
GLOBAL DEPENDENCE ANALYSIS ON INDONESIAN PALM OIL PRODUCTION AND ITS EFFECT ON ENVIRONMENTAL SECURITY USING THE COPENHAGEN SCHOOL APPROACH

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ABSTRACT

Increasing international demand is related to global dependency on Indonesian palm oil, forcing Indonesia to increase its palm oil production, resulting in environmental concern. A combination of quantitative and qualitative methods with the Copenhagen School approach is used. On average from 2010-2020, Indonesia exported palm oil to Asia (64.72%), the EU (16.29%), Africa (13.59%), America (5.30%), and Oceania (0.07%). According to the Copenhagen School perspective, there are potential environmental security threats to the international world. One aspect of the environment that is suffering is forested due to deforestation, related fires, damage to ecosystems, and species that are essential contributors to global climate change and loss of biodiversity, as well as poor local and regional air quality. Involvement in the human rights sector, terrorist activities, smuggling, and tax evasion are also evident. Indonesian palm oil production provides economic benefits through international trade and at the same time threatens global environmental security.

Keywords: copenhagen school, environment, global dependency, indonesia, palm oil.

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INTRODUCTION

Palm oil (in Latin, '*Elaeis guineensis*') is one of the world's most consumed and produced oils. The use of palm oil continues to increase along with the growth of the world's population, the development of production technology, and the increase in the population's consumption level, so the use of palm oil will continue to increase globally. The use of palm oil that continues to increase every year is related to the fact that palm oil is a very productive commodity (Wulansari et al., 2016); (Azizah, 2015). Palm oil is used mainly for cooking in developing countries. It is commonly used in food products, detergents, cosmetics, and, to a lesser extent, biodiesel, a trending topic for energy sustainability in the future (Azizah, 2015).

It is noted that Indonesia and Malaysia are the leading palm oil producers in the global market (Bentivoglio et al., 2018). These two countries accounted for more than 85% of the total global palm oil production in 2013 (Goggin & Murphy, 2018). For a decade, Indonesia was the world's largest producer of crude palm oil (CPO), with an average contribution of production amounting to 44.46% of the total world CPO production (Azizah, 2015). Indonesia will produce 51.3 million tons in 2021, with a production area of 9 million hectares of the total global palm oil production volume of 63.2 million tons and a global production area of 17 million hectares (Wulansari et al., 2016); (Mahdi, 2021). This increase in production is in line with the increasing international demand for vegetable oils and is supported through public investment and subsidies in several Southeast Asian countries.

In Indonesia, of the total production, only 35% of palm oil is consumed domestically. Meanwhile, 65% of it is exported abroad. Exports of Indonesian palm oil products in 2021 in CPO, PKO, oleo chemicals, and biodiesel reached 34.2 million tons with an export value of US\$ 35 billion (Mahdi, 2021). Furthermore, successively the most CPO importing countries from Indonesia are occupied by the European Union, India, Pakistan, Africa, the United States (US), the Middle East, and Bangladesh (Nurhadi, 2022).

Increasing global demand for biofuels and other non-food products (mainly from Europe) and food (mainly from India and China) has been the main factor behind land conversion in Southeast Asia for oil palm cultivation. Land conversion has been shown to increase deforestation, forest fires and air pollution, carbon emissions, water abstraction, and land conflicts. Deforestation is a major global problem with severe consequences. These consequences negatively affect climate, biodiversity, and atmosphere and threaten local indigenous peoples' cultural and physical survival (Lambin et al., 2018).

As demand continues to increase, global palm oil production will likely continue to increase (Pirker et al., 2016). Given the high versatility of palm oil, it is also necessary to track the upstream use of palm oil consumed by countries other than producing countries to direct supply chain management towards sustainable production and consumption as set out in the United Nations Sustainable Development Goals.

The aim of this study is to the global dependence on Indonesian palm oil and its effect on environmental security, analyze the trend of Indonesian palm oil production and trade, describe environmental aspects which are most affected by the large production of palm oil in Indonesia, describe the environmental damage in Indonesia have an on the global environment and the effect of palm oil production Indonesia on the international political aspects.

METHOD

The method used in this study combines quantitative and qualitative methods with a descriptive approach for both. All quantitative and qualitative data are extracted from secondary data sources (FAOSTAT, OEC, Trade Map, Statista, etc.). The database for palm oil production is primarily taken from FAOSTAT. The trade database used for the Import and Export Trends of Palm Oil Worldwide includes all data regarding palm oil's import and export value worldwide in the most recent year available in Statista (2021). The trade database in Statista includes all food and agricultural products imported/exported annually by all the countries in the world. The trade database used for the Import and Export Trend of Palm Oil in Indonesia includes all data averaged from 2010 to 2020 regarding palm oil in Indonesia with the following variables: import quantity, import value, export quantity, and export value. The trade database in FAOSTAT includes all food and agricultural products imported/exported annually by all the countries in the world.

RESULTS AND DISCUSSION

Copenhagen School

The Copenhagen School is a school of academic thought that originates from the book by the international relations theorist Barry Buzan entitled "People, States, and Fear: The National Security Problem in International Relations" the book was first published in 1983. The Copenhagen School

emphasizes non-military security, representing a shift away from traditional security studies (Buzan, 1991). In addition, there is also the main Copenhagen School book written by Buzan, Wæver, and De Wilde with the title "Security: A New Framework for Analysis" (Buzan et al., 1998).

In the study of international relations security, there are differences in interpreting the concept of security, namely the concept of security with traditional issues and the concept of security with non-traditional issues. Traditional groups regard security as freedom from all military threats in an anarchic international system (Šulović, 2010). Or security is more focused on the military field and the problem of threats of war.

Meanwhile, non-traditional groups (non-military threats) explain a more expanded definition of security, security does not only talk about the military sector, but other issues are also essential and can pose security threats, such as the political sector (authority, status government, and recognition); social sector (collective identity); economic sector (trade, production, and finance); and the environmental sector (human activity and the planetary biosphere) (Šulović, 2010). Theorists associated with this group include Barry Buzan, Lene Hansen, Huysmans, Jaap de Wilde, and Ole Waever of the Copenhagen School.

In addition, the actors involved are no longer just countries but also international organizations (global and regional), non-governmental organizations (global, regional, and local), interest groups, and pressure groups (multinational and transnational companies, epistemic groups, individuals, Political Parties, and others). The study conducted by the Copenhagen school explains the shift in the referent object from the state as an object and sovereignty as a value that is secured towards society as a reference, while identity is a value that is secured. This idea became a major change in the approach to the Copenhagen school. It was from this idea that the concept of securitization emerged. According to the Copenhagen School, the securitization process has two stages: the stage of raising the issue and the stage of convincing the audience (public).

In the first stage of securitization, state, or non-state actors such as trade unions or people's movements describe specific issues, people, groups, or entities as an existential threat to the target object or community. The second, more critical stage concerns the success of securitization, which depends on whether the audience is convinced to accept that a particular object of reference is existentially threatened.

In the environmental field, of course, it will be related to how to maintain the local and planetary biosphere as an essential support system on which all living things depend; from the definition above, it becomes one of the determining factors whether an issue can enter into the theory of environmental security or not, the issue of transboundary haze which is has become an annual cycle and has been going on for a long time between Singapore and Indonesia can be classified as an environmental security issue. The haze is carried by seasonal winds to neighboring countries. Its spread is affected by factors such as El-Nino storms and climate change (Gultom et al., 2016).

Fires are also considered a potential threat to the international world and sustainable development because they directly impact ecosystems, carbon gas emissions, and biodiversity (Liu et al., 2013). Riau Province is one of the provinces whose geographical location is close to neighboring countries such as Malaysia and Singapore, a source of transboundary haze pollution for these two countries. The haze problem has become a global problem because this case causes

pollution in neighboring countries which causes them to protest against Indonesia as the country where the smoke is sourced (Liu et al., 2013).

Palm Oil Production in Indonesia

It is presented in the chart that within ten years back (2012-2022), the trend of palm oil production both in the world and in Indonesia was increasing. In 2012, the world produced only 52.91 Mt/y; it will be 1.45-fold higher in 2022 with 77.215 Mt/y. At the same time, production by Indonesia increased 0.57-fold, where it was 26.0 Mt/y in 2012 and 45 Mt/y in 2022. According to (Ritchie, H., Roser, 2020), the rise of palm oil follows the rapid increase in demand for vegetable oils more broadly. Global production of vegetable oils increased tenfold since the 1960s – from 17 to 170 million tonnes in 2014 and in 2018 comes to 218 million tonnes.

In Figure 5, there are two slight decreases in palm oil production in 2016 and 2020 for both world and Indonesia. The reason is that in 2016 palm oil production was impacted by El Nino, a warming of the Eastern Pacific Ocean waters which brings dry weather across Southeast Asia and lowers palm yields in top producers Indonesia and Malaysia. While the reason for 2020 is that total palm oil output in top producers Indonesia and Malaysia is expected to fall in that year, hampered by a labor shortage during the COVID-19 pandemic, 2019's dry weather, and lower fertilizer application (Reuter, 2020).

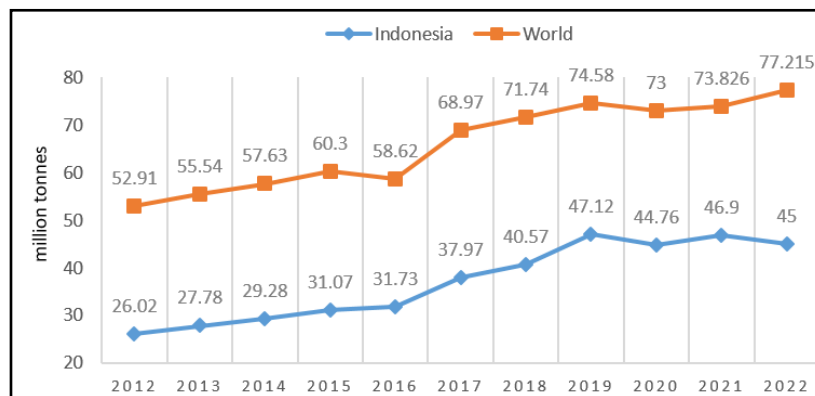


Figure 1. Palm Oil Production in The World and Indonesia from 2012 - 2022.

Source: FAO, USDA (Jan 4, 2023)

Indonesia's largest palm oil-producing areas are located on the islands of Sumatra and Kalimantan (the Indonesian name for Borneo, which is divided between Indonesia, Malaysia, and Brunei). These two islands are supported by a tropical climate that supports oil palm cultivation. In 2020, these were the six largest palm oil-producing provinces in Indonesia: 1) Riau (2,806,349 hectares, 9.5 Mt/y); 2) North Sumatra (1,773,049 hectares, 5.6 Mt/y); 3) Central Kalimantan (2,049,790 hectares, 7.6 Mt/y); 4) West Kalimantan (1,570,675 hectares, 5.2 Mt/y); 5) East Kalimantan (1,500,000 hectares, 4 Mt/y); 6) and South Sumatra (1,215,476 hectares, 4 Mt/y).

The large production makes Indonesia important in meeting the world's needs/demands for oil palm and its derivative products. As an important country in the world's oil palm industry, many parties (stakeholders), of course, play a role in influencing palm oil production in Indonesia. One of these parties is the role of private corporations as the driving force for Indonesian palm oil production. These are the 5 Biggest Indonesian Oil Palm Companies in 2020: 1) Provident Agro, Tbk. (PALM), 2) Smart Tbk. (SMAR), 3) Astra Agro Lestari Tbk. (AALI), 4) Sawit Sumbermas Sarana Tbk.

(SSMS), and 5) PP London Sumatra Indonesia Tbk. (LSIP), with profit and revenue respectively, \$0.13B/\$0.016, \$0.10B/\$2.8B, \$0.063B/\$1.3B, \$0.052B/\$0.28B, and \$0.049B/\$0.28B.

The Impact of Indonesian Palm Oil Production on the Environmental Security

Rapid growth in the international demand for palm oil has triggered considerable global concern because oil palm plantations deteriorate the environment where they are developed, resulting in complex environmental impacts in the producer nations. Forest biological diversity refers to all life forms found within forested areas and their ecological roles. It encompasses not just trees, but the multitude of plants, animals, and microorganisms that inhabit forest areas and their associated genetic diversity. Forest biological diversity can be considered at different levels, including ecosystem, landscape, species, population, and genetics. Complex interactions can occur within and between these levels. This complexity allows organisms to adapt to continually changing environmental conditions and to maintain ecosystem functions.

Indonesia is the world's largest palm oil exporter, accounting for 58% of globally traded flows. In 2018, Indonesia's oil palm plantations covered more than 165,000 km², around four times as big as the Netherlands. The expansion of oil palm plantations has been an essential driver of deforestation in Indonesia for the past 20 years, accounting for one-third (3 million hectares) of Indonesia's loss of old-growth forests. Indonesia had 1,450,382 ha of palm oil deforestation in 2020, with a volume of 44,757,944 tonnes. In Figure 14, the spread of palm oil plantations and associated deforestation in 2020 was concentrated in Borneo Island (Kalimantan), Sumatra Island, Papua, and Riau. Five of the Top 10 provinces with palm oil deforestation exposure are in Kalimantan Island, including South Kalimantan, East Kalimantan, West Kalimantan, North Kalimantan, and Center Kalimantan with a total exposure of 1,004,301 ha (69%). In 2015, with the production of only 0.53% (167,468 tonnes) of Indonesia's palm oil, Papua was expected to be a possible new frontier of oil palm plantation expansion and associated deforestation. It was proven that in 2020, two provinces in Papua were included in The Top 10 province with total deforestation exposure of 165,170 ha (11%).

The other Top 10 provinces with the most deforestation exposure are Riau, North Sumatra, and Jambi with exposure respectively 106,227 ha (0.07%), 53,280 ha (0.03%), and 29,181 ha (0.02%). However, several provinces continue to see the significant conversion of forests to oil palm plantations. In recent years, deforestation for palm oil production has been concentrated in the forest-rich provinces of Indonesian Borneo (Kalimantan) and Papua. Together, these two islands accounted for 80% of all deforestation for palm oil in Indonesia in 2020.

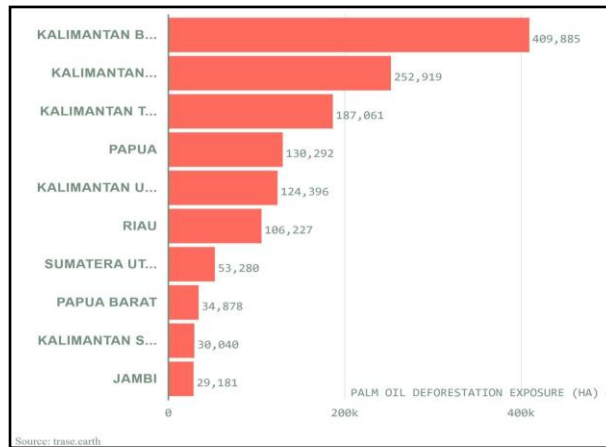


Figure 2. Deforestation Exposure (ha) of Indonesian Palm Oil Production in 2020 by Region (Province).
Source: Trace Supply Chain (Jan 2, 2023)

Incomplete words: Kalimantan Barat (west), Kalimantan Timur (east), Kalimantan Tengah (center), Papua, Kalimantan Utara (north), Riau, Sumatera Utara (north), Papua Barat (west), Kalimantan Selatan (south), and Jambi. Figure 2 shows Indonesian Palm Oil's most significant export companies, ordered on palm oil deforestation exposure. Indonesia's export market has been consistently dominated by five exporter groups: Royal Golden Eagle, KPN Corp, Sinar Mas, Musim Mas Astra Agro Lestari, IFFCO, Wilmar, First Resource, Louis Dreyfus, and unknown sources.

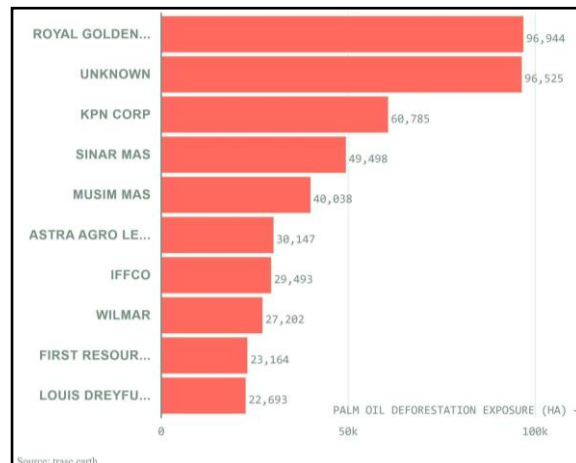


Figure 3. Deforestation Exposure (ha) by Indonesian Palm Oil Exporting Company in 2020.
Source: Trace Supply Chain (Jan 2, 2023)

Incomplete words: Royal Golden Eagle, Astra Agro Lestari, First Resources, and Louis Dreyfus. However, the top ten exporter groups, all with NDPE commitments, were still exposed to significant deforestation risk associated with their exports in 2020: Sinar Mas (49,498 ha), Wilmar (27,202 ha) Musim Mas (40,038 ha), Royal Golden Eagle (96,944 ha), KPN Corp (60,785 ha), Astra Agro Lestari (30,147 ha), First Resources (23,164 ha), Louis Dreyfus (22,693 ha) and unknown sources (96,525 ha). In some groups, these risks were concentrated within a subset of subsidiary traders. For example, 48% of Sinar Mas's deforestation risk exposure is associated with its subsidiary Sinar Mas Agro Resources and Technology. However, this company only trades 26% of Sinar Mas's total

exports, indicating that it contributes a disproportionate share to Sinar Mas's total deforestation risk. In contrast, another Sinar Mas subsidiary, Sumber Indah Perkasa, was responsible for 17% of Sinar Mas's deforestation risk while exporting 32% of the group's total exports.

Oil palm plantations have a particularly negative net effect on ecosystem function compared to primary and secondary tropical forests (Dislich et al., 2017).

Trends of Palm Oil Trade Worldwide and in Indonesia

The map in Figure 4 visualizes the Indonesian Palm Oil Import Value on Average from 2010 to 2020. Countries shown in the map are origins of palm oil imported to Indonesia, colored with gradation based on the difference in import value. The data and maps were extracted from FAOSTAT. On average from 2010 to 2020, Indonesia imported Palm Oil primarily from: Malaysia (\$8.65M), India (\$3.214M), Papua New Guinea (\$2.30M), Philippines (\$1.29M), Thailand (\$1.12M), and Sri Lanka (\$196K). Indonesia also used its palm oil for domestic use with an average (2010-2020) value of \$568K.

Indonesia imports Palm Oil primarily from: Malaysia (\$4.49M), Sri Lanka (\$180k), Singapore (\$162k), Ethiopia (\$87.1k), and the Netherlands (\$23.3k). The fastest-growing import markets in Palm Oil for Indonesia between 2019 and 2020 were Sri Lanka (\$180k), Ethiopia (\$87.1k), and the Netherlands (\$18.3k) (OEC, 2020).



Figure 4. Map of Indonesian Palm Oil Import Value, Average 2010- 2020.

Source: FAOSTAT (Dec 28, 2022)

Figure 4 visualizes that the average trend of Indonesian Palm Oil Export Quantity from 2010 to 2020 increased 1.59-fold, with 16.3 Mt/y in 2010 and 25.93 Mt/y in 2020. The highest export quantity was found in 2018, with 27.89 Mt/y. There were two declines in export quantity in 2016 (from 26.46 Mt/y to 22.75 Mt/y) and 2020 (from 27.48 Mt/y to 25.93 Mt/y). This was because Palm Oil production had decreased in the same 2 years as shown in Figure 1, due to El Nino and COVID-19. Here, the export value of Indonesian palm oil was influenced by the amount of palm oil produced each year.

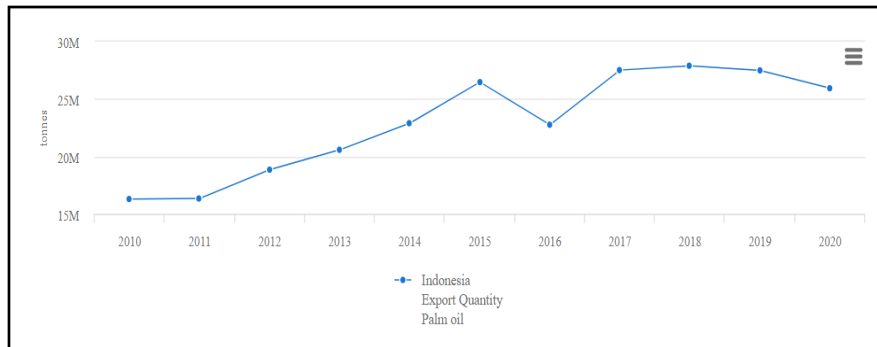


Figure 5. Indonesia's Export Quantity of Palm Oil, Average 2010 - 2020.

Source: FAOSTAT (Jan 2, 2023)

The map in Figure 5 shows the Indonesian Palm Oil Export Value on Average from 2010 to 2020. Countries shown in the map are Indonesian palm oil export destinations colored with gradation based on the difference in import value. The data and maps are extracted from FAOSTAT. On average from 2010 to 2020, Indonesia exported \$16.37B in Palm Oil which primarily to: Asia (export value: \$10.59B, 64.72%) [India (\$3.88B), China (N/A), Pakistan (\$1.05B), Malaysia (\$768M), Bangladesh (\$711.9), Myanmar (\$336.4M), Vietnam (\$161.1M), Philippines (\$163.5), United Arab Emirates (\$150.6M), Saudi Arabia (\$132M), Iran (Islamic Republic of) (\$125.9M), Republic of Korea (\$103.1M), and Japan (\$97.9M)]; European Union (export value: \$2.66B, 16.29%) [Netherlands (\$784M), Italy (\$637.6M), Spain (\$564M), Greece (\$329.7M), Russian Federation (\$343.1M), Germany (\$156M), and Turkey (\$120M)]; Africa (export value: \$2.22B, 13.59%) [Egypt (\$627.9M), South Africa (\$184.5M), United Republic of Tanzania (\$173.2M), Djibouti (\$153.5M), Kenya (149.7M), and Benin (\$104.3M)]; America (export value: \$868M, 5.30%) [USA (\$342M) and Brazil (\$109M)]; Oceania (export value: \$11.49M, 0.07%)[Papua New Guinea (\$11M)].

The world's most consumed cooking oil, international purchases of imported palm oil cost an estimated US\$50.8 billion in 2021. Overall, the value of palm oil imports accelerated by 51% for all importing countries since 2017. Five years earlier, international purchases of palm oil cost \$33.6 billion. Year over year, globally imported palm oil increased by 50% from \$33.8 billion in 2020.

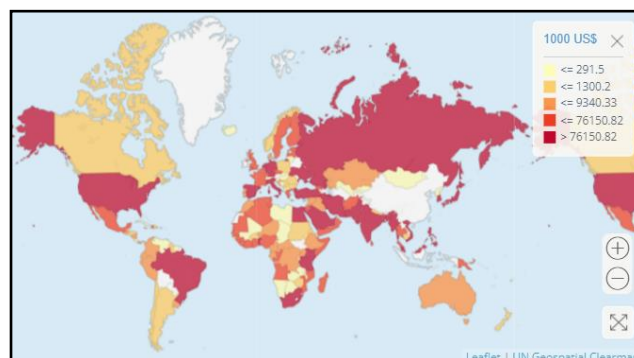


Figure 6. Map of Indonesian Palm Oil Export Value, Average 2010 - 2020.

Source: FAOSTAT (Dec 28, 2022)

Statistics in Figure 6 show the import value of the leading importer countries of palm oil worldwide in 2021. That year, India was the leading importer of palm oil worldwide, with an import

value of about 9.56 billion U.S. dollars. Malaysia and Indonesia are the leading suppliers. India imports palm oil with the highest dollar value during 2021, US\$4.1 billion (up 166.5% from 2020) and \$3.9 billion (up 22.% from 2020). Followed by China (\$5.94B, with a value of \$4.3 billion imported from Indonesia); Pakistan (\$3.40B, with a value of US\$3 billion imported from Indonesia); Netherlands (\$2.1B, with a value of US\$703.4M, \$352.9M, and \$267.7M imported from Malaysia, Papua New Guinea, and Indonesia respectively); US (\$1.80B), Spain (\$1.52B), Italy (1.48B), Russia (\$1.27B), Malaysia (\$1.14B), Vietnam (\$1.04B), and Kenya (\$0.99 B).

The five most prominent importers of palm oil are India, China, Pakistan, the Netherlands, and the United States of America. Collectively, that quintet of major palm oil buyers imported 45% of total palm oil purchased via international markets in 2021. From a continental perspective, Asian countries imported the highest dollar worth of palm oil in 2021, with purchases valued at \$29.6 billion or almost three-fifths (58.4%) of the global total. In second place were European importers at 20.9%, while 13.3% of palm oil imported worldwide was delivered to African buyers. Smaller percentages went to customers in North America (4.5%), Latin America (2.5%), excluding Mexico but including the Caribbean, and Oceania (0.4%), led by Australia, Papua New Guinea, and New Zealand.

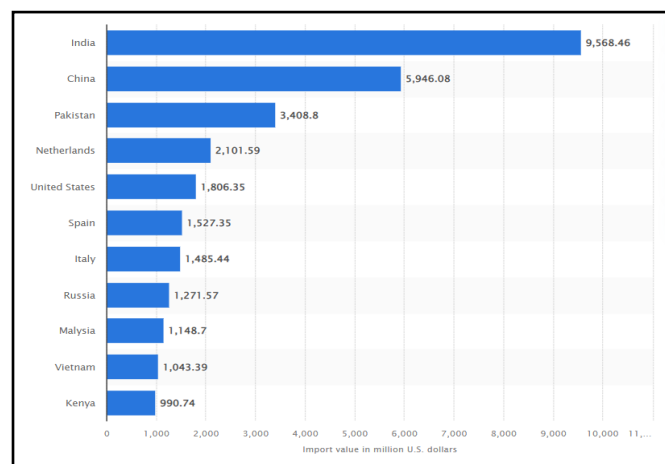


Figure 7. Leading importers of palm oil worldwide in 2021.

Source: Statista (Jan 2, 2023)

The statistics in Figure 7 show the export value of palm oil worldwide in 2021 by leading countries. In that year, Indonesia was the leading exporter of palm oil, with an export value of about 26.7 billion U.S. dollars, followed by Malaysia (\$14.2B), Netherlands (\$1.2B), Papua New Guinea (\$793.9M), Thailand (\$713.5M), Guatemala (\$709.6M), Colombia (\$467.8M), Germany (\$363.9M), Nepal (\$236.4M), and Honduras (\$236M). They were also followed by five other countries (not mentioned in the diagram) Estonia (\$222.6M), Costa Rica (\$217.7M), Turkey (\$209.8M), Italy (\$193.8M), Djibouti (\$182M). The listed 15 countries shipped 95.7% of global palm oil exports by value in 2021.

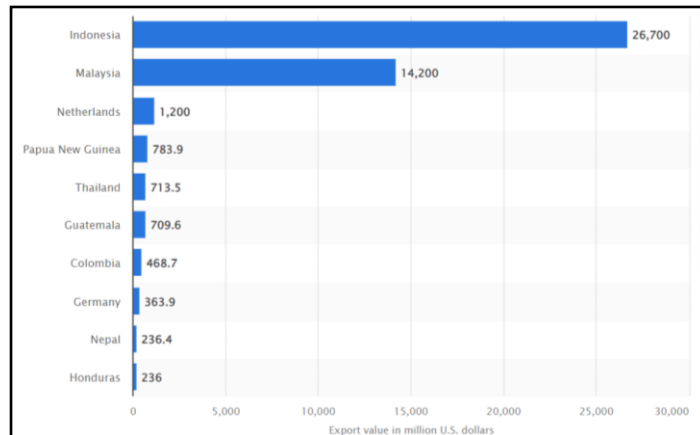


Figure 8. Leading exporters of palm oil worldwide in 2021.

Source: Statista (Jan 2, 2023)

Global palm oil suppliers are intensely concentrated in Indonesia and Malaysia, accounting for 83.9% of the value of all palm oil exported in 2021. Asian countries attracted the highest dollar worth of sales from exported palm oil during 2021, with shipments valued at \$42.4 billion or 87.1% of the global total. In second place were European exporters at 5.2%. In comparison, another 4.2% of worldwide palm oil shipments originated from Latin American countries, excluding Mexico but including the Caribbean. Tinier percentages came from Oceanian countries (1.7) led by Papua New Guinea and the Solomon Islands, Africa (1.6%), and North America (0.3%).

Effect of Palm Oil Export on Political International Aspect

Tax Evasion in Oil Palm Plantations

Indonesian lawmakers have demanded an accounting of the illegal palm oil plantations that continue to operate in the country after the government revealed it had missed out on at least \$3 billion in taxes from these companies in 2021. According to data from the environment ministry, there are 1.42 million hectares (3.51 million acres) of illegal plantations in Riau and 806,400 hectares (2 million acres) in Central Kalimantan. That is two-thirds of the total 3.37 million hectares (8.33 million acres) of illegal plantations in Indonesia. Indonesia has identified 505 illegal plantations inside forest areas that are supposed to be off-limits to plantation activity. Based on their size and output, these plantations should have paid taxes amounting to 44 trillion rupiahs (\$3.05 billion) in 2021, a figure that is a quarter of Indonesia's COVID-19 budget in 2020. An audit by local lawmakers in Sumatra's Riau province, one of Indonesia's central oil palm-growing regions, found that Riau alone is deprived of at least 107 trillion rupiahs (\$7.4 billion) in potential revenue every year from the illegal plantations operating there.

The Effect of Palm Oil Plantation in Indonesia on Human Security

The findings obtained from the study of the influence of oil palm plantations in Indonesia on human security are genuinely concerning. Human rights violations related to oil palm plantations are rife in production areas. Implementation of international human rights obligations by the government is less effective. While national laws uphold many human rights, not only are critical elements of national law not enforced, but there are systemic problems in issuing concessions. The way companies operate (Komnas, 2015).

Community rights to their lands, territories, and natural resources are not protected or recognized. Compensation payments for expropriated land were minimal and only for agricultural land, not more expansive community areas. Legally mandated plasma plantations are generally not provided. Workers' rights to freedom of association and free collective bargaining are not enforced. Most local workers are employed as casual daily wage laborers and are paid below the statutory minimum wage. There are many areas for improvement in providing primary education and health services, exacerbated by inadequate transport. Then in some exceptional cases, restrictions on people crossing plantations to access sources of livelihood. Most residents reported problems voicing complaints about the treatment they experienced, including intimidation and criminalization of those who voiced complaints. Residents complained that dispute resolution was not working effectively. Several protesters and complainants experienced intimidation and harassment (Firdaus, et al., 2012).

The Effect of Palm Oil Production on Terrorism Activities

The consequences of soaring demand for palm oil for biodiesel are becoming increasingly brutal. In Jambi Province, Sumatra Island, 1,500 armed men demolished four indigenous settlements in Indonesia and displaced inhabitants unwilling to surrender their land to a palm oil company. In another case, Indonesian authorities said they were investigating whether Jemaah Islamiyah (JI), which carried out the 2002 Bali bombings that killed 202 people 17 years ago and other terrorist attacks in the country, was involved in establishing palm oil plantations and other enterprises as funding sources for its operations.

The latest arrest revealed that JI was using a palm oil plantation business to fund its terrorist activities. JI has found new financial stability with steady income generated from the palm oil industry (Palansamy, 2019). According to Indonesian police, the JI leader, Para Wijayanto, conducted the plantation business while recruiting more members to the group and enabling the terror organization to pay its "officers" a monthly wage of between 10 and 15 million rupiah (Laksmi, 2019). The plantations are also usually in remote locations, which makes them ideal for shelters and military training. Owning a plantation allows one to purchase large amounts of chemical products, such as fertilizer, which can be used to craft bombs (Palansamy, 2019).

Smuggling of Palm Oil in Indonesia

Smuggling becomes inevitable whenever there is a differential between domestic and world prices (McBeth, 2022). The palm oil export ban came into force in Indonesia on Apr 28, 2022, driving food prices higher amid global inflationary pressures. As a result of the ban, CPO smuggling has been rife in Indonesia (TVRI, 2022).

The Indonesian navy arrested seven foreign-flagged tankers attempting to smuggle crude palm oil or CPO. The navy arrested an MT World tanker, MT Annabelle, TB Ever Sunrise, MV World Progress (Liberia), MT W. Blossom (Tuvalu), MV Annabelle (China), and the Indonesian-flagged MV Toto XVI, all detained by the Navy's Koarmada I that secures western Indonesian waters (Tan, 2022; The Star, 2022). Smuggling and illegal shipping of cooking oil and its raw materials abroad are alleged to be one of the causes of the recent cooking oil scarcity and abnormal price hikes in Indonesia that the Indonesian government is trying to stop.

Indonesian Palm Oil Tycoons

Most Indonesian Palm Oil Industry is controlled by tycoons - or taipan in Bahasa. This word stems from the Japanese word *taken* (大君), which means "Great Lord." It is now commonly used to refer to wealthy business magnates who - often together with their families - control groups of companies that are active in various business sectors, such as plantations, mining, energy, real estate, finance, and services. Fourteen of the 32 Indonesian billionaires identified by Forbes magazine are palm oil tycoons, having accumulated their wealth at least in part through the industry.

The palm oil industry's expansion has continued into the 2010s, driving economic growth but also crippling the archipelago country's rainforests, fueling a land-grabbing epidemic and desiccating Indonesia's vast peat swamp zones in such a way as to fuel the disastrous fires that each year blanket the region in a choking haze. The nation's wealthiest have not completely monopolized the spoils of palm oil, used in around half the goods one finds on supermarket shelves, from chocolate and cooking oil to soap and makeup. The total wealth of the 29 tycoon families is estimated at USD 69.1 billion on average. Even when compared to Indonesia's Gross Domestic Product - US\$ 878 billion in 2012 - these tycoons control enormous wealth, especially when compared to the 2014 State Budget of 1,800 trillion, their net worth is equivalent to 45% of Indonesia's State Budget; according to the exchange rate in effect in July 2014 (TuK Indonesia, 2015).

Analysis of Global Dependence on Indonesian Palm Oil Production

Global dependence on Indonesian palm oil production occurs because global demand for palm oil continues to increase along with world population growth, developments in production technology, and increasing levels of population consumption, so demand palm oil will continue to increase globally. The demand for palm oil, which continues to increase every year, is inseparable from the fact that palm oil is a very productive commodity (Wulansari et al., 2016) (Azizah, 2015) because the main advantage of palm oil as a vegetable oil is its low price and high usefulness compared to other vegetable oils.

In the modern life system, no country can meet its own needs, there needs to be interaction with other countries and in the end, it creates dependence on one another (Suryanegara, 2014). At the beginning of the interaction process, there must be an impression of a pattern of mutualism or a mutually beneficial relationship between the two parties.

This can be seen from the pattern of interaction between countries which then creates dependence, namely the relationship between Indonesian palm oil production and importing countries. Following are some of the importing continents for Indonesian palm oil that are spread worldwide: Asia, the European Union, Africa, America, and Oceania.

FAO says the world's primary vegetable oil production is highly concentrated in a handful of countries. The highest concentration is with palm oil, as 84% of global production came from two countries in 2019, Indonesia (58%) and Malaysia (26%); while 61% of the world's oil palm fruit production comes from Indonesia. Such concentrations can significantly impact prices when crop yields are positively or negatively affected in major producing countries that export a portion of their production (Wang et al., 2021).

It is not surprising that palm oil is one of Indonesia's primary export commodities. The share of the market for Indonesian palm oil production has an average export value from 2010 to 2020; Indonesia exported CPO of \$ 16.37 billion, which was mainly destined for the Asian continent of \$

11.23 billion (68.6%), the European Union \$ 2.83 billion (17.3%), Africa \$2.36 billion (14.41%), America \$922 million (0.92%) and Oceania \$13 million (0.073%). So, Indonesia's biggest palm oil exports are on the Asian continent, which on average exceeds 50%, 68.6% of the whole continent, followed by the European Union as second place.

Consumer-driven needs or demands cause global dependence on Indonesian palm oil production. The largest consuming countries during the 2013-2020 period, making Indonesia the world's largest export market were India, China, and the European Union, with a total of 49%.

However, the relative importance of each of these markets has changed. In 2020, exports to India decreased by 13% and the EU by 5%, however, it was different from China which increased its market share from 11% in 2013 to 16% in 2020 or increased by 5% and became the largest importer of palm oil—Indonesia in the world. At the end of the 2020 period, international palm oil sales jumped 49.2% from \$32.7 billion. These sales can be used for food, cosmetics, and biofuel, generating strong demand for palm oil worldwide. Moreover, Indonesia remains the market leader in supplying palm oil to international customers.

Thus, this dependence can be seen positively. An Indonesian palm oil production system spread worldwide is vital for the Indonesian and global economies. As well as having many other uses for the global community or companies in each country. Thus, providing a significant source of exports through food and for industrial use.

In addition, it is also used for domestic food, beauty products, biodiesel, and biofuels. Due to the advantages of palm oil, it is easier to stabilize and maintain the quality and consistency of taste in processed foods, so food manufacturers often prefer it. In 2015 it was seen that, on average globally, humans consumed 7.7 kg (17 lb) of palm oil per person (Meijaard et al., 2018). It can be indicated that the global community depends on palm oil production or creates more supply-demand that drives Indonesia's economic growth.

However, on the other hand, it shows that global dependence on Indonesia in the oil palm plantation sector has unknowingly led to more extraordinary interaction efforts between Indonesia and other countries. Thus, indirectly opening the door for Indonesia to interact with other countries as a mirror of the industrialization of Indonesian palm oil.

Thus, efforts to open broader interactions will be carried out based on Indonesia's national interest to make all countries in the world one of the targets for expanding the base of the Indonesian palm oil industry, particularly in terms of expanding market access for Indonesian palm oil production.

The Global Response to Indonesian Palm Oil

Indonesia's palm oil industry provides many economic benefits, especially economically, and reduces poverty (Rifin, 2020). However, the industry is under global pressure, such as the Black Campaign and the European Union with the Renewable Energy Directive II (RED II) policy in the palm oil resolution by the European Union Parliament issued on Apr 4, 2017, in Strasbourg, France, because the industry is often associated with environmental security issues, social, human rights, and health

This resolution policy aims to reduce the negative impacts of unsustainable palm oil production because it can lead to deforestation, human rights violations, and so on. According to (Dolle, 2017), this is the first resolution made by the European Union parliament on the issue of

deforestation because it threatens the global agreement on climate change COP21 under the United Nations Framework Convention on Climate Change (UNFCCC) (2015) and the United Nations Sustainable Development Goals (SDGs).

It is well known that the European Union is one of the producers of renewable energy, which is quite advanced in its development technology. Until now, the European Union is the largest biodiesel producer in the world. Biodiesel production increased more than 20 times between 1994 and 2005. Germany is the leading biodiesel producer, accounting for almost half of the total biodiesel production produced by the European Union. Germany can produce 2.5 million tonnes of biodiesel. Apart from Germany, France is also the largest biodiesel producer in the European Union after Germany. France produced 2 million tonnes of biodiesel that year.

Biodiesel and bioethanol do not occupy a vital position in biodiesel. It is noted that bioethanol only fulfills 20% of the total production of biofuels in the European Union. Germany and France are European Union member countries that are the leading bioethanol producers. Biodiesel is a very important biofuel for the European Union. 80% of the European Union's biofuel consumption is biodiesel, and the rest is bioethanol. According to a European Biodiesel Board (EBB) report, EU biodiesel production increased 16.8% to 5.7 million tonnes in 2007 compared to the previous year of only 4.9 million tonnes.

However, the legal use of palm oil biodiesel in the European Union is not considered renewable energy. It will be limited until 2021, as stated in EU RED II (Sitepu et al., 2018). This resolution is suspected not only to affect environmental sustainability. However, it will also affect the trade in the Palm Oil sector and other vegetable oils.

Indonesia, the world's largest palm oil producer, criticized this resolution because it was seen as triggering disputes. The impact of this resolution leads to the economic welfare of oil palm smallholders. If you look at the Figure (Leading exporters of palm oil worldwide in 2021), Asia has become Indonesia's largest palm oil export market region, with purchases of 64.72% of exports in 2010-2020.

Since 2010, the European Union has been the world's second-largest palm oil importing country. The European Union takes a lot of palm oil from Indonesia, with 16.29% of exports. However, in 2020, exports to the European Union decreased by a total of 12%. In 2015, oil palm plantations in Indonesia covered an area of 11.4 million ha, consisting of private companies (52%), smallholders (41%), and state-owned companies (7%) (Purnomo et al., 2018). With the adoption of this resolution, it is evident that Indonesia has experienced reduced exports from the European Union and losses in large quantities.

The implementation of RED II by the European Union can be an obstacle to the entry of Indonesian palm oil products into the European Union because the palm oil produced by Indonesia is not "green" palm oil. This Green Protectionist is not only related to the environmental policy itself but also to various policies not related to the environment that affect environmental policies resulting in discrimination or trade bans. This form of green protectionism is often seen as a Technical Barrier Trade or TBT (part of the non-tariff barrier/NTB) as well as Sanitary and Phytosanitary Measures (SPS). NTB and SPS are often used by the European Union and the United States for several agricultural products and the food industry. For example, when the United States, on Jan 28, 2012, sent an official letter of rejection of CPO exports from Indonesia.

Apart from that, there is also an anti-palm oil movement using the Palm Oil Free Label Regulation. This labeling is already at the level of a palm oil boycott and even "forbidding" the use of palm oil. This palm oil-free labeling is aimed at industrial consumers of such products, which do not only apply to the European market but sooner or later spread to the rest of the world. Transnational NGO networks worldwide have become a global monitoring network to ensure that the palm oil-free label is implemented. Such a structured, systematic, and massive ban on the use of palm oil by the global food and non-food industry leads to the "Dying for palm oil" scenario often voiced by international NGOs and their supporters.

In addition to the obstacles in the entry of Indonesian palm oil, which are considered unsustainable by the European Union, the United States, and international NGOs, there is also support for the Indonesian palm oil industry. One of the supports came from the largest biodiesel-producing country in the European Union, Germany. The Ambassador Extraordinary and Plenipotentiary of the Federal Republic of Germany conveyed the support to Indonesia, Timor Leste, and Asean, namely Michael Freiherr von Ungern-Sternberg, during a visit to the oil palm plantation of PT. Paya Pinang in North Sumatra (Sari, 2018).

Apart from supporting the sustainable palm oil industry, Germany, through the German Development Institute, has also contributed directly to developing technology for palm oil certification in Indonesia (Brandi et al., 2013). The German government expects global palm oil production to grow and calls for globally coordinated steps to implement deforestation-free planting, according to responses to a parliamentary inquiry first reported by Germany's press office. The German government notes that it is not fundamentally against using or importing palm oil. The aim is "sustainable palm oil production without negative impact on the environment and climate while respecting residents' rights" (Xinhua, 2019).

CONCLUSION

In the past ten years, there has been an increase in palm oil production globally and in Indonesia, with Indonesia being one of the world's largest palm oil producers. The five largest Indonesian palm oil companies are Provident Agro, Tbk., Smart Tbk., Astra Agro Lestari Tbk., Sawit Sumbermas Sarana Tbk., and PP London Sumatra Indonesia Tbk. Indonesia's largest palm oil-producing areas are located on the islands of Sumatra and Kalimantan. On average, Indonesia imports palm oil mainly from Malaysia, India, Papua New Guinea, the Philippines, Thailand, and Sri Lanka. At the same time, India, the European Union, and China were the largest importers of Indonesian palm oil. The negative impact of palm oil production on the environment and local communities has been well documented, leading to concerns about national security and human rights violations. Despite these concerns, palm oil remains a significant source of exports. It is used in various industries, including food, beauty products, biodiesel, and biofuels.

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Global Dependence Analysis on Indonesian Palm Oil Production and Its Effect on Environmental Security Using the Copenhagen School Approach

Wang, D., Jenkins, K., Forstehäusler, N., Lei, T., Price, J., Warren, R., Jenkins, R., & Guan, D. (2021). Economic impacts of climate-induced crop yield changes: evidence from agri-food industries in six countries. *Climatic Change*, 166(3–4), 30.

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