Jurnal Asia Pacific Studies, July-December, 2025
Vol. 9 No 2, pp 176 - 199
https://10.33541/japs.v9i2.6953

E ISSN: 2580 7048
P ISSN: 2580 6378

GEOECONOMIC IMPLICATIONS OF INDONESIA'S B50 BIODIESEL PROGRAM ON GLOBAL BIOFUEL SUPPLY CHAINS

[1*]Syhilla Putri Nadia, [2]Muhammad Badaruddin

[1]Bakrie Center for Energy and Sustainability

[2]Bakrie Center for Energy and Sustainability

Corresponding Email:[1]1211004031@student.bakrie.ac.id[2]muhammad.badaruddin@bakrie.ac.id

Submission: May 25, 2025| Accepted: October 7, 2025

ABSTRACT

Indonesia's B50 biodiesel mandate, which requires a 50% palm oil–based biodiesel blend by 2026, represents a significant policy shift with wide-ranging implications for domestic energy security and global biofuel trade. This study examines how the B50 program, as a form of state-led intervention, may reshape international market dynamics by altering palm oil availability, trade flows, and price stability. Employing a qualitative case study approach, the analysis draws on government policies, industry reports, and international trade data, interpreted through the theoretical lens of neomercantilism to highlight elements of resource nationalism. The findings suggest that B50 may strengthen Indonesia's energy independence while simultaneously reducing palm oil export volumes, contributing to global vegetable oil price volatility, and disrupting trade for major importers such as India, China, and the European Union. The study concludes that Indonesia's B50 program illustrates the dual role of biofuel policies in promoting domestic energy security while generating ripple effects across global supply chains.

Keywords: biodiesel, biofuel, global supply chain, market disruption, renewable energy

ABSTRAK

Mandat biodiesel B50 Indonesia, yang mewajibkan bauran biodiesel berbasis sawit sebesar 50% pada tahun 2026, merupakan pergeseran kebijakan yang signifikan dengan implikasi luas bagi ketahanan energi domestik dan perdagangan biofuel global. Studi ini mengkaji bagaimana program B50, sebagai bentuk intervensi negara, dapat membentuk ulang dinamika pasar internasional dengan mengubah ketersediaan minyak sawit, arus perdagangan, dan stabilitas harga. Menggunakan pendekatan studi kasus kualitatif, analisis ini bersumber dari kebijakan pemerintah, laporan industri, dan data perdagangan internasional, yang diinterpretasikan melalui lensa teoretis neomerkantilisme untuk menyoroti elemen nasionalisme sumber daya. Temuan studi menunjukkan bahwa B50 dapat memperkuat kemandirian energi Indonesia, namun secara bersamaan mengurangi volume ekspor minyak sawit, berkontribusi pada volatilitas harga minyak nabati global, dan mendisrupsi perdagangan bagi importir utama seperti India, Tiongkok, dan Uni Eropa. Studi ini menyimpulkan bahwa program B50 Indonesia mengilustrasikan peran ganda kebijakan biofuel dalam mendorong ketahanan energi domestik sekaligus menimbulkan dampak berantai pada rantai pasok global.

Kata Kunci: biodiesel, biofuel, rantai pasok global, disrupsi pasar, energi terbarukan

BACKGROUND

Global biofuel demand is projected to grow by 38 billion liters between 2023 and 2028, representing nearly a 30% increase compared to the previous five-year period. By 2028, total demand will reach 200 billion liters, with renewable diesel and ethanol accounting for two-thirds of this growth, while biodiesel and biofuel will make up the remainder. Emerging economies, particularly Brazil, Indonesia, and India, are driving this expansion due to strong biofuel policies, increasing transport fuel demand, and abundant feedstock availability (International Energy Agency 2023). Biodiesel consumption is projected to grow mainly in Brazil, Indonesia, and India, driven by stricter blending mandates and increasing diesel demand (Simonovska 2024a). In these areas, the demand for transport fuel is growing due to economic expansion and the gradual uptake of electric vehicles. These nations are anticipated to add around 27 billion liters to the demand, bringing the global road biofuel demand to a total of 205 billion liters by 2030 (International Energy Agency 2024). These factors are anticipated to drive the growth of biofuels.

Biodiesel is one of the most advanced biofuel products. The production of biodiesel in each country is influenced by the availability of raw materials (feedstock) within that country (Sipayung 2023). In that order, the world's top five biodiesel producers are the European Union, the United States, Indonesia, Brazil, and Argentina. The United States (US), Brazil, and Argentina primarily produce soybean-based biodiesel, while Indonesia focuses on palm oil-based biodiesel. Meanwhile, the European Union utilizes a variety of feedstocks, including rapeseed oil, used cooking oil (UCO), palm oil, and others(Sipayung 2023).

The International Energy Agency (IEA) stated that the main factor behind this surge in demand is the growth of emerging economies, particularly Brazil, Indonesia, and India, driven by strong biofuel policies, increasing demand for transport fuels, and ample feedstock availability (Simonovska 2024b). Malaysia and Indonesia are the largest exporters of palm oil, with the majority of their exports going to the European Union (EU). Although the EU produces biodiesel, it faces limitations in cropland that is available for feedstock expansion and has set ambitious targets for biofuel use. Other major importers of palm oil, though not necessarily for biodiesel, include China, India, and Pakistan, while the US holds only a small share of the global palm oil market (Keeney and Nanninga 2008).

The role of palm oil as a global biodiesel feedstock has steadily grown over the years. The volume of palm oil used in the global biodiesel industry rose from 6.2 million tons in 2015 to 13.9 million tons in 2020. Along with the increase in volume, palm oil's share in the global feedstock market grew significantly from 23% to 36% during this period. This rise is attributed to the advantages of palm oil, including its

competitive price, ample supply, stability of consistency, and reliable availability of palm oil as a feedstock for biodiesel production (Sipayung 2023).

The development of biodiesel in Indonesia is still underway. The share of palm oil biodiesel from Indonesia in the global biodiesel market has grown rapidly. Indonesia's share increased from 4% in 2015 to 17% in 2020. This rise highlights the growing role of palm oil biodiesel in reducing fossil energy consumption and lowering greenhouse gas emissions associated with fossil fuel use (Sipayung 2023). In addition to being directly used for biodiesel production, palm oil also contributes to global biodiesel production by providing raw materials (feedstock's). According to United States Department of Agriculture (USDA) data (2020), the most commonly used feedstock's in the global biodiesel industry include palm oil, soybean oil, rapeseed oil, used cooking oil (UCO), tallow, coconut oil, and others, in that order (Sipayung 2023).

Global vegetable oil trade has declined by over 500,000 tons to 86.1 million tons trough 2024/2025, as reduced palm oil exports from Indonesia and Malaysia outweigh the increased exports of soybean oil from the United States, Argentina, and Brazil, as well as sunflower oil from Russia and Ukraine (United States Department of Agriculture 2024). Since mid-November 2024, palm oil prices in Indonesia and Malaysia have risen, while soybean oil prices have declined due to higher-than-anticipated crushing and exports in Argentina. Heavy rainfall and limited exportable supplies in Indonesia and Malaysia have driven up palm oil prices, while abundant global soybean supplies have put downward pressure on soybean oil prices, leading to an unusual premium for palm oil over soybean oil. As palm oil prices continue to rise, soybean oil exports are expected to partially offset the decline in palm oil exports, although the global vegetable oil market remains constrained (United States Department of Agriculture 2024).

The agricultural sector plays a vital role in Indonesia's economy, as evidenced by its contribution to the country's Gross Domestic Product (GDP) (Prabowo, Hardyastuti, and Darwanto 2023). Oil palm is a key commodity in the plantation sub-sector, consistently showing annual growth in production. According to data from the Ministry of Agriculture (2017), palm oil production grew by 6.12% in 2015, accompanied by a 0.65% increase in productivity (Prabowo, Hardyastuti, and Darwanto 2023). The relative equilibrium price of a commodity in international trade is determined by the balance of supply and demand in global markets (Prabowo, Hardyastuti, and Darwanto 2023). The Indonesian crude palm oil (CPO) market holds a dominant position and is highly competitive on a global scale (Prabowo, Hardyastuti, and Darwanto 2023).

Indonesia's biodiesel subsidy program has been instrumental in promoting the blending and consumption of palm oil-based biodiesel. Since its inception in 2015, the

program has been funded through an export levy on crude palm oil (CPO) and its derivatives, managed by the CPO Fund Agency (BPDPKS). Between January and June 2016, the program supported the absorption of over 1 billion liters of biodiesel, using levy revenues to cover the price gap between biodiesel and fossil fuels. The fund was established under regulations 24/2015 and 61/2015 and began operations in the summer of 2015 (Wright and Rahmanulloh 2016). According to BPDPKS, revenues from the export levy were projected to reach IDR9.5 trillion (approximately USD698 million) in 2016. The subsidy amount depends on the price difference between biodiesel and fossil diesel, which reportedly reached IDR5,000 per liter (37 cents per liter) in April 2016. Despite low fossil fuel prices and rising CPO prices, BPDPKS remained publicly optimistic about maintaining a steady supply of subsidized fuel throughout the year. However, industry contacts expressed skepticism, noting that the growing subsidy costs and the lack of a short-term recovery in fossil fuel prices could pose challenges. Consequently, it is anticipated that biodiesel subsidy volumes might decrease later in the year, depending on financial conditions for fuel and CPO (Wright and Rahmanulloh 2016).

The government's initiative to enhance the share of renewable energy in the national energy mix is outlined in the National Energy General Plan (RUEN). The document stated that Indonesia plans to increase renewable energy share of 23% by 2025 and 31% by 2050), with biodiesel being one of the key renewable energy sources. The use of biodiesel as an energy source began in 2006. However, its adoption accelerated significantly starting in 2015. Before 2015, the blending rate of biodiesel with diesel was only 10%, but this increased to 15% in 2015 and reached 30% by 2020. The government's efforts to accelerate the biodiesel program are demonstrated by its inclusion as a national strategic project in the 2020-2024 National Medium-Term Development Plan (RPJMN) and the establishment of the Palm Oil Plantation Fund Management Agency (BPDPKS) in 2015. BPDPKS serves as an institution managing palm oil plantation funds, with the majority of its expenditures allocated to incentivizing the biodiesel industry's development. According to a study by Faisal Basri and Gatot A. Putra (2020), the biodiesel program contributed to a trade balance deficit due to reduced crude palm oil (CPO) exports and increased imports of raw materials (methanol and sodium methylate) and capital goods for the biodiesel industry. Furthermore, the biodiesel industry overlooks optimal economies of scale, being influenced by the interests of major CPO producers (Saputra et al. 2021).

The government remains committed to achieving national energy independence, partly by accelerating the development of B50 biodiesel. Biodiesel is considered a viable alternative to replace diminishing fossil fuel supplies and plays a strategic role due to its positive impact on various aspects, particularly on the environment (BPDPKS n.d.). The transition to a higher mandate is expected to require significant investment in new processing capacity. However, the country’s palm oil

industry has raised concerns that the increased mandate could impact exports due to stagnating production, which has grown by less than 1% annually since 2019. The B50 mandate would require around 18 million tons of crude palm oil, potentially raising domestic cooking oil prices and reducing exports. The largest palm oil producers' association (GAPKI) has urged the government to focus on improving production before raising the mandate further (APROBI 2024).

Indonesia is the largest producer and exporter of palm oil globally. In 2023, the country's palm oil production is estimated to be approximately 46.82 million metric tons. However, production in 2024 is expected to remain flat due to severe wet weather conditions early in the year (CRIF n.d.). Crude palm oil is the main feedstock for biofuel in Indonesia. To ensure a stable market for palm oil and enhance its energy independence, the Indonesian government has introduced a plan to gradually increase the CPO percentage in biodiesel. Biodiesel is also heavily subsidized by the government to encourage its use among drivers, leading to a rise in domestic biodiesel consumption. In 2023, Indonesia increased its biodiesel mix from B30 to B35, which consists of 35 percent crude palm oil, to further boost domestic palm oil consumption. The implementation of B35 is expected to reduce greenhouse gas emissions (GHG) by nearly 35 million tons of CO2. Additionally, PT Pertamina, Indonesia's state-owned oil and gas company, aims to produce and supply B50 biodiesel by 2025 (Siahaan n.d.).

The rise in CPO prices aligns with increased demand from the biofuel industry and reduced productivity in Indonesia and Malaysia, according to (Maranda 2024). GAPKI reports that domestic palm oil consumption in Indonesia has grown at an average annual rate of 7.6% since 2019, driven by policies such as the biodiesel blending mandate and the requirement for mandatory domestic cooking oil sales. In contrast, production in Indonesia—the world's leading palm oil producer and exporter—has risen by less than 1% annually over the same period, highlighting a growing imbalance between demand and supply (Astra Agro Lestari, n.d.). This significant rise in CPO demand could potentially impact domestic and export cooking oil prices negatively and reduce government revenue derived from export levies due to constrained availability for other markets (Astra Agro Lestari 2024).

The urgency of this research lies in the trade-offs created by B50. On one hand, the program is designed to reduce fossil fuel dependency, strengthen energy security, and support national economic interests. On the other hand, diverting millions of tons of crude palm oil (CPO) from exports to domestic biodiesel production may reduce global supply, elevate vegetable oil prices, and trigger trade adjustments among major importers such as the European Union, India, and China. These disruptions also carry implications for global supply chain stability and food security, raising critical questions about the balance between domestic policy goals and international market consequences.

Existing literature has examined earlier blending mandates, such as B30, and their effects on palm oil trade, agricultural commodity prices, and environmental sustainability (Siregar et al. 2024 (Siregar et al. 2024; Saputra et al. 2021). However, limited studies have explored the potential global consequences of the forthcoming B50 program, despite its larger scale and higher demand for palm oil feedstock. This gap provides the rationale for this study.

Existing literature has extensively examined the effects of biodiesel policies on energy markets, agricultural commodity prices, and environmental sustainability. Research on Indonesia's biodiesel mandates, such as the B30 policy, suggests that increased domestic consumption affects palm oil exports and global vegetable oil markets (Siregar et al. 2024). Sorda et al. (2010) analyzed the implications of biodiesel mandates in the European Union, highlighting their impact on feedstock demand and price volatility (Sorda, Banse, and Kemfert 2010), while Sholihah et al. (2019) explored how biofuels development influenced some foods coomodities in the world markets (Sholihah and Kusnadi 2019). This study addresses this gap by investigating the potential disruptions in the global biodiesel market induced by Indonesia's B50 program. The hypothesis posits that Indonesia's B50 policy will create significant market disruptions by reducing palm oil availability for international trade, altering biodiesel price structures, and prompting policy adjustments in competing markets.

Accordingly, this article seeks to answer the research question: How does Indonesia's B50 biodiesel policy reshape global biodiesel markets and trade flows? To address this question, the study employs neomercantilism as its theoretical framework, highlighting the state's role in resource nationalism and trade intervention. By situating B50 within broader debates on energy security and global supply chains, this research contributes to policy and academic discussions on the geopolitical and economic dimensions of renewable energy transitions.

LITERATURE REVIEW

The global literature on biofuel policies emphasizes their complex interplay with trade, energy security, and sustainability. Existing studies generally converge on three key debates: the economic consequences of blending mandates, the role of the state in energy transitions, and the environmental trade-offs of biofuel expansion.

Scholars highlight that blending mandates significantly affect international agricultural and energy markets. Sorda, Banse, and Kemfert (2010) show that biodiesel policies in the European Union have reshaped feedstock demand, driving price volatility in vegetable oils. Similarly, Sholihah and Kusnadi (2019) identify how the expansion of biofuels contributes to food commodity price fluctuations in global markets (Sorda, Banse, and Kemfert 2010; Sholihah and Kusnadi 2019). More recent

work on Indonesia's biodiesel program, particularly the B30 mandate, indicates that rising domestic consumption of palm oil reduces export availability and influences global trade dynamics (Siregar et al. 2024). However, studies remain limited on the implications of the forthcoming B50 mandate, which is expected to absorb an even larger share of crude palm oil (CPO) from international markets.

Theoretical perspectives from international political economy provide a lens to interpret Indonesia's biodiesel policies. Neomercantilism argues that states adopt protectionist strategies to secure strategic resources and reduce external dependence (Ziegler and Menon 2014). In the energy sector, such strategies are often framed as resource nationalism, where governments prioritize domestic use of natural resources through subsidies, mandates, and export restrictions (Sriyani and Nonutu 2020). Indonesia's B50 initiative reflects this approach by channeling palm oil toward national energy needs, thereby reducing vulnerability to global fossil fuel markets. From this perspective, biodiesel policies are not merely environmental measures but also instruments of economic and geopolitical strategy.

Contrasting views emphasize the benefits of economic interdependence and comparative advantage. From a liberal standpoint, Indonesia's specialization in palm oil reflects its comparative advantage in renewable energy production, potentially reinforcing global trade integration (Jørgensen 2021). Meanwhile, analytic eclecticism highlights how real-world policies often blend elements of liberalism and mercantilism (Chernoff, Cornut, and James 2020). Indonesia's biodiesel transition embodies this hybridity: while promoting renewable energy trade, it simultaneously restricts exports to safeguard domestic supply.

While the literature has addressed the economic, policy, and environmental dimensions of earlier biofuel programs, few studies examine how Indonesia's planned B50 mandate may disrupt global trade flows and price stability. Furthermore, existing research has not fully explored the policy through a neomercantilist lens, which emphasizes state-led intervention and resource nationalism. This study addresses these gaps by analyzing Indonesia's B50 program as both an energy security strategy and a potential disruptor of global biofuel markets.

RESEARCH METHOD

Given the complexity of this topic, a case study design will be employed to conduct a detailed investigation into the effects of Indonesia's biodiesel program over time. This will involve an in-depth exploration of specific disruptions or shifts in biodiesel production, trade flows, and market prices resulting from the B50 program. By examining specific instances of market disruptions, this research will provide

valuable insights into the broader implications for the global biodiesel industry (Oranga and Matere 2023).

This research applies qualitative methods to explore complex, real-world phenomena such as the global biodiesel market and the reactions of various stakeholders to the implementation of the B50 biodiesel program. The qualitative approach is particularly valuable for examining how market players, from governments to private sectors, perceive and respond to such policy changes. Participants' experiences, perspectives, and the socio-political context of Indonesia's biodiesel program are crucial to understanding its potential to disrupt global markets. In-depth interviews with key stakeholders, such as industry experts, policymakers, and business leaders, will provide insights into the motivations behind the adoption of B50 biodiesel and its broader market implications (Tenny, Brannan, and Brannan 2022).

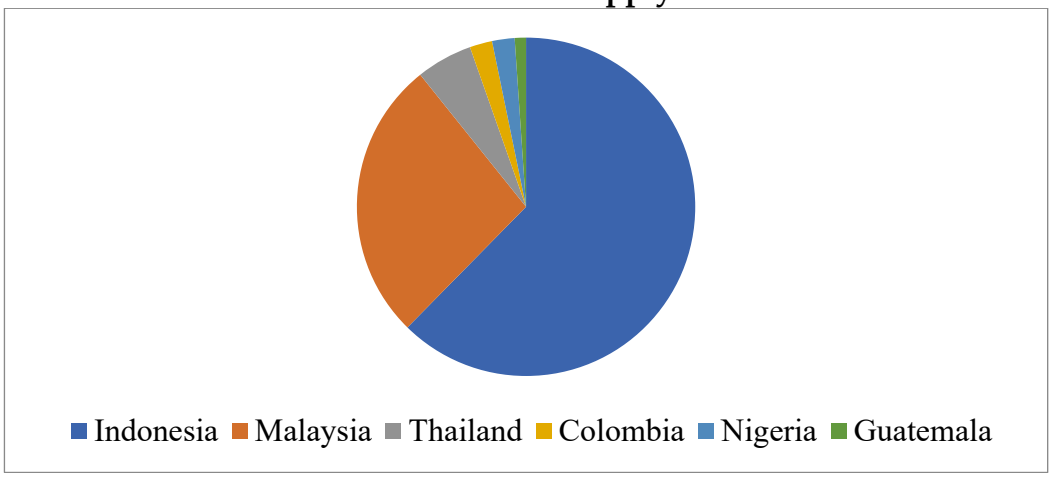
The thematic analysis will be employed to identify recurring patterns related to market disruptions and policy responses. Textual analysis will help scrutinize government policies, market reports, and industry publications to uncover underlying trends and strategies that may drive these changes. Discourse analysis will also be applied to understand the language used in public discussions, media coverage, and political debates surrounding Indonesia's biodiesel program, highlighting the discursive shifts in global market perceptions and reactions (Ugwu, Chinyere. N. and Eze Val 2023).

DISCUSSION

Indonesia Role in Palm Oil Supply Chain

As the supplier of approximately 58% of the world's palm oil supply, Indonesia's rising domestic consumption is poised to significantly influence the dynamics of the global vegetable oil market. This shift could lead to reduced export volumes, potentially driving up prices for international buyers and increasing demand for alternative oils such as soybean, sunflower, and rapeseed oil. Additionally, Indonesia's focus on fulfilling domestic energy needs through biodiesel production may reshape trade patterns, highlighting the country's pivotal role in balancing global supply and demand for vegetable oils.

Figure 1.
World's Palm Oil Supply



Source: (USDA 2025)

Figure 2.
Indonesia Palm Oil Data (Billion Tons)

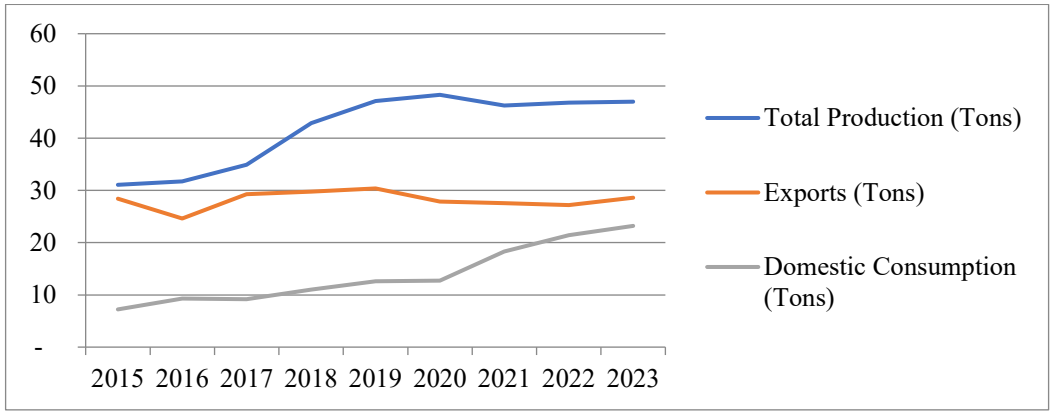
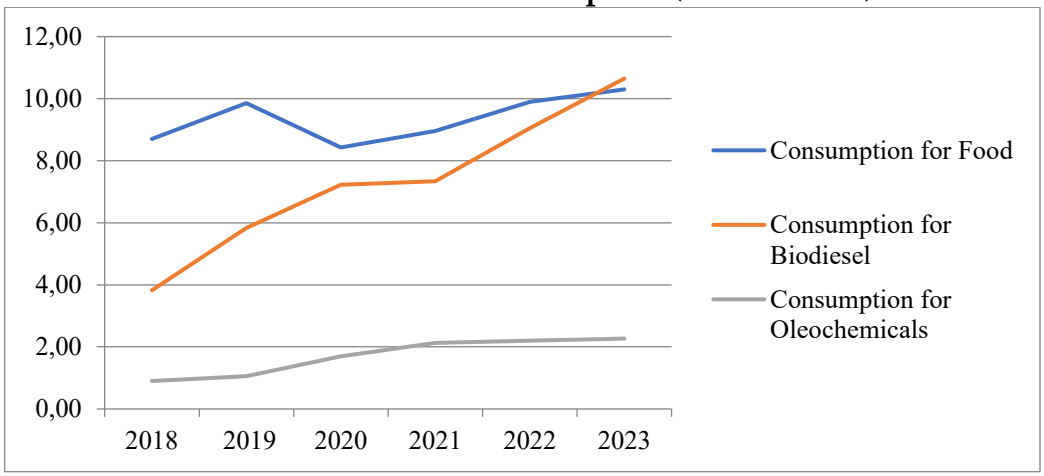


Figure 3.
Indonesia Palm Oil Consumption (Billion Tons)



Source: (Ahdiat 2024)

Rising domestic consumption has reduced the available export volume, with domestic usage increasing sharply from 12,750 tonnes in 2020 to 23,210 tonnes in 2023. This growth is driven by the government's mandatory biodiesel policies, such as B35 and B40. Indonesia seems to be prioritizing domestic consumption, particularly for energy (biodiesel). Palm oil continues to be a vital economic commodity for Indonesia, both domestically and internationally.

Table 1.
Global Vegetable Oil Price (USD/MT)

Year	Palm Oil	Rapeseed Oil	Soybean Oil	Sunflower Oil
2015	565,09	774,62	672,17	1022,18
2016	639,85	821,95	721,16	1009,74
2017	647,80	871,95	735,28	953,03
2018	559,86	829,63	658,63	900,81
2019	523,95	853,66	645,32	883,51
2020	666,06	903,11	690,01	1056,51
2021	1073,52	1510,04	1277,44	1718,91
2022	1177	1763,30	1566,08	1934,16
2023	838,35	1038,97	1272,79	1218,07

Source: (International Monetary Fund n.d.)

Palm oil consistently has the most competitive price compared to other vegetable oils, making it a popular choice in developing countries. In contrast, rapeseed oil or soybean oil most expensive globally, with its limited supply resulting from unfavorable weather conditions in key production regions (Canada and Europe) and growing demand for biofuel production. Based on the data above, despite rising prices, palm oil remains the most affordable option and continues to dominate the global market.

Vice Minister of Agriculture, Sudaryono, stated that the B50 program is designed to support Indonesia's dual objectives: enhancing national energy security and strengthening the country's bargaining position in the global market (GAPKI 2024b). GAPKI Chairman Eddy Martono highlighted that the implementation of the B50 mandatory policy could potentially reduce palm oil exports by up to 6 million tons. This reduction may hinder efforts to boost production since exports play a crucial role in generating palm oil funds through export levies managed by the Palm Oil

Plantation Fund Management Agency (BPDPKS). These levies serve as the primary funding source for critical programs, including the rejuvenation of community oil palm plantations (GAPKI 2024a). Eddy emphasized to the government that a reduction in palm oil exports would significantly affect the funding of the biodiesel program, which heavily relies on revenues from export levies. Previously, Minister of Agriculture Andi Amran Sulaiman expressed optimism that the B50 program could commence by 2026. He is confident that domestic crude palm oil (CPO) production, currently at 46 million tons, would be sufficient to meet the raw material requirement of 5.3 million tons for B50 production, with the remaining output allocated to meet domestic consumption and export demands (GAPKI 2024a).

Indonesia is focusing on boosting biodiesel production, even if it means cutting back on palm oil exports. In 2025, the country intends to significantly increase its biodiesel output to 15.6 million kiloliters. As the world's largest exporter of palm oil, Indonesia is prepared to reduce its palm oil exports in order to achieve its biodiesel targets. This approach is part of Indonesia's broader strategy to reach net-zero emissions by 2050 and enhance energy self-sufficiency. The government aims to increase the biodiesel blend to 50% by 2026, a move expected to save USD 20 billion annually on energy imports (Lin 2025).

Feedstock Analysis

The growth in vegetable oil production aligns with the rising international demand, driven by both food needs (primarily in India and China) and non-food uses, including biofuels (largely from Europe). This expansion is bolstered by public investments and subsidies in several Southeast Asian nations. However, the growing demand has contributed significantly to land conversion for oil palm cultivation in the region. Such conversions have led to environmental challenges, including deforestation, forest fires, increased carbon emissions, air and water pollution, and land disputes. Deforestation, a critical global issue, has profound consequences for the climate, biodiversity, and atmosphere, while also posing threats to the cultural and physical survival of local indigenous communities (Bogheiry, Thaha, and Rahmah 2023).

As global demand for palm oil continues to grow, particularly for use in food, biofuels, and industrial applications, its production is expected to rise correspondingly (Bogheiry, Thaha, and Rahmah 2023). Over the past decade (2012–2022), the global and Indonesian palm oil production trends have shown significant growth. Globally, production increased from 52.91 million tons per year in 2012 to 77.215 million tons per year in 2022, representing a 1.45-fold increase. During the same period, Indonesia's palm oil production rose by 0.57-fold, growing from 26.0 million tons per year in 2012 to 45.0 million tons per year in 2022 (Bogheiry, Thaha, and Rahmah 2023).

There were slight declines in global and Indonesian palm oil production in 2016 and 2020. The 2016 drop was attributed to the impact of El Niño, a climate phenomenon causing warming of the Eastern Pacific Ocean and bringing dry weather to Southeast Asia, which reduced palm yields in major producers like Indonesia and Malaysia. In 2020, production was affected by several factors: labor shortages due to the COVID-19 pandemic, lingering effects of dry weather in 2019, and reduced fertilizer usage, all of which contributed to decreased yields in the same top-producing nations (Reuters 2020).

Malaysian palm oil futures dropped amid concerns over weak export demand and uncertainty regarding Indonesia's biodiesel mandate. The March benchmark contract on the Bursa Malaysia Derivatives Exchange decreased by 0.21%, settling at RM4,356 per metric ton. Market sentiment remains wary following December's Malaysian export data, which reported declines ranging from 2.5% to 7.8% in 2024 (Reuters 2025). Enhanced biodiesel mandates like B50 drive up domestic demand for palm oil as a feedstock, potentially limiting its availability for exports. This shift contributes to market uncertainty and influences global palm oil prices, as demonstrated by the cautious outlook in Malaysia.

Potential Market Disruptions

Indonesia's full membership in the Brazil, Russia, India, China, and South Africa (BRICS) alliance is seen as an opportunity to foster collaboration in new and renewable energy (NRE), including the advancement of biodiesel development (Dewi 2025). President Prabowo previously emphasized the importance of palm oil plantations as critical state assets, calling on regional leaders and security forces to ensure their protection. Likewise, Indonesian House of Representatives member Firman Subagyo advocated for recognizing palm oil as a strategic commodity, proposing laws to safeguard it alongside other key commodities, similar to measures implemented in countries such as the United States, Turkey, and Malaysia (Kurniawan 2025).

The redistribution of palm oil exports is influenced by various factors, including rising export levies and increasing domestic consumption, particularly in major palm oil-producing countries like Indonesia and Malaysia. These changes are causing shifts in global trade patterns, as buyers in traditional markets seek alternative oils. For example, high palm oil prices have prompted countries like India and China to turn to other oils, such as soybean oil, which the U.S. is now exporting in larger volumes, especially after a strong soybean harvest. Additionally, the European Union’s deforestation regulations and sustainability policies have reduced demand for palm oil, particularly for biofuels, further affecting the distribution of palm oil exports (Pendrill et al. 2019). This shift may lead to surpluses or shortages in markets that are

less sensitive to price fluctuations or those that do not have strict environmental policies (Austin et al. 2019). As a result, the dynamics of palm oil trade are evolving as demand patterns change and new policies are implemented (Phillips 2022)(Our World in Data n.d.).

Factors like environmental regulations and labor shortages in key producing countries, such as Indonesia and Malaysia, have constrained palm oil production. This has tightened the global vegetable oil market, pushing consumers to look for alternative options (Kwon 2024). The palm oil industry in Indonesia and Malaysia is increasingly affected by climate change, including intense rainfall and droughts that hinder productivity. Companies face additional pressure from regulations like the EU Deforestation Regulation (EUDR), demanding improved supply chain traceability. While regenerative agriculture and sustainable practices are being explored, the industry struggles to move away from monoculture farming (Hicks 2024). If production remains stagnant at 54.84 million tons, crude palm oil (CPO) export volumes will decline as domestic consumption increases with the transition from the B40 to the B50 biodiesel programs. Under the B40 program, domestic consumption stands at 26.57 million tons, consisting of 10.3 million tons for food, 2.27 million tons for oleochemicals, and 14 million tons for biodiesel, leaving an export supply of 28.27 million tons. In contrast, with the B50 program, domestic consumption rises to 30.07 million tons, including 17.5 million tons for biodiesel, reducing the export supply to 24.77 million tons (Bloomberg 2024).

In addition to Indonesia's B50 policy, several factors have contributed to the decline in production in exporting countries. Malaysia's weak exports have been a significant factor, with overseas shipments decreasing by 8.3% in the first 20 days of December 2024 and exports to India, its largest buyer, falling by nearly 22%. Seasonal demand also drops during the winter months, as palm oil solidifies in colder temperatures, diminishing its appeal. Furthermore, palm oil faces strong competition from its primary substitute, soybean oil, and is currently trading at an unusual premium, which negatively impacts its competitiveness (Listiyorini 2024).

The potential for shortages or surpluses in key palm oil markets is influenced by a combination of biofuel policies, global supply challenges, and environmental pressures. Policies such as Indonesia's B40 or B50 biodiesel mandates are expected to consume significant amounts of palm oil domestically, which could reduce the volume available for export. At the same time, declining productivity due to adverse weather conditions in Malaysia, coupled with policy shifts in major importing regions like the European Union, could create localized shortages. In addition, increases in the production and export of alternatives such as soybean oil from the U.S. may help alleviate some of these supply gaps. Moreover, the ongoing high demand for palm oil in sectors outside of biofuel, including food and cosmetics, adds another layer of

complexity to global supply chains. These markets will need to balance sustainability initiatives with growing demand, and long-term solutions, including sustainable certification schemes and enhanced yields, are being promoted to manage these challenges effectively (Our World in Data n.d.; Phillips 2022).

The industrial sectors most impacted by the CPO supply gap are those dependent on CPO-derived products, particularly the **food industry**, due to rising **cooking oil prices.** The increase in export levies could drive up the cost of CPO derivatives, such as cooking oil, as a result of a reduced vegetable oil supply from Indonesia. Furthermore, the **biodiesel industry** is directly affected, as the policy aims to prioritize domestic supply for the biodiesel program. This policy could also diminish the competitiveness of Indonesian CPO in the global vegetable oil market, potentially impacting industries reliant on exports (Purnama 2024).

Price dynamics in the palm oil market are significantly influenced by the interplay between CPO prices and biodiesel production costs. Rising CPO prices, driven by factors such as shifting export patterns, regulatory policies, and fluctuating production levels, directly affect biodiesel production costs. For instance, biodiesel producers in countries like Indonesia and Malaysia, which mandate biofuel blending (e.g., B35 or B40 programs), are faced with higher feedstock costs as the demand for palm oil increases domestically. This in turn can lead to higher biofuel prices globally (Declerck et al. 2023).

The ripple effect on alternative biofuel feedstocks, such as soybean oil, further amplifies price volatility. As CPO prices rise, buyers often shift towards alternatives like soybean oil, which sees increased demand for both food and fuel production. This results in higher soybean oil prices as well, driven by its increased use in biofuels (USDA n.d.). The interconnection of vegetable oil markets means that price increases in one sector, such as palm oil, can trigger price hikes across others, leading to broader economic implications in biofuel production and global agricultural commodity markets (Declerck et al. 2023).

The global trade dynamics of biofuels and feedstocks are undergoing significant shifts influenced by policy changes, environmental considerations, and economic pressures. For instance, the United States' emphasis on renewable diesel production has increased domestic demand for soybean oil and other low-carbon-intensity feedstocks, transforming the U.S. into a net importer of soybean oil by 2023. This shift has reshaped global feedstock availability and pricing, disrupting traditional trade patterns. Concurrently, Brazil has leveraged its expanding soybean production to strengthen its market share, particularly in China, driven by competitive pricing and increased output (USDA 2024; Fuels and Lubes 2024).

For biofuel-importing nations, such as the European Union and India, these shifts mean greater reliance on alternative feedstocks or increased costs. EU faces challenges from anti-dumping duties on biodiesel from countries like China, forcing it to seek other sources or shift focus toward alternative energy solutions(USDA 2024)(Fuels and Lubes 2024). For exporting nations like Brazil, the opportunities to increase their market presence are significant. However, exporters face pressures to ensure sustainable practices and navigate fluctuating demand for biofuels as countries emphasize electrification and other renewable energy pathways (Fuels and Lubes 2024). These trade pattern changes underscore the evolving nature of global energy markets, driven by policy, environmental, and economic factors. The ripple effects are reshaping the competitive landscape for biofuel and feedstock trade worldwide.

Indonesia has increased the indicative price of crude palm oil, raising the export duty to USD124/ton, which is expected to make Indonesian palm oil more expensive in global markets. Sunflower oil prices rose by 5% to USD1,289/ton in 2024, driven by supply shortages from Ukraine and higher procurement costs for sunseeds. This growing price premium is prompting buyers to reconsider palm oil as a substitute (UkrAgroConsult 2024). Major companies like Procter & Gamble, Nestlé, Unilever, and Mondelez, which rely on palm oil for food, cosmetics, and household products, would face higher input costs. These costs are likely to be passed on to consumers, raising the prices of everyday products such as cookies, soaps, and detergents. Reduced availability could lead to difficulties in sourcing sufficient quantities of palm oil, forcing companies to reformulate products or shift to alternative, potentially less efficient, ingredients (Nangoy 2022)

The diversion of palm oil for biofuel production, coupled with rising domestic demand, has disrupted global supply chains. As a major importer of vegetable oils, India has been heavily impacted. The country imports approximately 9 million tonnes of palm oil annually, mainly from Indonesia and Malaysia. According to India's Economic Survey for 2021-22, cooking oil imports are expected to grow at an annual rate of 3.4% until 2030 (IVPA 2024). The Fast-Moving Consumer Goods (FMCG) sector in India, which relies heavily on palm oil for manufacturing products like soaps, detergents, and processed foods, faces increased production costs due to higher palm oil prices. These costs are often passed on to consumers, leading to higher retail prices (The Economic Times 2022). To mitigate the impact of reduced palm oil imports, Indian companies may consider shifting to alternative edible oils such as soybean or sunflower oil. However, this transition depends on the availability and pricing of these substitutes, which can also be affected by global market dynamics (Murali and Palit 2025).

Furthermore, by 2024, India's oleochemical sector is facing major challenges due to increasing oleic acid prices, further intensified by a rise in imports of finished

products like oleic acid and refined glycerin from Malaysia, Indonesia, and Thailand. The primary cause of the price increase is the higher cost of raw materials, particularly palm oil, which has led to increased production costs for oleochemicals (Hong 2024).

The decrease in palm oil demand occurred as China shifted to sunflower oil, which was more affordable than palm oil. As a result, China's imports from Indonesia dropped, with China becoming the largest importer of CPO from Indonesia, totaling 7.7 million tons in 2023 (Pratomo 2024). This scenario highlights how shifts in global demand, such as China's preference for cheaper sunflower oil, could be further disrupted by Indonesia's B50 program. By prioritizing domestic use of palm oil for biofuel production, Indonesia may reduce the amount of palm oil available for export, exacerbating supply shortages and increasing competition for the remaining available palm oil, which could drive prices up and potentially lead to market disruptions globally. Malaysia, the world's second-largest palm oil exporter, has faced significant challenges in meeting global demand due to labor shortages and production shortfalls. In December 2024, Malaysian palm oil stocks fell to a 19-month low of 1.71 million metric tons, marking the third consecutive month of decline. This decrease was attributed to reduced output caused by floods, with crude palm oil production dropping by 8.3% to 1.49 million tons (Murali and Palit 2025).

Reduced production in major palm oil-producing countries like Indonesia and Malaysia, combined with the increased demand for palm oil due to Indonesia's B50 biodiesel program, is tightening global supply. This has led to higher palm oil prices and reduced its competitiveness compared to alternative oils like soybean oil (Business Times 2024). Typically, palm oil is cheaper than soybean oil, with the average discount over the past decade being around $170 per metric ton. However, this year, palm oil has been trading at a premium of around $145 per ton compared to soybean oil, largely due to reduced production in Indonesia, the top producer (Braun 2024). The global vegetable oil market is facing challenges, with a projected decline in rapeseed and sunflower oil production for 2024-25, potentially leading to more attention on soybean oil. . The global vegetable oil market is facing challenges, with a projected decline in rapeseed and sunflower oil production for 2024-25, potentially leading to more attention on soybean oil (Braun 2024).

According to USDA data, global soybean production is projected to rise by over 25 million tons (more than 6%), reaching a total of 422 million tons. Global rapeseed production is expected to remain largely stable, with increases in Canada, Australia, and China compensating for declines in the European Union, Ukraine, and India. Global sunflower seed production is forecasted to see a slight increase, as gains in Ukraine and the European Union offset reductions in Argentina and Russia. Other oilseeds, such as cottonseed, peanuts, and palm kernel, are also expected to experience

modest growth, while copra production is anticipated to decline (USDA 2023). As a result, soybean oil is likely to replace palm oil in the global market.

Environmental Consideration

President Prabowo Subianto confidently asserted that he is not intimidated by accusations of deforestation from various countries, including the European Union. He also emphasized his commitment to enhancing food and energy self-sufficiency, with palm oil being a key strategic asset for the nation. This is particularly important as Prabowo seeks to strengthen the downstream sector, including the implementation of renewable energy policies related to the B50 biodiesel program (Redaksi Majalah sawit Indonesia 2025).

The biodiesel blending calculation conducted by LPEM FEB UI indicated that if the government establishes a 50% blending level (B50), an area expansion of 9.2 million hectares will be required (Saputra et al. 2021). The provinces of Kalimantan on Indonesian Borneo, known for their dense forests, have experienced the greatest impact, accounting for 72% of all deforestation for palm oil in Indonesia between 2018 and 2022. Meanwhile, the island of Sumatra witnessed a 3.7-fold increase in deforestation linked to palm oil production in 2022 compared to 2020. This surge may be attributed to rising demand for palm oil in China and increased domestic consumption (Benedict and Heilmayr 2024).

The expansion of palm oil plantations to satisfy biodiesel demands has resulted in deforestation, posing a threat to biodiversity and contributing to higher greenhouse gas emissions. According to the BBC, Indonesia's push for biodiesel is driving deforestation, which undermines efforts to address climate change (Stallard and Song 2021). Research by the International Council on Clean Transportation raises concerns about the impact of palm biodiesel on air quality in Indonesia. Studies suggest that palm biodiesel could lead to higher nitrogen oxide (NOx) emissions than conventional diesel, which may negatively affect air quality (Malley, Searle, and Kristiana 2021).

Palm oil has become a key ingredient in a wide range of products. According to the World Wildlife Fund (WWF), nearly 50% of packaged goods found in supermarkets — including items like pizza, doughnuts, chocolate, deodorant, shampoo, toothpaste, and lipstick — contain palm oil. Additionally, it is commonly used in animal feed and as a biofuel in many regions worldwide (Igini 2023).

Producing sustainable palm oil in compliance with RSPO Standards ensures the protection and management of forests designated as High Conservation Value (HCV) and High Carbon Stock (HCS) areas. This safeguards the habitats of numerous endangered species of flora, animals, and birds, including Sumatran tigers and Orang Utan (WWF 2021).

CONCLUSIONS

Indonesia's B50 biodiesel mandate represents both a milestone in the country's renewable energy transition and a potential disruptor of global biofuel markets. By requiring a 50% palm oil–based biodiesel blend by 2026, the program advances national energy security and reduces dependence on imported fossil fuels. However, the redirection of crude palm oil (CPO) from exports to domestic consumption is likely to reduce global supply, elevate vegetable oil price volatility, and force trade adjustments among major importers such as India, China, and the European Union.

Analyzed through the lens of neomercantilism, B50 illustrates how states employ resource nationalism to prioritize domestic economic interests and strengthen strategic autonomy. The use of subsidies, export levies, and blending mandates reflects deliberate state intervention in markets, positioning biodiesel policy as both an energy strategy and a trade instrument.

At the same time, the policy exposes Indonesia to domestic and international risks. Domestically, stagnant palm oil production and rising food prices may strain subsidy mechanisms and social stability. Internationally, sustainability concerns—including deforestation and emissions—could challenge Indonesia's standing in global markets, particularly under stricter environmental regulations.

This study contributes to the literature by demonstrating that national biofuel policies have far-reaching global implications, reshaping trade flows, market structures, and geopolitical alignments. For policymakers and industry stakeholders, Indonesia's B50 program underscores the importance of balancing energy security objectives with trade stability **and** sustainability commitments**.**

Future research should build on this analysis by employing quantitative modeling to project long-term price and trade effects of B50 and by exploring comparative cases in other emerging economies. Such studies would deepen our understanding of how domestic energy policies influence global markets in an era of accelerating renewable energy transitions.

BIBILIOGRAPHY

Ahdiat, Adi. 2024. "Konsumsi Sawit Untuk Biodiesel Meningkat, Lampaui Pangan." Databoks. 2024. https://databoks.katadata.co.id/agroindustri/statistik/37b1e4ce697d218/konsumsi-sawit-untuk-biodiesel-meningkat-lampaui-pangan.

APROBI. 2024. "Indonesia Begins Testing to Prepare 'B50' Palm Oil Biodiesel Mandate." 2024. https://www.aprobi.or.id/id/indonesia-begins-testing-to-prepare-b50-palm-oil-biodiesel-mandate/.

Astra Agro Lestari. 2024. "Indonesia Begins Testing to Prepare 'B50' Palm Oil Biodiesel Mandate – Astra Agro Lestari." Astra Agro Lestari. 2024. https://www.astra-agro.co.id/en/2024/08/08/indonesia-begins-testing-to-prepare-b50-palm-oil-biodiesel-mandate/.

Austin, Kemen G., Amanda Schwantes, Yaofeng Gu, and Prasad S. Kasibhatla. 2019. "What Causes Deforestation in Indonesia?" *Environmental Research Letters* 14 (2). https://doi.org/10.1088/1748-9326/AAF6DB.

Benedict, Jason Jon, and Robert Heilmayr. 2024. "A Decade of Progress on Palm Oil Deforestation at Risk in Indonesia | New Security Beat." New Security Beat. 2024. https://www.newsecuritybeat.org/2024/10/a-decade-of-progress-on-palm-oil-deforestation-at-risk-in-indonesia/.

Bloomberg. 2024. "Biodiesel B40 Diterapkan 1 Januari 2025, Begini Kesiapannya." Bloomberg. 2024. https://www.bloombergtechnoz.com/detail-news/52776/biodiesel-b40-diterapkan-1-januari-2025-begini-kesiapannya/2.

Bogheiry, Ali, M Thaha, and Laila Rahmah. 2023. "Global Dependence Analysis on Indonesian Palm Oil Production and Its Effect on Environmental Security Using the Copenhagen School Approach." *Journal of World Science* 2 (3): 466–82. https://doi.org/10.58344/jws.v2i3.243.

BPDPKS. n.d. "Menteri Pertanian Resmikan Biodiesel B50, Sejarah Baru Kemandirian Energi Nasional - Beranda." Accessed December 9, 2024. https://www.bpdp.or.id/menteri-pertanian-resmikan-biodiesel-b50-sejarah-baru-kemandirian-energi-nasional.

Braun, Karen. 2024. "Soyoil Assumes Power Position as Palm Oil Prices Reach Near-Record Premium |." Reuters. 2024. https://www.reuters.com/markets/commodities/soyoil-assumes-power-position-palm-oil-prices-reach-near-record-premium-braun-2024-11-26/.

Business Times. 2024. "World's Most Popular Vegetable Oil Is No Longer the Cheapest." The Business Times. 2024. https://www.businesstimes.com.sg/companies-markets/energy-commodities/worlds-most-popular-vegetable-oil-no-longer-cheapest.

Chernoff, Fred, Jérémie Cornut, and Patrick James. 2020. "Analytic Eclecticism and International Relations: Promises and Pitfalls." *International Journal* 75 (3): 383–91. https://doi.org/10.1177/0020702020959250.

CRIF. n.d. "Market Insights of Indonesian Palm Oil." CRIF Asia. Accessed January 7, 2025. https://www.id.crifasia.com/resources/industry-insights/market-insights-of-indonesian-palm-oil/.

Declerck, Francis, Prince Hikouatcha, Guillaume Tchoffo, and Roméo Tédongap. 2023. "Biofuel Policies and Their Ripple Effects: An Analysis of Vegetable Oil Price Dynamics and Global Consumer Responses." *Energy Economics* 128 (June 2022). https://doi.org/10.1016/j.eneco.2023.107127.

Dewi, Mis Fransiska. 2025. "RI Gabung BRICS: Peluang Buat Kerja Sama Biodiesel." Bloomberg. 2025. https://www.bloombergtechnoz.com/detail-news/59824/ri-gabung-brics-peluang-buat-kerja-sama-biodiesel.

Fuels and Lubes. 2024. "Biofuels in Asia: Policies, Progress, and Challenges for 2024 - F&L Asia." Fuels and Lubes. 2024. https://www.fuelsandlubes.com/fli-article/biofuels-in-asia-policies-progress-and-challenges-for-2024/.

GAPKI. 2024a. "GAPKI Reminds B50 Negative Impact Amid Stagnant Production - Gabungan Pengusaha Kelapa Sawit Indonesia (GAPKI)." 2024. https://gapki.id/en/news/2024/10/30/gapki-reminds-b50-negative-impact-amid-stagnant-production/.

———. 2024b. "RI To Apply B50 As A Means To Boost Global Bargaining Position - Gabungan Pengusaha Kelapa Sawit Indonesia (GAPKI)." 2024. https://gapki.id/en/news/2024/09/25/ri-to-apply-b50-as-a-means-to-boost-global-bargaining-position/.

Hicks, Robin. 2024. "Can Regenerative Agriculture Save Southeast Asia's Rainforests from Palm Oil? |." Reuters. 2024. https://www.reuters.com/sustainability/land-use-biodiversity/can-regenerative-agriculture-save-southeast-asias-rainforests-palm-oil-2024-10-10/.

Hong, Xiang. 2024. "Indian Oleochemical Sector Faces Pressure Amid Rising Oleic Acid Prices and Import Surge." CHEMANALYST.NEWS. 2024. https://www.chemanalyst.com/NewsAndDeals/NewsDetails/indian-oleochemical-sector-faces-pressure-amid-rising-oleic-acid-prices-30647.

Igini, Martina. 2023. "All You Need to Know About Palm Oil Deforestation." Earth.Org. 2023. https://earth.org/how-palm-oil-contributes-to-environmental-destruction/.

International Energy Agency. 2023. "Renewables 2023." https://doi.org/10.1002/peng.20026.

———. 2024. "Renewables 2024 Analysis and Forecast to 2030."

International Monetary Fund. n.d. “Primary Commodity Price System - At a Glance - ANNUAL - IMF Data 2015-2023.” IMF. Accessed February 17, 2025. https://data.imf.org/?sk=471dddf8-d8a7-499a-81ba-5b332c01f8b9.

IVPA. 2024. “Vegetable Oil Vision 2030: Challenge and Opportunities.” INDIAN VEGETABLE OIL INDUSTRY.

Jørgensen, Knud Erik. 2021. *International Theory Tradition in Europe Edited By*.

Keeney, Dennis, and Claudia Nanninga. 2008. “Biofuel and Global Biodiversity.” http://www.agobservatory.org/library.cfm?refid=102584.

Kurniawan, Didi. 2025. “Gapki Supports President Prabowo’s Policy To Make State Strategic Asset Palm Oil.” VOI. 2025. https://voi.id/en/economy/448392.

Kwon, Yage. 2024. “Rapeseed Oil Prices Rise Amid Tight Supplies and Growing Demand in Europe.” CHEMANALYST.NEWS. 2024. https://www.chemanalyst.com/NewsAndDeals/NewsDetails/rapeseed-oil-prices-rise-amid-tight-supplies-and-growing-demand-in-europe-28036.

Lin, Bo-yu. 2025. “Indonesia Delays Full Implementation of B40 Biodiesel.” Reccessary. 2025. https://www.reccessary.com/en/news/id-regulation/indonesia-delays-b40-biodiesel-implementation.

Listiyorini, Eko. 2024. “Palm Oil Prices Fall on Weak Malaysia Exports, Competition With Soyoil.” Bloomberg. 2024. https://www.bloomberg.com/news/articles/2024-12-24/palm-oil-falls-on-weak-malaysia-exports-competition-with-soyoil.

Malley, Jane O, Stephanie Searle, and Tenny Kristiana. 2021. “Air Quality Impacts of Palm Biodiesel in Indonesia.” *ICCT White Paper*, no. January.

Maranda, Servio. 2024. “Bapanas Boss Denies Reports That CPO Hike Causes MinyaKita Price to Soar - News En.Tempo.Co.” Tempo. 2024. https://en.tempo.co/read/1950676/bapanas-boss-denies-reports-that-cpo-hike-causes-minyakita-price-to-soar?tracking_page_direct.

Murali, Divya, and Amitendu Palit. 2025. “Indonesia’s Palm Oil Export Ban: India Must Diversify Sources to Avoid Future Supply Disruptions.” NUS Institute of South Asian Studies (ISAS). 2025. https://www.isas.nus.edu.sg/papers/indonesias-palm-oil-export-ban-india-must-diversify-sources-to-avoid-future-supply-disruptions/.

Nangoy, Fransiska. 2022. “Indonesia Bans Palm Oil Exports as Global Food Inflation Spikes.” Reuters. 2022. https://www.reuters.com/world/asia-pacific/indonesia-ban-palm-oil-exports-shore-up-supply-soyoil-futures-surge-2022-04-22/.

Oranga, Josephine, and Audrey Matere. 2023. “Qualitative Research: Essence, Types and Advantages.” *OALib* 10 (12): 1–9. https://doi.org/10.4236/oalib.1111001.

Our World in Data. n.d. “Palm Oil - Our World in Data.” Our World in Data. Accessed December 13, 2024. https://ourworldindata.org/palm-oil.

Pendrill, Florence, U Martin Persson, Javier Godar, and Thomas Kastner. 2019. “Deforestation Displaced: Trade in Forest-Risk Commodities and the Prospects for a Global Forest Transition.” *Environmental Research Letters* 14 (5): 055003. https://doi.org/10.1088/1748-9326/AB0D41).

Phillips, Josie. 2022. “Palm Oil: Making Supply Chains Fairer.” *China Dialogue Https://Cdn.Chinadialogue.Net/Content/Uploads/2022/08/31084432/CD-Palm-Oil-Journal_202208_V2.Pdf Printed 30 February 2023* 1 (August).

Prabowo, Baginda Mora Fortius, Suhatmini Hardyastuti, and Dwidjono Hadi Darwanto. 2023. “The Performance of Indonesian Crude Palm Oil Export.” *Journal of Agribusiness Management and Development* 2 (2): 1–9. https://doi.org/10.22146/jamadev.v2i2.971.

Pratomo, Gagas Yoga. 2024. “Minyak Bunga Matahari Kalahkan CPO Indonesia Di China.” Bisnis Liputan 6. 2024. https://www.liputan6.com/bisnis/read/5686454/minyak-bunga-matahari-kalahkan-cpo-indonesia-di-china?page=3.

Purnama, Azura Yumna Ramadani. 2024. “Pungutan Ekspor CPO Naik Demi Biodiesel, Migor Bisa Makin Mahal.” Bloomberg. 2024. https://www.bloombergtechnoz.com/detail-news/58611/pungutan-ekspor-cpo-naik-demi-biodiesel-migor-bisa-makin-mahal/2.

Redaksi Majalah sawit Indonesia. 2025. “Belum Genap 100 Hari, Kebijakan Sawit Presiden Prabowo Dapat Gangguan.” Kantor Berita Sawit. 2025. https://sawitindonesia.com/belum-genap-100-hari-kebijakan-sawit-presiden-prabowo-dapat-gangguan/.

Reuters. 2020. “Asian Palm Oil Producers Forecast Lower Output in 2020 | Reuters.” 2020. https://www.reuters.com/article/markets/currencies/asian-palm-oil-producers-forecast-lower-output-in-2020-idUSKCN24N1IU/.

———. 2025. “Palm Fell on Export Concerns, Indonesia’s Biodiesel Plans.” Business Times. 2025. https://www.nst.com.my/business/economy/2025/01/1158204/palm-fell-export-concerns-indonesias-biodiesel-plans.

Saputra, Wiko, Muhammad Ichsan, Anita Permatasari, and Tazkiyah Syakira. 2021. “Pandangan Pemangku Kepentingan Terhadap Risiko Ekonomi Dan Lingkungan Dalam Kebijakan Biodiesel Di Indonesia Wiko Saputra Muhammad Ichsan Anita Permatasari Tazkiyah Syakira Spos Indonesia | 2021.”

Sholihah, Fathimah, and Nunung Kusnadi. 2019. “The Impact of Biofuels Development on Price Volatility of Some Foods Commodities in the World Markets.” *Jurnal Agribisnis Lahan Kering* 37 (2): 157–70.

Siahaan, Mona. n.d. “Palm Oil Industry in Indonesia- Statistics & Facts | Statista.” Accessed December 9, 2024. https://www.statista.com/topics/5921/palm-oil-industry-in-indonesia/#topicOverview.

Simonovska, Misha. 2024a. “Emerging Economies Drive 30% Surge in Global Biofuel Demand by 2028.” Fastmarkets. 2024. https://www.fastmarkets.com/insights/emerging-economies-drive-biofuel-demand/.

———. 2024b. “Emerging Economies Drive 30% Surge in Global Biofuel Demand by 2028 - Fastmarkets.” Fastmarkets. 2024. https://www.fastmarkets.com/insights/emerging-economies-drive-biofuel-demand/.

Sipayung, Tungkot. 2023. “Journal Analysis of Palm Oil Strategic Issues.” *Global Warming Dan Solusi Dari Industri Sawit* IV (07). https://palmoilina.asia/wp-content/uploads/2023/02/4.07.-GLOBAL-WARMING-DAN-SOLUSI-DARI-SAWIT.pdf.

Siregar, Indah Adelina, Rahmi Nofitasari, Jl Sunggal, Gg Bakul, Kec Medan Sunggal, Kota Medan, and Sumatera Utara. 2024. “The Impact of Indonesian Crude Oil Demand Prices on the Indonesian Biodiesel Industry” 10: 3622–30.

Sorda, Giovanni, Martin Banse, and Claudia Kemfert. 2010. “An Overview of Biofuel Policies across the World.” *Energy Policy* 38 (11): 6977–88. https://doi.org/10.1016/j.enpol.2010.06.066.

Sriyani, Karmelia, and Tiara E Nonutu. 2020. “International Political Economy: Theories and Case Studies,” no. 2: 192. http://repository.uki.ac.id/1899/.

Stallard, Esme, and Wanyuan Song. 2021. “Indonesia’s Biodiesel Drive Is Leading to Deforestation.” BBC. 2021. https://www.bbc.com/news/59387191.

Tenny, Steven, Janelle M. Brannan, and Grace D. Brannan. 2022. “Qualitative Study.” *StatPearls*, September. https://www.ncbi.nlm.nih.gov/books/NBK470395/.

The Economic Times. 2022. “Indonesia’s Ban on Palm Oil Exports a Concern but Impact to Be Transitory: FMCG Industry.” The Economic Times. 2022. https://economictimes.indiatimes.com/industry/cons-products/fmcg/indonesias-ban-on-palm-oil-exports-a-concern-but-impact-to-be-transitory-fmcg-industry/articleshow/91234387.cms?from=mdr.

Ugwu, Chinyere. N. and Eze Val, H. U. 2023. “Qualitative Research.” *IDOSR JOURNAL OF COMPUTER AND APPLIED SCIENCES* 8: 20–35. https://www.researchgate.net/publication/367221023_Qualitative_Research.

UkrAgroConsult. 2024. “Palm Oil Continues to Rise in Price, Which Supports Prices for Soybean and Sunflower Oil.” UkrAgroConsult. 2024. https://ukragroconsult.com/en/news/palm-oil-continues-to-rise-in-price-which-supports-prices-for-soybean-and-sunflower-oil/?utm_source=chatgpt.com.

United States Department of Agriculture. 2024. “Oilseeds : World Markets and Trade,” no. December.

USDA. n.d. “USDA ERS - Soybeans and Oil Crops.” USDA. Accessed December 13, 2024. https://www.ers.usda.gov/topics/crops/soybeans-and-oil-crops/.

———. 2023. “World Markets and Trade.” *World Agricultural Outlook Board*, no. July: 1–4.

———. 2024. “U.S. Renewable Diesel Production Growth Drastically Impacts Global Feedstock Trade | USDA Foreign Agricultural Service.” USDA Foreign Agricultural Service. 2024. https://fas.usda.gov/data/us-renewable-diesel-production-growth-drastically-impacts-global-feedstock-trade.

———. 2025. “Palm Oil Explorer.” USDA. 2025. https://ipad.fas.usda.gov/cropexplorer/cropview/commodityView.aspx?cropid=4243000.

Wright, Thom, and Arif Rahmanulloh. 2016. “Indonesia Biofuels Annual 2016.” *USDA Foreign Agricultural Service* ID 1134 (5): 1–8.

WWF. 2021. “Deforestation Fronts.” WWF. 2021. https://www.worldwildlife.org/stories/deforestation-fronts.

Ziegler, Charles E., and Rajan Menon. 2014. “Neomercantilism and Great-Power Energy Competition in Central Asia and the Caspian.” *Strategic Studies Quarterly* 8 (2): 17–41. https://www.researchgate.net/publication/312212506_International_trade_theories_and_its_trends.