory (microeconomic) in which the behavior of economic agents is explained specifically and in detail in the form of behavioral equations. CGE is able to describe interactions between different agents within a country/region and between countries/regions.

One of the growing CGE models is the model of Global Trade Analysis Project (GTAP) developed by Purdue University in 1993. The GTAP model not only has many advantages but also has its limitations. The GTAP model is compiled from national accounting data and input–output tables, showing consistent market interdependence (Hosny 2013; Hosoe et al. 2010). Some of the advantages of the GTAP model are

1. It is a common analytical tool used to analyze problems related to the effects of trade liberalization and price policies in the agricultural sector, therefore, any external shocks (e.g., policy changes or trade accuracy) and the consequences of changes in domestic policy due to the application of the trading rules can be measured quantitatively.
2. GTAP model can provide appropriate steps and methods for changes in welfare as a result of trade liberalization policies when compared to other methods. This model can accurately measure not only changes in aggregate welfare, but also the welfare consequences of changes in trade policies in certain sectors. This is important because in reality, policymakers may pay more attention to the impact of trade policies on individual sectors and special interest groups rather than their impact on the

Table 1 Summary of sectoral and regional aggregation

No	Sectoral
1	Vegetable oil
2	Oil seed
3	Others
No	Region
1	Indonesia
2	Malaysia
3	Thailand
4	Colombia
5	Nigeria
6	Singapore
7	European Union (EU)

overall economy. Thus, in this study, the GTAP model was used to analyze the impact of the policies implemented by the European Union on Indonesian palm products.

Meanwhile the GTAP model also has limitations, including first, focused on price as the main driving variable and ignored other influences on economic behavior (Piermartini and Teh 2005). Second, this CGE-GTAP Model only confirms that intensive driving trade changes are not taken into account (Schiff and Winters 2003). Last is the absence of result validation, which is included in other econometric models, and the market structure is assumed to be in a perfect competition market, making it difficult to perform analysis in imperfect market competition conditions (Oktaviani 2011; Kasan 2011).

2.1 Data

This study applied the model of the GTAP version 9 approach, in which 140 regions and 57 sectors are already aggregated. Data in GTAP version 9 are the initial equilibrium according to the input–output table of 2004, 2007, and 2011. In line with the objective to observe the suspension of CPO exports from Indonesia to European Union, this study will perform further aggregation based on the required and relevant region and sector. For aggregation based on region, this study will use aggregation data from the region of the European Union as a whole (Indonesian CPO export destination region), as well as the main CPO-producing countries of (1) Indonesia, (2) Malaysia, (3) Thailand, (4) Colombia, (5) Nigeria, and (6) Singapore. Despite the fact that Singapore is not considered a global producer of CPO, it is the largest CPO trader in the world. Meanwhile, the other countries were included in the region labeled rest of world (row).

This study only focused on the impact of Indonesian CPO export suspension to the European Union (with its 28 member countries), with vegetable oil focused upon as the product discussed in the aggregation. According to the GTAP program, CPO is one of the components in vegetable oil, which thus applies to vegetable oil produced in Indonesia. Therefore, the aggregation process applied to sectors such as (1) vegetable oil (vegetable oil and fats) containing CPO, (2) oilseed (oil containing oilseed), and (3) other commodities. A summary of regional and sectoral aggregation is presented in Table 1.

2.2 GTAP model and simulation

The GTAP model is widely used by researchers, academicians, and policymakers to perform empirical analyses on the impact of liberalization and change in trade policy implemented by a country. The simulation result is used as a reference to observe the impact as well as suggests recommendations toward the policy. In this case, the European Union parliament plans to establish trade policy to suspend Indonesian CPO imports in 2021 based on the agreement in the Report on Palm Oil and Deforestation on Rainforest. Even though the decision has not been finalized, the resolution already contains recommendations toward the palm oil industry. Through a statement mentioning rampant corruption in the palm oil industry with respect to child labor, violation of human rights, omission of the rights of indigenous people, and deforestation and habitat damage, the industry is considered to have created a negative impact and be mismanaged.

Hertel (1997) mentioned that there are three main components in the GTAP model. First, GTAP is developed based on the regional economy to describe the activity and behavior of economic players (company, consumer, and government). In this component, interaction between economic players exists through economic activity, both in the form of production and consumption, and the value added. The existing interaction can be observed from the flow of goods and services, as well as the flow of money between economic players/agents.

The second component of the GTAP model framework is the database, which is a component of economic data related to the matrix of bilateral trade, transportation, and protection from the input–output table model and of each country. Therefore, it is possible for the GTAP model to be the most appropriate for applied software to perform various simulations regarding the impact of free trade between countries or regions. Last, the third main component in the GTAP model is behavior which consists of four parameters, namely (a) elasticity of substitution (consumption and production), (b) elasticity of transformation that will determine the level of movement between sectors, (c) flexibility of regional investment allocation from the primary factor, and (d) elasticity of consumer demand. In addition, the model also explains that a policy implemented by a country/region will impact another country/region.

GTAP is both a model and software that can be used to analyze many countries. Analysis is done by determining simulation considering the impact of a policy (shock) on indicators from the region or sector which become the focus of analysis. Therefore, the main key from this analysis is the determination of the simulation type from the policy to be applied in each analysis.

This study will apply two scenarios or simulations to analyze the impact of suspending Indonesian CPO exports to the European Union based on macroeconomic and sectoral conditions in Indonesia. The scenarios used in this study were as follows:

a. Scenario 1 (Simulation 1/SIM1): All European Union (EU) countries ratify (agree on) the suspension of total CPO imports from Indonesia in 2021. In this situation, approximately 17–20% ($\pm$5 million ton CPO) of total CPO exports to European Union will be restricted.

Table 2 Impact of palm oil exports' stoppage to the European Union based on macroeconomic conditions of gross domestic product (GDP) and welfare level in Indonesia and other palm oil-producing countries

No	Country	Gross domestic product (%)		Equivalent variation (US $ Million)	
		SIM1	SIM2	SIM1	SIM2
1	Indonesia	− 0.00274	− 0.00138	− 213.99	− 107.24
2	Malaysia	− 0.00011	− 0.00009	10:37	7:35
3	Thailand	0.00044	0.00033	4:06	3:01
4	Singapore	− 0.00004	− 0.00005	− 2.62	− 1.95
5	Colombia	0.00004	0.00003	00:27	00:18
6	Nigeria	0	0	− 0.32	− 0.23

Description:

SIM1: Scenario in which the export of palm oil from Indonesia to the European Union halted 100%

SIM2: Scenarios in which the export of palm oil from Indonesia to the European Union halted 50%

b. Scenario 2 (Simulation 2/SIM2): European Union limits the use of palm oil for biodiesel and 47–50% of EU CPO import from Indonesia is used for biofuel; therefore, it will halt 50% of the total Indonesian CPO import to the European Union.

3 Results and discussion

3.1 The impact of palm oil export stoppage to the European Union based on macroeconomic conditions in Indonesia and several other main palm oil-producing countries

The GTAP model is an analytical model to analyze the impact of policy changes in trade among countries. Some theories show that international trade is closely related to a country's economy (Bowen et al. 2001; Cogneau and Robillard 2000). The initial part of this discussion will look at the impact of palm oil exports' stoppage to the European Union based on macroeconomic conditions in Indonesia and some of the other main palm oil-producing countries.

The stoppage of Indonesian palm oil products to the European Union will have very little impact on real GDP, welfare level, exports and import value, trade balance and terms of trade. Table 2 shows the impact of the stoppage of Indonesian palm oil exports to the European Union based on macroeconomic indicators, such as economic growth through gross domestic product (GDP) and welfare level. This condition indicates that both scenarios show different impacts. For Indonesia as the main producer, palm oil exports' stoppage to the European Union leads to a relatively small decline in real GDP of less than 1% (0.00274 and 0.00138%) for both scenarios of 100% or 50% stoppage of palm oil for nonbiodiesel exports. This is consistent with research by the Ministry of Industry (2018) and the findings of the previous multiplier analysis. The study conducted by the Ministry of Industry (2018) focuses on the ban on CPO in the European Union accompanied by investments in the CPO downstream industry. The authors look at the impact of CPO bans on the domestic CPO industry, and see the relation to CPO substitution into fuel. While this study looks at the impact of the planned termination of CPO exports to the European Union on macroeconomic and sectoral conditions

without limiting the related industries using two scenarios. The same condition has also been experienced by Malaysia and Singapore. Even though it does not have oil palm plantations, Singapore is known as a trader of palm oil from Indonesia and Malaysia. The Indonesian palm oil exports' stoppage to the European Union does not necessarily impact other producer countries (Thailand, Colombia and Nigeria), and this can be seen from the very scant rise in real GDP. Because of this, it is suspected that the European Union does not necessarily divert its palm oil supply from Indonesia to other producer countries. According to experts and palm stakeholders who were interviewed in an FGD conducted by the research team, this happens because the European Union must consistently apply the product requirements for palm oil to all producer countries, whereas the conditions of other producer countries are no better than Indonesia and there is still an 'emotional' bond in the palm oil-processing industry in Europe which has networks and good relations with palm oil producers in Indonesia.

The next indicator is the welfare level. Indonesia as the main palm oil-producer country in the world shows that palm oil exports' stoppage, both in SIM1 and SIM2, leads a decline in welfare of US $ 213.99 million and US $ 107.24 million, respectively. The greatest loss of welfare happens if palm oil exports to the European Union are stopped completely. Indonesia experiences the largest welfare loss among other main producer countries, and even countries such as Malaysia, Thailand and Colombia experienced an increase in welfare, although at a relatively small value. Malaysia experiences slight increase in welfare since the country has more developed and diversified palm oil products which has higher value added compare to Indonesia. With the stoppage of CPO, Malaysia can benefit from producing more value-added products of palm oil.

For Indonesia, the welfare level indicator shows that those who experience the impact of the export ban are the community directly involved with oil palm, such as smallholders and large/private plantations, because they will experience a short-term decline in demand and prices. This condition will reduce short-term consumption, but in the medium and long term, palm oil stakeholders, especially in industry, will make adjustments by seeking new markets outside the European Union or strengthening existing key markets (India and China) and by seeking to strengthen and utilize domestic markets that have not been optimally exploited (biodiesel–bioavtur, cooking oil, and other derivative products).[1]

The next macroeconomic indicators discussed are those of export, import, trade balance and terms of trade as presented in Table 3. Indonesia as the main palm oil producer in the world shows that if the palm oil exports' stoppage to the European Union is fully implemented, then there will be a relatively small impact on total Indonesian exports, that is, less than 1% (i.e., 0.128% if exports are stopped completely and 0.06% if the export of palm oil for biodiesel is halved). This finding is the same as the results of a study conducted by the Ministry of Industry (2018) that looks at the impact of the European Union's import cessation on Indonesian CPO which is used as a biodiesel material. The study showed that the import and export indicators fell by 0.04 and 0.15%, respectively. The decline in exports is suspected to be due

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[1] This was the conclusion of the interview and FGD with oil palm stakeholders in Pekanbaru, Medan and Pontianak.

Table 3 Impact of stoppage of palm oil exports to the European Union against macroeconomic conditions of export, import, trade balance, and terms of trade in Indonesia and some of the World Major Palm

No	Countries	Export (%)		Imports (%)		Trade Balance (US $ Million)		*Terms of trade* (%)	
		Sim1	Sim2	Sim1	Sim2	Sim1	Sim2	Sim1	Sim2
1	Indonesia	− 0.128	− 0.0641	− 0.242	− 0.121	22.37	11.16	− 0.0950	− 0.0476
2	Malaysia	0.006	0.0026	0.014	0.007	− 6.92	− 4.89	0.0047	0.0022
3	Thailand	0.001	0.0004	0.003	0.001	− 1.32	− 0.66	0.0011	0.0005
4	Singapore	− 0.001	− 0.0003	− 0.002	− 0.001	− 1.75	− 0.99	− 0.0008	− 0.0004
5	Colombia	0.001	0.0006	0.001	0.001	0.15	0.06	0.0003	0.0001
6	Nigeria	− 0.0001	− 0.0000	− 0.001	0	0.40	0.18	− 0.0003	− 0.0001

Description:

SIM1: Scenario in which palm oil exports from Indonesia to the European Union are stopped 100%

SIM2: Scenario in which the export of palm oil from Indonesia to the European Union is stopped 50%

to, in recent times, palm oil, as it is the largest contributor to the Indonesian export structure. Similarly, palm oil export stoppage to the European Union will impact the decreasing Indonesian total imports from various countries. A higher decline in the total import from Indonesia implicates a positive balance of trade.

In Table 3, Indonesian imports, in both the first (SIM1) and second scenarios (SIM2), experienced a decrease of 0.242 and 0.121%, respectively. This shows that, although Indonesia will halt its palm oil exports to the European Union, this will not have a major impact on its national trade performance. It is shown that when compared to other top oil-producing countries, Indonesia has a positive trade balance. This means that the Indonesian export value is still far greater than the total import value, despite declining Indonesian exports. This condition also shows that, through the palm oil export stoppage to the European Union, Indonesia has the greatest benefits compared with other palm oil producer countries.

The last macroeconomic indicator discussed is the terms of trade (TOT) which is a comparison of the relative price of goods between two countries (Oktaviani et al. 2010). In addition, TOT also shows the competitiveness of a product or country (Oktaviani et al. 2010). Although Indonesian trade balance has a positive value, the decline in exports and imports indicates the decline in competitiveness of all Indonesian products, especially palm oil. This is indicated by decreased terms of trade when Indonesian palm oil exports are partially or completely stopped to the European Union. The decline was also not too significant (less than 1%) at 0.095% and 0.047% for both scenarios, respectively. Several other countries, such as Malaysia and Thailand, have increased competitiveness, even though they are very small at less than 0.01% for each scenario. Based on the interviews and FGDs conducted in several cities, the European Union's decision to ban Indonesia has generated momentum to improve and better prepare the Indonesian palm oil industry, especially in terms of fulfilling certifications (RSPO, ISPO, ISCC) and coordinating an impartial policy of oil palm. It is hoped that improvements to national palm oil management will recover the negative image of palm oil for major buyers in the international market.

Table 4 Impact of stoppage of palm oil exports to the European Union based on sectoral conditions in Indonesia

No	Sectoral indicators	Scenario	
		Sim1	Sim2
1	Output	− 4.79	− 2.40
2	Land	− 2.33	− 1.16
3	Price	− 0.10	− 0.04
4	Unskilled labor	− 4.86	− 2.43
5	Skilled	− 4.82	− 2.38

Description:

SIM1: Scenario in which palm oil exports from Indonesia to the European Union are stopped 100%

SIM2: Scenario in which the export of palm oil from Indonesia to the European Union is stopped 50%

3.2 Impact of palm oil export stoppage to the European Union based on the sectoral condition in Indonesia

Palm oil export stoppage to European Union will have relatively small impact on output, land use, prices and employment. Table 4 provides information on the impact of palm oil export stoppage to the European Union based on the sectoral indicators in Indonesia. The indicators used are output from CPO, domestic prices, land use, and labor absorption (skilled and unskilled). It has been theoretically shown that trade restrictions will have a negative impact on countries that implement them (Bowen et al. 2001). The European Union plan to sanction Indonesia to halt imports from 2020 is due to the reasons mentioned by the parliament of the European Union in that palm oil is largely problematic with respect to the issues of corruption, child labor, violation of human rights, omission of the rights of indigenous people, and deforestation and habitat damage. This statement is found in the Report on Palm Oil and Deforestation on Rainforest and will implicate sectoral conditions particularly within the palm oil industry in Indonesia.

The output and land indicator are changes due to the impact of Indonesian palm oil export stoppage to the European Union. If palm oil exports are stopped completely, palm oil output, such as palm oil and its derivatives, only decreases by 4.79 and 2.40% for each scenario, respectively. This condition shows that the industry will adjust its production (reduce its production) in the short term, while in the long term it will be readjusted by trying to find new markets, the use of the domestic market and utilization of the domestic downstream sector. The implication of reducing output is the fall of oil palm land use, but this needs to be noted that oil palm is an annual crop that is not easily replaced or converted to other crops. Based on the two scenarios, there will be a reduction in land use of 2.33 and 1.16%, respectively.

In addition, the effect of palm oil export stoppage to the domestic price is negligible, indicated by the value of 0.1 and 0.04% obtained for each scenario, respectively. While there was a price adjustment, it was only temporary, and thus the transmission of price changes was relatively insignificant. It could be seen that the domestic price only decreased by 0.1%; however, based on the focus group discussion (FGD) and discussions, price changes were very sensitive. A very small price change can be directly transmitted to the price of palm oil input, such as fresh fruit bunches (FFBs) at the farm level (Susila

2004). In this condition, it is necessary to anticipate unfavorable price changes at the farmer level as the affected party.

Another indicator that needs to be considered as a result of the Indonesian palm oil export stoppage is employment. Based on the scenarios and the general equilibrium economic model and software of GTAP version 9, there is a decrease in employment within the palm oil industry in Indonesia. This is seen from the absorption of both skilled labor (professional sector) and unskilled (plantation and other informal labor in the palm oil industry) labor, who both experienced an average decline of 4.8%. Similar results were also generated from the simulation of 50% palm oil export stoppage. This condition is expected due to the short-term adjustments in output, thus the use of labor in the industry should be rationalized. The same outcome was also found in smallholder plantations wherein the owners themselves harvest the oil palm, work that was previously performed by labor outside the household. However, this condition will not be a long-term result, since the industry will adjust the non-exported output to be further processed and absorbed by the domestic market.

4 Conclusion

There were no significant impacts found in the suspension of palm oil exports on Indonesia's macroconditions. There is no significant ban on Indonesian CPO imports by the European Union, alleging that the contribution of Indonesia's CPO exports to the European Union is only 14% of total CPO exports (2017). So that EU policies to stop CPO imports from Indonesia have not had a significant impact on macroconditions. Moreover, in terms of sectoral indicators such as output, land use, and labor absorption, there were nonsignificant impacts. Therefore, the European Union's suspension of palm oil exports by the government of Indonesia will, in general, not generate negative impacts on the national and sectoral economy of Indonesian palm oil industry.

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