



## Indonesian's Position in The World Vegetable Oil Trade

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### Article Information    Abstract

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Indonesia's position as the largest vegetable oil producer is very strong in the world trade. Nonetheless, the Netherlands and Malaysia trade the Indonesian palm oil, which leads to a significant generation of profits. This research demonstrates the role of Indonesia in the global trade of vegetable oil. It illustrates the rivalry among vegetable oil producers and exporters and the dependence of vegetable oil importers on Indonesia. The annual volume data of vegetable oil production, export, and import sourced from FAO STAT in 2010-2020 were used. The data were processed and analyzed using descriptive statistics. Palm oil is the most widely acquired vegetable oil. The production of this oil is plentiful, and its price is the most economical compared to other vegetable oils. Soybean oil was the main competitor of palm oil, with the primary producers being China and the United States. The negative campaign against Indonesian palm oil could not weaken Indonesia's competitiveness in the global vegetable oil trade. Indonesia should limit palm oil exports to Europe and Malaysia while increasing exports to countries that only use it for domestic consumption. Coconut oil had the most potential to increase vegetable oil production in Indonesia. Indonesia's prominence in the global trade of edible oil is supreme. However, this preeminent status may be deteriorated by nations engaged in the commerce of Indonesian palm oil. Therefore, Indonesia should continuously update the world vegetable oil trade map to emphasize the point and level of export elevation or reduction. Indonesia should also develop and increase the production of other vegetable oil products to strengthen its position in the world's oil trade.

## INTRODUCTION

Vegetable oil is commonly extracted from seeds, including soybean, grape, and cocoa butter. It is also obtained as fats from other fruit parts, with olive, palm, and rice bran oils being appropriate. Besides being edible, most of these oils are used to produce cosmetics, soaps, paints, and fuel/biofuel. Vegetable oils have a wide range of uses in various industries. They have been used as metalworking fluids (MWFs) in small-scale metalworking operations and industries with strict environmental regulations, offering improved lubricity, cooling properties, and stability of the oil (Afonso *et al.*, 2023). Vegetable oils are also used to prepare lipid-based nanocarriers for pharmaceutical and cosmetic products, showing superior efficacy to commercial therapy (Fagionato Masiero *et al.*, 2021). In Green Chemistry, vegetable oils are used as solvents, cosolvents, reactants, and raw materials for derived compounds, offering economic and safety advantages (Cheikhyoussef and Cheikhyoussef, 2020). Additionally, vegetable oils have the potential to replace petroleum-derived fuels in low and medium-speed diesel engines, reducing the emission of pollutants and greenhouse gases (Torres-García *et al.*, 2020). In the food, pharmaceutical, and chemical industries, vegetable oils are valued for their high energy content, essential fatty acids, fat-soluble vitamins, and antioxidant activity, although they can be contaminated with mycotoxins (Can and Duraklı Velioglu, 2023).

The above indicates that vegetables are highly consumed even when manufactured by only a small percentage of countries worldwide. Since some countries do not produce these oils, trading engagement is often practiced. Indonesia is also globally considered the largest vegetable oil producer, with full control not exercised over the world palm oil trade. This is because Malaysia and the Netherlands dominate international palm oil trade countries.

European countries do not produce palm oil, although they export many palm products imported from Malaysia and Indonesia. This shows that the consumption of the product in

Europe is quite large. This continent often exerts pressure to halt or restrict the development of the palm oil industry, aiming to undermine Indonesia's position in the global vegetable oil trade. According to Purba (2017), pressure was exerted to promote the production of grape-seed and sunflower oils, the domestic crops in the European Union used mainly to source vegetable oil.

The action resulted in avoiding dependence on palm oil imports. The strategy was challenging due to palm oil's global reputation. It also defeated soybean oil's dominance in the world market. Palm oil's productivity led to its availability and trading to European countries. European countries imported palm oil due to the low productivity of rapeseed and sunflower oils.

Malaysia is the second palm oil-producing and exporting country after Indonesia (Abdul Rahman *et al.*, 2023). This was in line with several previous studies, such as Murdayanti, Ibrahim and Sutanto (2021) and Ramadhani and Santoso (2019) where various measurement methods, including RCA (Revealed Comparative Advantage), RSCA (Revealed Symmetric Comparative Advantage), and CMS (Constant Market Share), were used to show the better competitiveness level of Indonesia than Malaysia. Yanita, Napitupulu and Rahmah (2020) also explained that domestic production and world and petroleum prices affected the competitiveness of Indonesian palm oil exports in the global market. Meanwhile, the factors comparatively influencing competitiveness were the area of oil palm plantations, Malaysia's export volume, soybean oil prices, and exchange rates.

Based on Wang (2016) the drivers and inhibitions of trade were analyzed in four types of vegetable products, namely palm, rapeseed, soybean, and sunflower seed oils. Palm oil displayed the most significant degree of competitiveness among the four vegetable oils, concurrently demonstrating the lowest substitution rate. This observation substantiated that the product was remarkably resistant to being substituted by alternative oils. In light of this particular context, it becomes evident that palm oil was exclusively cultivated in tropical regions,

rendering it arduous to replace the vegetable oils produced in different geographical locales. Indonesia is the largest producer of palm and vegetable oils in the world. This shows that the global competitiveness of this country in the world vegetable oil trade needs to be continuously considered and analyzed. Until Indonesia loses money in the trading market, other competitors will continue to press its position to become the only producing country with greater enjoyable trade benefits. Therefore, this study aims to analyze the patterns by which the competitiveness level of Indonesia compares with vegetable oil producers, exporters, and importers. It also aims to provide input for the government to determine the strategies capable of strengthening the country's position in the international vegetable oil trade. The importance of this study is highly emphasized because no previous report has attempted to analyze and describe the competition between countries in the global vegetable oil trade. The results obtained are also expected to provide insight into the significance of Indonesia to many nations trading palm oil. This is because the country often produces income for the concerned nations, specifically Malaysia and the Netherlands. Based on the results, Indonesia is also expected to organize strategies to control the world vegetable oil trade.

Indonesia encounters rivalry with Malaysia as the leading palm oil producer and with other nations involved in producing vegetable oil. No study delineates Indonesia's standing in the global trade of vegetable oil. This study aims to explicate Indonesia's position in the international trade of vegetable oil, thereby providing a valuable point of reference for formulating strategies for the trade of Indonesian palm oil.

## RESEARCH METHODS

A descriptive statistics method was used in this study to process the data sourced from the Food and Agriculture Organization (FAO). This was because the FAO provided comprehensive data for vegetable oils, with the available information from 2010 to 2020. An analysis was

also conducted based on a 10-year sequence, providing sufficient time to elucidate the behavior of the world vegetable oil trade. Furthermore, the descriptive statistics method involves processing raw data into analyzable information, including calculations for averages, percentage values, and other relevant statistical requirements. These processed data were presented through various illustrations and then analyzed and interpreted.

For each vegetable oil product, the analyses of production, export, and import data from all countries were carried out, with the unit emphasizing thousands of tons. These analyses included vegetable oil production, export, and import volume. The countries supplying the highest oil products were also determined by sorting export and production data. However, the import data analysis was performed to determine the consumption behavior of vegetable oils. From these descriptions, the vegetable oil data of FAO emphasized various products, such as soybean, groundnut, sunflower-seed, rape and mustard, cotton-seed, palm kernel, palm, coconut, sesame-seed, olive, rice bran, and maize-germ oils.

An analysis was subsequently conducted after determining Indonesia's production, import, and export position. This analysis was performed to answer the following questions: 1) What is Indonesia's bargaining position in the world vegetable oil trade? 2) To which countries should Indonesia increase vegetable oil exports? 3) What vegetable oils are competitors for Indonesia, and which countries produce them? Moreover, 4) What is the competition between Indonesia and palm oil producers?

In this study, Malaysia and the Netherlands were some countries of specific interest. From this context, Malaysia was considered the main competitor of Indonesia in the international palm oil trade. Meanwhile, the Netherlands formed the trading system in the country during the colonization era, which lasted 350 years. This nation had played a significant role in determining the trade of Indonesian commodities until the modern era.

## RESULTS AND DISCUSSION

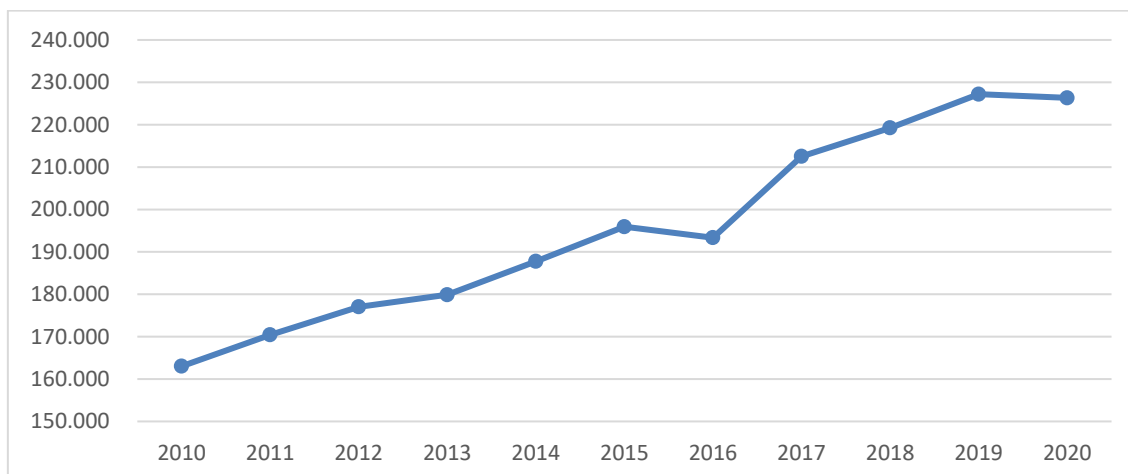
The results were presented in 2 subsections: vegetable and palm oil trades. This indicated that the potential for Indonesia to increase its bargaining position was enormous, as palm oil was not the only vegetable product produced. Indonesia could also manage any vegetable oil, with almost all oil-producing crops being cultivated. From this context, coconut oil was the most promising product for increasing production and export. It was also highly emphasized by the Philippines, Indonesia, and Malaysia, ASEAN's three largest exporting countries. According to Aulia *et al.* (2020), the position of Indonesian crude coconut oil and its derivatives were analyzed than that of the competitors from 2001 to 2017, using RCA (Revealed Comparative Advantage), AR (Acceleration Ratio), ISP (Trade Specialization Index), and ESI (Export Similarity Index). Based on the results, Indonesia had high competitiveness and the highest accelerated export growth of crude coconut oil compared to the Philippines and Malaysia. It also had a palm oil market similar to that of the Philippines.

Although Indonesia was the largest producer and exporter of palm oil, Malaysia still controlled the international trade, a competing producer of the country, and the Netherlands. Currently, Indonesia lacks a specified benchmark price for palm oil. The benchmark prices employed in global commerce are those of Malaysia and the Netherlands. From this context, the Netherlands exported all palm oil from Indonesia after the initial importation from Malaysia. This indicated that the profits generated from Indonesian palm oil production

were enjoyed mainly by the competitors (Malaysia and the Netherlands). However, the country (Indonesia) could export its oil product (palm oil) to other importing nations for domestic consumption and not re-export. Based on these results, a strategy was needed to continuously reduce the volume of exports to Malaysia and the Netherlands. This increased direct exports to other user countries, such as India and China. Indonesia should also be able to minimize the opportunity for other nations to generate high profits from its palm oil trade.

Figure 1 presents the development of world vegetable oil production from 2010-2020. This indicated that vegetable oil production continuously increased with the increasing demand for oils, precisely fuel to replace petroleum. Kojima *et al.* (2014) analyzed the global demand for major edible and non-edible vegetable oils, using 161 cross-country panel data from 1991 to 2011.

The paper used seemingly unrelated regressions to estimate the demand system with eight compensated demand equations. The paper reported own-price, cross-price, and expenditure elasticities for each of the eight vegetable oils. The paper aimed to identify the demand system for vegetable oils in the United States, focusing on the wholesale markets of the eight vegetable oils. The elasticity estimates obtained from the analysis are essential for future research, policy analysis, simulation, forecasting, and equilibrium displacement studies. Compared to food use, income elasticity was significantly higher for industrial implementation, indicating that demand for non-food vegetable oils was expected to increase with global wealth.



**Figure 1.** Development of World Vegetable Oil Production 2010-2020 (Thousand Tons)  
Source: FAO Stat, 2023 (Processed)

Palm oil was the most widely produced vegetable product (31.1%), accompanied by soybean (25.4%) and rape/mustard oils (12.6%). Meanwhile, Sunflower Oil accounted for 8.5% of the total production, as observed in Table 1. (Benavides *et al.*, 2013) also conducted an economic feasibility analysis to develop vegetable products, such as soybean oil, as biodiesel in the United States. This was because

the country was the second-largest soybean oil-producing country after China. In this case, feasibility was analyzed regarding technical aspects, transportation and storage costs, seasonal factors, and raw material availability. This suggested that biodiesel production from soybean oil should be considered for subsequent analysis.

**Table 1.** Average Vegetable Oil Production per Year 2010-2020

No	Vegetable Oil	Average (Thousand Tons)	Percentage
1	Coconut Oil	3,167	1.6%
2	Cotton-seed Oil	4,703	2.4%
3	Groundnut Oil	5,003	2.6%
4	Maize-Germ Oil	2,691	1.4%
5	Oil crops Oil, Other	16,109	8.2%
6	Olive Oil	3,343	1.7%
7	Palm Oil	60,880	31.1%
8	Palm kernel Oil	6,719	3.4%
9	Rape and Mustard Oil	24,582	12.6%
10	Rice bran Oil	1,141	0.6%
11	Sesame seed Oil	997	0.5%
12	Soybean Oil	49,666	25.4%
13	Sunflower seed Oil	16,703	8.5%
14	Total	195,706	100.0%

Source: FAO Stat, 2023 (Processed)

From these results, Indonesia was the world's largest palm and palm kernel oil producer. Besides these products, it also

manufactured Coconut, Groundnut, Maize Germ, Soybean, Sunflower-seed Oils, and other vegetable products listed in Table 2.

**Table 2.** Indonesian Position as a Vegetable Oil Producer

No	Vegetable Oil	Number of Manufacturers	Ranking Indonesia	Does Indonesia Produce?
1	Coconut Oil	53	2	YES
2	Cotton-seed Oil	68	99	NOT
3	Groundnut Oil	79	20	YES
4	Maize-Germ Oil	51	37	YES
5	Oil crops Oil, Other	124	1	YES
6	Olive Oil	31	56	NOT
7	Palm Oil	43	1	YES
8	Palm kernel Oil	35	1	YES
9	Rape and Mustard Oil	61	81	NOT
10	Rice bran Oil	15	32	NOT
11	Sesame seed Oil	43	63	NOT
12	Soybean Oil	101	14	YES
13	Sunflower seed Oil	78	53	YES

Source: FAO Stat, 2023 (Processed)

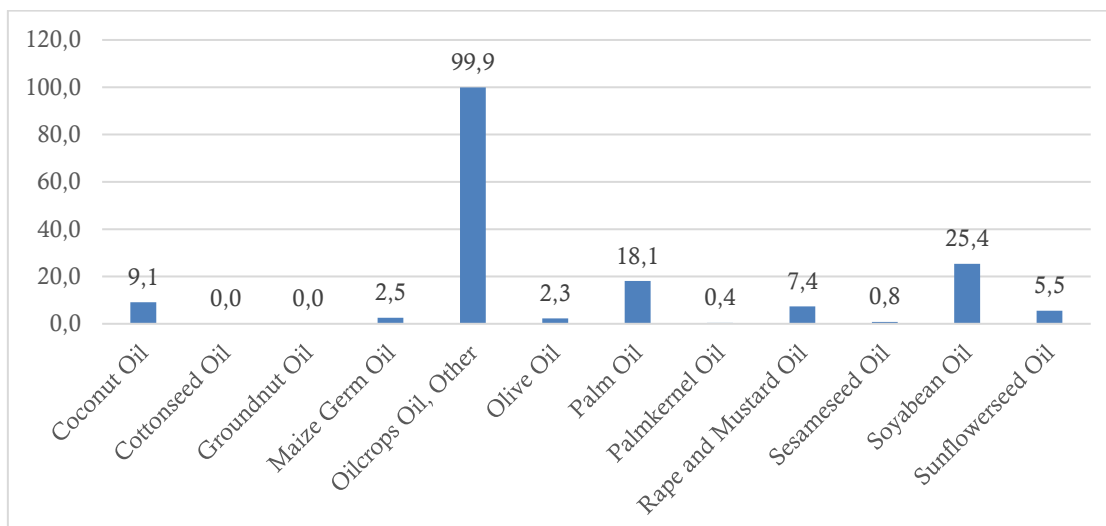
Although Indonesia was the leading exporter of palm oil, many exporting countries were still observed. This indicated that many nations produced palm oil in quantities exceeding their domestic consumption, with some countries solely engaging in the production process for trading purposes. Coconut oil also had the potential to be developed since Indonesia was the second exporting country after the Philippines. Based on the results, the other oil-crops category was not included in the remaining 12 categories, with Indonesia being the number 1 exporter. This indicated that the country produced and exported other vegetable oils.

Based on (Agustira *et al.*, 2018), corn and soybean were technically used as intercrop plants in areas where oil palm was yet to be developed. This analysis was conducted in the Sarangani Posi plantation, Sarolanguni Jambi Regency, using the RCR (Revenue Cost Ratio), ROI (Return on Investment), LER (Land Equivalent Ratio), and LEOR (Land Equivalent Optimize Ratio) methods. The results showed that corn

and soybeans had various potential benefits. Regarding land use efficiency, corn was better than soybean as an intercrop in oil palm.

Gunawan, Vanany, and Widodo (2021) also identified operational bottlenecks in Indonesian vegetable oil development. Compared to other food commodities, operational constraints in the oil chain had not been specifically studied. Developing vegetable oils in Indonesia also involved social, economic, and environmental factors. In this case, the barriers associated with the edible oil trade were customer demand, transaction models, customer willingness to pay, consumer trust, and indirect sales systems.

Indonesia only performed a few importation activities as a world vegetable oil-producing country. Figure 2 presents the vegetable products imported by the country, excluding cotton-seed and groundnut oils. In this case, soybean oil was the most imported product by Indonesia, with China and Argentina being the largest producers and exporters, respectively.



**Figure 2.** Average Indonesian Vegetable Oil Imports per Year 2010-2020

Source: Trademap.org, 2023 (Processed)

From these results, Russia and Ukraine were the world's largest sunflower oil producers. Appendix 1 shows that the highest average annual production during 2010-2020 was in Ukraine, accompanied by Russia. The ongoing conflict between the two countries, since February 2014, hindered the global production and exportation of sunflower oil. The peak of the conflict was also observed on February 24, 2022, when Russia launched a full-scale invasion of Ukraine, with the war still in progress. In addition, sunflower oil was a crucial product for both countries, similar to the importance of palm oil in Indonesia. According to Zavorotniy and Bilyk (2017), the military aggression of Russia against Ukraine, the annexation of its territory, and the economic blockade greatly affected the growth of sunflower oil production in the oppressed country (Ukraine). This was because oil was a driving force for the GDP development in Ukraine, being a primary export product. Support was also sought from the EU (European

Union) for the country to continuously integrate into the European economic environment toward boosting its sunflower oil production. In (Borodin and Salnikov, 2018), the export of sunflower oil from Russia and other European countries increased, with India and China being the major consumers and importers. This proved that the growing markets in both countries were potential trading spots for Russian products. Russia and other European countries were also continuously developing the exportation of processed sunflower oil, leading to the elevation of the export value of the product. In addition, Russia was confronted with tough competition in producing and exporting sunflower oil, with Kazakhstan and Ukraine being strong competitors for the seeds.

As the most extensive vegetable product, palm oil was a substitute for sunflower oil. This was observed from the growth data of exports sourced from trademap.org, as shown in Table 3.

**Table 3.** Export Growth (%) Quarterly 2020-2022 Sunflower Oil (Russia and Ukraine) and Palm Oil (Indonesia)

Period	Russia	Ukraine	Indonesia
2020-Q2	0	7	1
2020-Q3	-30	-37	10
2020-Q4	12	53	16
2021-Q1	13	-28	-19
2021-Q2	-37	-9	-8
2021-Q3	-16	-34	41
2021-Q4	51	118	-26
2022-Q1		-34	-19
2022-Q2		-46	-26
2022-Q3		85	139
2022-Q4		19	2

Source: Trademap.org, 2023 (Processed)

Since 2022, the exports of Russia have ceased due to the sanctions obtained from the war with Ukraine. In Table 1, several periods emphasized the decline of sunflower oil exports from Russia and Ukraine, accompanied by the elevation of palm oil exportation from Indonesia. For example, in the third quarter of 2020, sunflower oil exports from Russia and Ukraine declined by 30% and 37%, respectively, with the exportation of palm oil from Indonesia increasing by 10%. A similar trend was observed in the third quarter of 2021, with sunflower oil exports from Russia and Ukraine declining by 16% and 34%, respectively, while palm oil exportation increased by 41% in Indonesia.

Based on these results, various difficulties were encountered when predicting the patterns by which the position of Indonesia was affected

in the trade competition with Russia and Ukraine regarding the production of sunflower oil amid the ongoing war. In this case, the global demand for palm oil likely remained high, with the supply of sunflower oil from Russia being hindered. However, Indonesia should remain vigilant against the increasing production by Ukraine and other sunflower oil-producing countries. This emphasized meeting the global demand for the product, as observed before the war. During the export sanctions, Russia was also developing other derivative products of sunflower oil to increase value at the war's end and when export sanctions were lifted. In conclusion, soybean oil was the second largest vegetable product after palm oil, with China and the United States being the largest producers. Table 4 shows the average soybean oil production by the top 10 countries.

**Table 4.** Average Annual Production of Soybean Oil in the Top 10 Producing Countries

Rank	Country	Production (000 tons)
1	China	13,399
2	United States of America	9,922
3	Brazil	8,168
4	Argentina	7,374
5	India	1,580
6	Germany	629
7	Mexico	595
8	Paraguay	592
9	Spain	578
10	Netherlands	546

Source: FAO Stat, 2023 (Processed)



According to the results, India, China, and the United States were the first, second, and eighth-largest importers of palm oil, respectively. In this case, the average annual palm oil imports

from China and the United States were 6 million and 1.3 million tons, respectively. Table 5 presents the average palm oil imports by the top 10 importing countries.

**Table 5.** Average Annual Palm Oil Imports of Top 10 Countries

Rank	Country	Import Value (000 tons)
1	India	7,877
2	China	6,033
3	Pakistan	2,497
4	Netherlands	2,460
5	Bangladesh	1,419
6	Italy	1,404
7	Spain	1,327
8	United States of America	1,275
9	Nigeria	1,194
10	Germany	1,118

Source: FAO Stat, 2023 (Processed)

The competition between palm and soybean oils was evidenced by the cointegration between their prices (Othman, 1998). This concluded that a long-term relationship was found between the prices of both products. A two-way causality relationship was also observed, indicating the influential correlation of the prices. Moreover, a stronger correlation was found between soybean oil costs and palm oil prices. Since China was the largest consumer of

vegetable oils, its imports were mainly conducted to meet domestic demand. The United States also uses less palm oil due to lower vegetable oil consumption and substantial production of other products. This was supported by the low level of soybean oil exports from China despite being the largest producer. Table 6 presents the soybean oil exports from the top 12 countries, with China exhibited as the 12th largest exporter.

**Table 6.** Average Annual Export of Soybean Oil from the Top 12 Countries

No	Country	Export (000 tons)
1	Argentina	4,734
2	Brazil	1,414
3	United States of America	1,058
4	Paraguay	529
5	Netherlands	487
6	Spain	401
7	Russian Federation	381
8	Bolivia (Plurinational State of Bolivia)	329
9	Germany	313
10	Ukraine	155
11	Malaysia	138
12	China	130

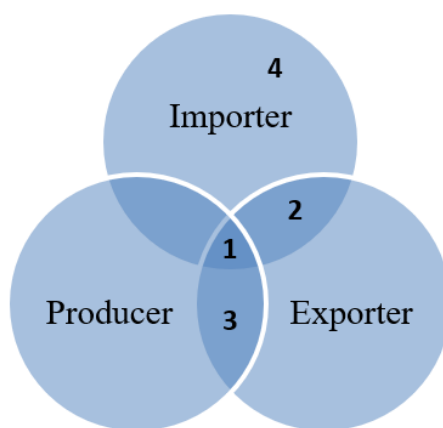
Source: FAO Stat, 2023 (Processed)

Table 6 shows Malaysia's high soybean oil export to China, while Indonesia was not active in the exportation market. This showed that the

position of Malaysia was more dominant than Indonesia in the global vegetable-oil trade due to its engagement in the larger trade of various

products, including palm oil. In Bentivoglio, Finco, and Bucci (2018), the factors influencing the production of Indonesian palm oil were analyzed. This explained that soybean oil price, Malaysian palm oil harvested area, and consumption significantly affected Indonesian oil palm production. Indonesia's position also

depended on various global vegetable oil trade factors. Moreover, the dominant countries in the trading industry influenced Indonesian palm oil production and the country's engagement behavior in the vegetable oil trade. The positions of several countries were also categorized, as shown in Figure 3.



**Figure 3.** The Country's Position in the International Vegetable Oil Trade  
Source: Data Processed, 2023

Based on Figure 3, the countries were categorized into Types 1, 2, 3, and 4. In Type 1, Malaysia generally encompassed three roles: producers, importers, and exporters. This indicated that the country imported and exported palm oil from Indonesia to other countries, specifically the Netherlands. Type 2 also included the Netherlands, which imported and exported oil products from Malaysia and Indonesia to other nations. This indicated that the country was not a palm oil producer. Type 3 subsequently emphasized Indonesia, which exported the excess oil products being used domestically. Meanwhile, Type 4 contained

India and China, which only imported palm oil for personal consumption without re-exportation. Since the production of other vegetable oils was not as extensive as palm oil, the countries' positions in international trade did not exceed the product (palm oil).

Not all exporters were considered producers in the vegetable oil trade, as shown in Table 9. When the number of the parties involved emphasized a negative difference, more exporters were observed than producers. This indicated that the countries only exporting vegetable oils could mediate trade, with palm oil having the most intermediary traders.

**Table 7.** Number of Vegetable Oil Exporters and Producers

No	Vegetable Oil	Number of Exporters	Number of Manufacturers	Difference between Producer and Exporter
1	Coconut Oil	47	53	6
2	Cotton-seed Oil	36	68	32
3	Groundnut Oil	27	79	52
4	Maize-Germ Oil	53	51	-2
5	Oil crops Oil, Other	125	124	-1
6	Olive Oil	46	31	-15
7	Palm Oil	100	43	-57

No	Vegetable Oil	Number of Exporters	Number of Manufacturers	Difference between Producer and Exporter
8	Palm kernel Oil	53	35	-18
9	Rape and Mustard Oil	59	61	2
10	Rice bran Oil	2	15	13
11	Sesame seed Oil	30	43	13
12	Soybean Oil	92	101	9
13	Sunflower seed Oil	87	78	-9

Source: FAO Stat, 2023 (Processed)

Based on the results, 62 intermediary traders or countries only concerned about exporting palm oil were observed. These countries with an average export value between 2010-2020 were exhibited in Appendix 2. Only five countries also produced palm oil without exportation, including Central African Republic, Gambia, Paraguay, Guinea-Bissau, and Burundi. Meanwhile, 38 nations were considered producers and exporters of oil products, with the

average exportation and production values presented in Appendix 3.

Intermediary trading countries often export by initially importing palm oil from producers before exportation. In this case, the Netherlands was considered the country with the most intermediary traders. Table 8 illustrates the export and import data on the Netherlands Palm Oil Trade in 2021.

**Table 8. Netherland Palm Oil Trade in 2021**

No	Description	Volume (tons)	Import Percentage
1	Export to World	1,042,938	-
2	Import from World	2,009,361	100%
4	Domestic Consumption	966,423	-
3	Import from Indonesia	265,058	13%
4	Import from Malaysia	638,219	32%
5	Import from ASEAN	951,083	47%
6	Import from America	586,513	29%
7	Import from Europe	80,721	4%
8	Import from Africa	34,724	2%

Source: Trademap.org, 2023 (Processed)

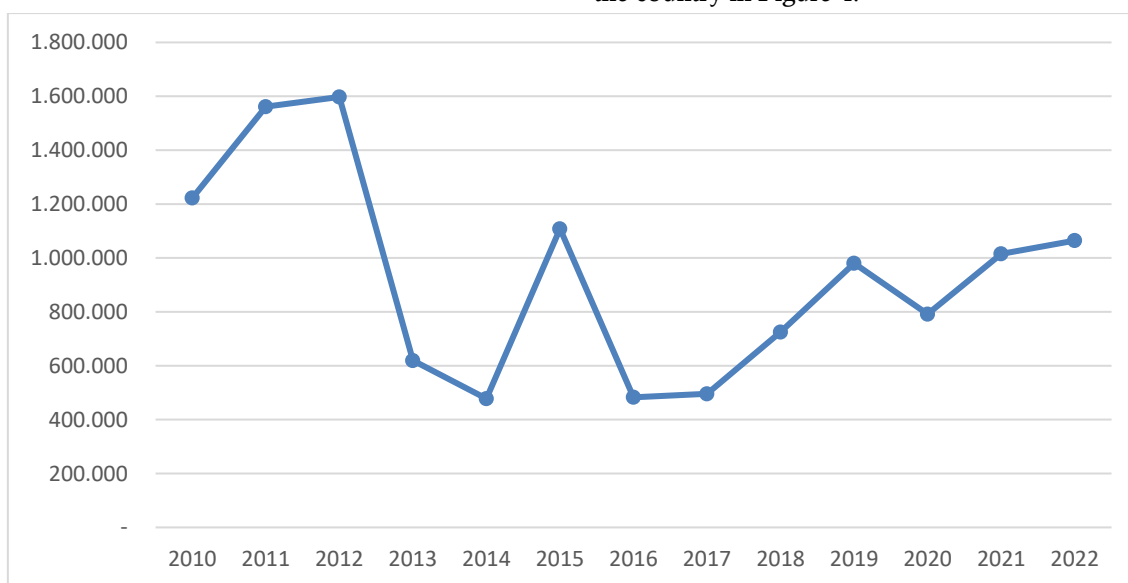
In Table 10, most of the palm oil (52%) imported by the Netherlands was for re-export, with only 48% used for domestic consumption. In this case, 32% and 13% of the imported products originated from Malaysia and Indonesia, respectively. The Netherlands also imported palm oil from various continents, such as the Americas, Africa, and Europe, at 29%, 2%, and 4%, respectively. Furthermore, Indonesia encountered stiff competition from Malaysia. This was because the products traded by the Netherlands from Malaysia were more than those of Indonesia. Among all Asian nations, the Netherlands exclusively procured oil products from ASEAN countries. This was because the

value of imports from Asia and ASEAN was equal. The significance of ASEAN also emphasized its commitment to free and open trade among the member countries. From this context, the association's trade agreement impacted the transactions between Indonesia and Malaysia. However, the agreement should not have a detrimental effect on Indonesia.

According to Zuhdi *et al.* (2021), the competitiveness of Indonesian palm oil exports worldwide was analyzed. This was accompanied by an evaluation of the strategies implemented to increase the country's competitiveness in the trading industry, using the 1993-2017 Indonesian palm oil export data. The analysis was also

motivated by the palm oil discrimination carried out by the European Union against the Indonesian commodity. Based on the results, the export performance of the country's oil products increased in 2017. This indicated that Indonesia had palm oil competitiveness due to the increasing volume of exports to major importing countries, such as India, Pakistani, and European nations. In addition, the country was highly competitive in the European and Asian markets.

The Netherlands also had a strong relationship with Indonesia due to the trading system formed by the Dutch during the colonization era. This indicated the progression of the persistence of the system until the present, with the openness of the international market allowing all countries to trade any product regardless of its origin. Besides trading palm oil, Malaysia also traded the oil products owned by Indonesia, as evidenced by large imports from the country in Figure 4.



**Figure 4.** Malaysia Import from Indonesia 2010-2022

Source: Trademap.org, 2023 (Processed)

From 2010-2022, the average Malaysian palm oil imports from Indonesia each year were 934,067 tons, with 1,015,239 tons observed in 2021. Meanwhile, the imports were only 638,219 tons from Malaysia to the Netherlands (Table 6.2). This indicated that all palm oil sold by Malaysia to the Netherlands originated from Indonesia, which emphasized a very detrimental condition to the country. In this case, the trade profits that should belong entirely to Indonesia were shared with merchant countries, specifically Malaysia and the Netherlands. China is also a country that should be considered in the world palm oil trade. Increasing palm oil exports to the country improved Indonesia's trade balance deficit (J. H. V. Purva, 2020).

Moreover, a faster increase was observed in Chinese consumption than in its production growth, promoting Indonesian exportation

practices (Purba, 2020). In this context, the exportation practices between both countries were affected by the increase in vegetable oil consumption in China. This demonstrated that the value of exports to the Chinese economy positively impacted and reduced Indonesia's trade balance deficit. From these results, palm oil was a strategic commodity in the country (Indonesia), which helped overcome the trade balance deficit and increased exportation.

## CONCLUSION

In conclusion, palm oil was the largest vegetable oil product that surpassed other related commodities regarding production. This indicated that Indonesia was the world's largest oil producer, leading to challenges for other countries to compete in production. Besides

being a prominent palm oil producer, the country also manufactured other vegetable commodities, such as coconut, groundnut, maize germ, soybean, and sunflower seed oils. This broad spectrum of vegetable oil production strengthened Indonesia's bargaining position in the global market.

Several countries should be significantly considered in the world vegetable oil trade, specifically the Netherlands, Malaysia, China, and the United States. As the second-largest producer in the world, Malaysia was Indonesia's main competitor. Meanwhile, the Netherlands often extensively traded most palm oil products from Indonesia. In this context, Malaysia commonly imported and exported products from Indonesia to the Netherlands, then sold to all countries worldwide. This proved that Malaysia and the Netherlands often enjoyed the added value of the trade services. When this trade chain was shortened, with palm oil directly exported to importing countries such as India and China, Indonesia enjoyed greater profits with increasing exports. In this case, increasing the ability of the country to break the transaction services between Malaysia and the Netherlands was very necessary. This was because the products purchased by these countries emerged from Indonesia. From these results, the government, namely the trade ministry, should analyze the appropriate countries capable of buying palm oil outside the country, specifically from Malaysia and the Netherlands. Indonesia should consider negotiating to increase direct palm oil imports to these countries. The country also needs to restrict palm oil exports to Malaysia and the Netherlands to minimize the trade of their products through them. In this case, China was the primary producer of various vegetable oils, with most of the oil products being manufactured within its borders. However, the country did not produce palm oil. Indonesia could also boost the production of soybean oil and other vegetable oils. As China's oil consumption continued to rise, Indonesia had the opportunity to augment its exports to the country continuously. The United States was also actively increasing its vegetable oil production to decrease reliance on

imported products and explore their usage as biofuel.

From the results, Sunflower and Soybean oils had the highest production after palm oil. This indicated that conflicting Russia and Ukraine were the dominant sunflower oil producers. Russia was also unable to export sunflower oil due to the crisis, leading to the consideration of Indonesian palm oil as an appropriate substitute. Furthermore, China was the world's largest consumer of vegetable oils, importing various types of products, specifically palm oil. The country was also a major destination for the export of any oil type around the globe. In this context, the United States did not heavily rely on vegetable oils and imported minimal amounts of palm oil due to emphasizing the development of soybean oil into biofuel. The future competition between palm and soybean oils is expected to increase because of the USA's continuously rising soybean oil production. The product was also a major competitor to palm oil regarding its large production, with China and the United States being the largest producers. The United States also developed this product to reduce dependence on vegetable oil imports and increase its use as biofuel. Appropriate production processes should be developed for coconut oil, with exports constantly increasing and portraying Indonesia as the dominant exporter, as observed for palm oil.

The expected end of the Russia-Ukraine war should also normalize the export of sunflower oil from Russia. This indicated that Indonesia should anticipate a potential decrease in palm oil demand or exportation. The country also needs to maintain the competitiveness of palm oil by increasing productivity and controlling international prices. In addition, the dominance of major vegetable oil-trading countries in influencing Indonesia's palm oil production should be reduced by controlling the volume of exports and increasing the manufacturing of other products.

As the main competitor of Indonesia in the vegetable oil trade, Malaysia often exported several products imported from the country. In this case, the Netherlands commonly procured

the most products from Malaysia, accompanied by the exportation to various countries worldwide. This proved that Indonesia should be able to directly export oil products without passing through Malaysia and the Netherlands for more trade benefits to be obtained and enjoyed.

This research suggests that the trading of Indonesian palm oil is prevalent among numerous nations, enabling them to derive substantial benefits from such commerce. Indonesia might be at a disadvantage because of this circumstance. By mapping Indonesia's position in the worldwide palm oil trade, enterprises, and the government can develop fitting strategies or regulations to guarantee that Indonesia does not suffer losses.

The research suggests that the government should regularly update the global vegetable oil trade map. The government should support palm oil businesses to maintain Indonesia's position in the palm oil trade. Additionally, the government should promote other vegetable oil industries that can thrive in Indonesia, such as coconut and soybean.

Several limitations were observed, as only the conditions in the study period were analyzed due to implementing a simple statistical analysis, namely descriptive statistics. Vegetable oil production and demand were not also forecasted for future periods. Therefore, more sophisticated forecasting methods should be applied in future studies.

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**APPENDIX**

**Appendix 1.** 10 Largest Vegetable Oil Producing Countries Based on Average Production per Year 2010-2020

Rank	Coconut Oil	Cotton-seed Oil	Groundnut Oil	Maize Germ Oil	Oil crops Oil, Other	Olive Oil	Palm Oil	Palm kernel Oil	Rape and Mustard Oil	Rice bran Oil	Sesame seed Oil	Soybean Oil	Sunflower seed Oil
1	Philippines	China	China	USA	Indonesia	Spain	Indonesia	Indonesia	China	India	China	China	Ukraine
2	Indonesia	India	India	China	Malaysia	Italy	Malaysia	Malaysia	Canada	China	Myanmar	USA	Russian Federation
3	India	Pakistan	Nigeria	Brazil	Brazil	Greece	Thailand	Thailand	Germany	Japan	India	Brazil	Argentina
4	Viet Nam	Brazil	Myanmar	Japan	India	Tunisia	Colombia	Nigeria	India	Thailand	Nigeria	Argentina	Türkiye
5	Mexico	USA	Sudan	South Africa	USA	Türkiye	Nigeria	Colombia	France	Myanmar	Japan	India	France
6	Sri Lanka	Uzbekistan	Senegal	Italy	Netherlands	Syrian Arab Rep.	Papua New Guinea	Brazil	Japan	Brazil	Sudan	Germany	Hungary
7	Malaysia	Türkiye	USA	Belgium	Canada	Morocco	Guatemala	Papua New Guinea	Poland	House of Korea	Uganda	Mexico	Spain
8	Papua New Guinea	Australia	Guinea	France	China	Portugal	Honduras	Honduras	UK & North Ireland	Viet Nam	Türkiye	Paraguay	Romania
9	Thailand	Burkina Faso	Argentina	Canada	Russian Federation	Algeria	Ecuador	Ghana	USA	Republic of Korea	Republic of Korea	Spain	China
10	Mozambique	Turkmenistan	Chad	Türkiye	Japan	Argentina	Côte d'Ivoire	Guatemala	Belgium	Sri Lanka	Tanzania	Netherlands	Bulgarian

Source: FAO Stat, 2023 (Processed)



**Appendix 2.** Exporting Countries that Do Not Produce Palm Oil and Average Export Volume in 2010-2020

No	Exporter	Export Volume (Thousand Tons)
1	Netherlands	1,317.0
2	Germany	338.8
3	United Arab Emirates	109.5
4	United States of America	85.0
5	Italy	73.5
6	Denmark	71.4
7	Kenya	66.5
8	Spain	52.7
9	Oman	51.8
10	Uganda	37.6
11	Niger	34.5
12	Viet Nam	27.2
13	United Kingdom of Great Britain and Northern Ireland	26.5
14	Türkiye	25.9
15	Nepal	25.7
16	Sweden	16.7
17	Ukraine	16.6
18	Greece	16.4
19	Saudi Arabia	15.0
20	Russian Federation	12.3
21	Bulgaria	10.5
22	South Africa	10.3
23	Egypt	9.7
24	Rwanda	7.5
25	Iran (Islamic Republic of)	5.3
26	Poland	3.3
27	France	2.4
28	Syrian Arab Republic	2.3
29	Bangladesh	2.2
30	Bhutan	2.0
31	Yemen	1.8
32	Canada	1.7
33	Czechia	1.7
34	Zambia	1.3
35	Austria	1.2
36	El Salvador	1.1
37	Croatia	0.8
38	Lithuania	0.8
39	Sri Lanka	0.8
40	Portugal	0.7
41	Uruguay	0.7
42	Mozambique	0.5

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43	Lao People's Democratic Republic	0.5
44	Pakistan	0.5
45	Tunisia	0.4
46	Fiji	0.4
47	Hungary	0.4
48	Morocco	0.3
49	India	0.3
50	North Macedonia	0.3
51	Romania	0.3
52	French Polynesia	0.3
53	Kazakhstan	0.2
54	Algeria	0.2
55	Japan	0.2
56	Latvia	0.2
57	Mali	0.2
58	Suriname	0.1
59	Australia	0.1
60	Slovakia	0.1
61	Slovenia	0.1
62	Switzerland	0.1

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Source: FAO Stat, 2023 (Processed)