

# Impact of European Renewable Energy Directive (RED) Policy On Indonesian Palm Oil Export Volume

Wafa Naufaliyah Bilqis \*, Ni Putu Wiwin Setyari \*\*

\* Faculty of Economics and Business, Udayana University, Bali, Indonesia

\*\* Faculty of Economics and Business, Udayana University, Bali, Indonesia

\*email correspondent: bilqis.wnb@gmail.com

DOI: 10.29322/IJSRP.11.03.2021.p11144

<http://dx.doi.org/10.29322/IJSRP.11.03.2021.p11144>

**Abstract-** Export is one of the most important factors in a country's economic growth. As an agricultural country, Indonesia has abundant natural resources that make Indonesia the largest producer and exporter of palm oil in the world. The purpose of this study is to determine the effect of RED policy, EU GDP, price, and productivity on the volume of Indonesian palm oil exports with a total of 20 observations and obtained from secondary data. Based on the analysis, RED Policy, EU GDP, prices, and productivity simultaneously have a significant effect on the volume of Indonesian palm oil exports. Partially, productivity, RED Policy and EU GDP have a positive and significant effect on the volume of Indonesian palm oil exports. Meanwhile Price has a negative and significant effect on the volume of Indonesian palm oil exports

Keywords: export volume, RED policy, EU GDP, prices, productivity

## I INTRODUCTION

Globalization has become a part of society, everyday people experience globalization, its influence on life and society, its power to change social and cultural structures and its blessings. Globalization has gone through many phases throughout its history. There are ups and downs in the globalization process (Gaskell, 2015). Globalization is an ever-increasing process; it may decline temporarily but never ends and cannot be stopped (Setyari, 2017). According to Astuti & Ayuningtyas, (2018), "International trade is a transaction activity in the economic sector. Where each country will find it easier to find out where related goods can be obtained to meet various needs and vice versa". Based Grozdanovska (2017), "In a global economy, there is no country that is not ready to produce everything necessary to meet its needs without cooperating with other countries. Each country is involved in a different type of trade or other activities for the sale of finished products, a lack of supply of materials or other resources, so as to achieve more efficient and cheaper production"

According to Pompiye (2017), in international trade there are two activities that are carried out, namely, export activities and import activities. Agusalin (2017), "Export is the activity of removing goods from the customs area. If the buyer comes from abroad and the seller comes from within the country, then the activity can be considered an export. Theoretically, free trade can maximize world output, almost every country still applies various forms of barriers to free international trade". Every trade carried out by a country will provide new opportunities in promoting the country's growth to conduct trade activities (Ramona, 2016). Export activities are usually carried out by a country if the country produces large quantities of goods and the demand for goods has been met in that country so that the production of goods is sent to a country that cannot produce goods or because the amount of goods production in the destination country is not fulfilled (Kartikasari, 2017)

Apart from export activities, there is also the effectiveness of imports of places of purchase and entry of goods from abroad to the country concerned (Purnamningsih & Winaya, 2019). Imports are economic activities that purchase foreign products for domestic or market purposes. Export and import activities are a form of inter-connectivity between each country. No country can live independently. Export and import activities affect aggregate demand (AD) which are overall direct expenditures that are directly related to national income (Dewi & Dewi, 2019). To support export and import activities, a product is needed in which the product will compete with other products in the international market (Kurnia, 2016). The development of Indonesia's export trade trends is of course one of the causes of various commodities or products that have good competitiveness in terms of quality and price and are also a mainstay commodity for Indonesian exports abroad. According to Khatiwada (2018), "Palm oil has become one of the most important crops for food, energy and international trade in Indonesia. With major efforts to reduce dependence on fossil fuels and new targets for the introduction of biodiesel blends, domestic demand for palm oil will increase rapidly in the coming decades. Likewise, the demand for vegetable oils globally continues to increase"

In 2019, Indonesia's exports to the non-oil and gas sector had a greater percentage of 90.93% compared to the oil and gas sector

This publication is licensed under Creative Commons Attribution CC BY.

<http://dx.doi.org/10.29322/IJSRP.11.03.2021.p11144>

[www.ijsrp.org](http://www.ijsrp.org)

which was 9.07%. One of Indonesia's main products in exports is palm oil. Oil palm seeds were brought to Bogor, West Java as an ornamental plant by Dutch tobacco growers in 1948 and are still cultivated there and in other tropical countries 10% above and below the equator. Based on Fazaalloh (2019), "Today, Indonesia is the world's largest producer and exporter of palm oil. In the long term, world demand for palm oil shows a demand trend that has a tendency to increase in line with the increase in world population which will therefore have an impact on increasing consumption of products made from palm oil"

Without palm oil exports Indonesia's trade balance will experience a deficit. If the value of non-oil exports is separated between exports of palm oil and non-palm oil, it will be seen that the net value of palm oil exports is consistently experiencing a surplus with an increasing trend. On the other hand, the net export value excluding palm oil tends to decline from a surplus to a deficit. In total, the non-oil and gas export value still experiences a surplus which is contributed by palm oil exports. According to Pramudya et al. (2017), "Export and import activities will affect the size of the level of foreign exchange reserves in a country. Foreign exchange reserves are used for foreign transaction activities." Foreign exchange is also used for the construction of projects and industries such as roads, bridges, airports, ports, and others (Sitohang & Sudiana, 2017). The increase in exports in 2018 was 29.7 million tons. Palm oil is a renewable or renewable natural resource which is continuously available or can be recovered relatively quickly (Mariyah, 2018). Apart from being renewable, there are natural resources that are not renewable which are all things that cannot be replaced or recovered quickly after they are exploited

CPO products, which are Indonesia's superior products, are proven to have increased competitiveness in the Asian, African and European markets (Ningsih & Kurniawan, 2016). In the first semester of 2019, Indonesia's total palm oil exports amounted to 13 million tonnes. The largest export volume by destination country was China, amounting to 2.1 million tons. The volume of palm oil exports to EU countries is in second place with a volume of 2 million tonnes. Meanwhile, India is the third largest palm oil export destination country with a total export volume of 1.8 million tonnes. If we look at the trend from the previous year, in 2018 Indonesia's palm oil exports as a whole amounted to 34.71 million tons, an increase of 8% from 32.18 million tons in 2017. In 2018 Indonesia's palm oil exports to the European Union were 4.7 million tons, 60% of which is used for biofuel. This amount reaches 14% of the total Indonesian palm oil exports. Every year the EU's GDP continues to increase. This consistent and high increase in GDP in the European Union means that economic growth in the European Union continues to increase. A high GDP figure is defined as a high production rate. The high rate of production is related to the high purchasing power of the people so that the consumption of both domestic and foreign (imports) will increase (Arief et al., 2020).

The world palm oil price tends to decline from year to year. There was a decline in world palm oil prices from 2011 to 2015. Then it increased in 2016 and 2017 but decreased again until 2019. This is due to several factors, one of which is that policies issued by other countries will affect palm oil prices. itself. The European Union on 23 April 2009 created a Renewable Energy Directive (RED) that sets out the overall policy for the production and promotion of energy from renewable sources in the European Union (Kartika et al., 2020). The Renewable Energy Directive (RED) establishes biofuel sustainability criteria for all biofuels produced or consumed in the European Union to ensure that biofuels are produced in a sustainable and environmentally friendly manner. The development of Indonesia's palm oil export volume to the European Union Market from 2017 to 2019 (Dusser, 2019). There was a significant decrease in 2018, if there is an export tax policy it will have a negative impact on economic growth (real GDP), especially in the long term (Nasution & Wulansari, 2019).

Export tax policies are able to inhibit export growth in taxable commodities (Susilawati et al., 2020). This is in line with the expectations of the policy to impose an export tax, which is to inhibit the rate of export growth. In addition, the fluctuation in the value of exports to six countries in the European Union was caused by the enactment of the Renewable Energy Directive (RED) by the European Union authorities in April 2009 which is considered to be able to affect the export value of Indonesian palm oil (J Taa et al., 2020).

This policy limits the use of palm oil-based biofuels because the carbon savings from CPO-based biofuels are deemed to have failed to meet the target set by the European Union of 35 percent. Limiting the use of CPO-based biofuels could reduce the value of Indonesia's palm oil exports to the European Union. Making distinctions between biofuels based on this criterion would not fit the discipline set by the World Trade Organization because these biofuel sustainability criteria could affect international trade. This policy also classifies palm oil as an energy source that is categorized as high risk or not environmentally friendly. In addition, they claim that Indonesia supports the expansion of palm oil land which causes a lot of forest deforestation which threatens the environment so that palm oil exporters must meet the requirements written in the policy in order to enter the European Union market so that this policy can limit the volume of the country's palm oil exports (Braungardt, 2019)

This study analyzes several factors that can affect the volume of Indonesian palm oil exports. This can be seen from the variables of this study, RED Policy (X1), EU GDP (X2), price (X3), and productivity (X4), and the export volume of Indonesian palm oil (Y). Then the proposed hypothesis is as follows:

H1: "It is assumed that the Renewable Energy Directive (RED) policy variable, EU GDP, price, and productivity simultaneously have a significant effect on the export volume of Indonesian palm oil in the world market for the period 2000-2019."

H2: "It is assumed that the EU GDP variable, price, and productivity partially have a significant and positive effect on the volume of Indonesian palm oil exports in the world market for the period 2000-2019."

H3: “It is suspected that the export volume of Indonesian palm oil in the world market for the period 2000-2019 was lower at the time the RED policy was implemented than without the implementation of the RED policy.”

## II. METHODS

The research design in this study uses an associative quantitative approach. The location of this research was conducted in Republic of Indonesia. The data collection method in this study is the non-participant observation method. Multiple linear regression analysis is used in this study in order to determine the effect of RED policy, EU GDP, prices, and productivity on the volume of Indonesian palm oil exports on the world market in 2000-2019, either simultaneously or partially.

$$Y = \beta_0 + \beta_1 DX_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \mu_i$$

Description:

Y = The export value of Indonesian palm oil to the European Union

$\beta_0$  = Intercept / Constant

DX<sub>1t</sub> = 1: RED Policy Implementation

0: No RED Policy implementation

X<sub>2t</sub> = EU GDP

X<sub>3t</sub> = Price

X<sub>4t</sub> = Productivity

$\beta_1 \dots \beta_4$  = Slope or direction of the regression line which states the value of Y as a result of a change of one unit of X.

$\mu_i$  = Confounding variable (residual error) representing other factors that affect Y but are not included in the model.

## III. RESEARCH AND DISCUSSION

### A. Regression Analysis Results

Regression analysis in this study is used to determine the magnitude of the effect of RED Policy (X), European Union GDP (X), Price (X), and Productivity (X) on the Indonesian Palm Oil Export Volume in the World Market (Y). The regression results are shown in the table as follows:

**Table 1. Results of Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-62.566	6.942		-9.013	.000
	RED policy	6.404	1.278	.404	5.011	.000
	EU GDP	22.425	2.104	.695	10.661	.000
	Price	-.009	.004	-.172	-2.450	.027
	Productivity	2.370	2.270	.098	1.044	.313

Primary Data, 2020

Based on data in Table 1, the equation can be made as follows:

$$Y = -62.566 + 6.404X_1 + 22.425X_2 - 0.009X_3 + 2.370X_4$$

A constant of -62,566 means that if the RED policy (X1), EU GDP (X2), price (X3), and productivity (X4) are 0, then the export volume of Indonesian palm oil is -62,566 million tonnes.

### B. Simultaneous testing (F test)

**Table 2. F Test**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1209.327	4	302.332	142.099	.000 <sup>b</sup>

This publication is licensed under Creative Commons Attribution CC BY.

<http://dx.doi.org/10.29322/IJSRP.11.03.2021.p11144>

[www.ijsrp.org](http://www.ijsrp.org)

Residual	31.914	15	2.128
Total	1241.241	19	

Primary Data, 2020

Based on the results of the F Test, it is known that RED Policy, EU GDP, Prices, and Productivity have a significant effect on the Indonesian Palm Oil Export Volume in the World Market in 2000-2019. This can be seen from the results of F-count = 142.099 and F-table = 3.01 because F-count > F-table then H1 is rejected. This means that there is a significant effect of RED (X) Policy, EU GDP (X), Price (X), and Productivity (X) on the Volume of Indonesian Palm Oil Exports in the World Market (Y). This is also supported by the R Square value of 0.974 which means that the RED Policy variable, EU GDP, Price, and Productivity affect the Indonesian Palm Oil Export Volume in the World Market in 2000-2019 by 97.4% and 2.6%, which is influenced by other variables not included in the study.

**The Effect of RED Policy on Indonesian Palm Oil Export Volume in the World Market 2000-2019**

The value of Sig. for the effect of X1 on Y of 0.000 <0.05 and the t-count value of 5.011 > t-table of 2.131, so it can be concluded that H0 is rejected, meaning that RED Policy (X1) has a significant and positive effect on Indonesian Palm Oil Export Volume in the World Market in 2000-2019. RED policy variable expressed in dummy form, where 0 without policy implementation and 1 with policy implementation. These results can be seen from the significance level of 0.000 which is smaller than 0.05. The regression coefficient of the RED policy variable (X1) is 6,404, meaning that if other independent variables are fixed and there is a RED policy implementation, the volume of Indonesian palm oil exports is higher when the RED policy is implemented compared to when it is not implemented where the difference is 6,404 million tonnes. The results of this study are supported by the response of the Indonesian government regarding this policy issued by the European Union. In 2011, Indonesia issued an Indonesian Sustainable Palm Oil (ISPO) policy which contains stricter environmentally friendly regulations and can encourage all Indonesian palm oil producers to obtain environmentally friendly certification so that the requirements contained in the RED policy can be met by Indonesia to keep exporting palm oil.

**The Effect of the GDP of the European Union on the Volume of Indonesian Palm Oil Exports in the World Market 2000-2019**

Sig value for the effect of X2 on Y of 0.000 <0.05 and the value of tcount 10.661 > t table 2.131, so it can be concluded that H0 is rejected, meaning that GDP of the European Union (X2) has a significant and positive effect on the Volume of Indonesian Palm Oil Exports in the World Market in 2000-2019. These results can be seen from the significance level of 0.000 which is smaller than 0.05. The regression coefficient for the EU GDP variable (X2) is 22,425, meaning that if the other independent variables are fixed and the EU's GDP increases by 1 million Euros, the export volume of Indonesian palm oil will increase by 22,425 million tons. GDP of trading partner countries has a significant influence on Indonesia's CPO exports. From the estimation results, the GDP of trading partner countries has a positive character in influencing Indonesia's CPO exports, this means that if there is a change in the GDP of trading partner countries it will increase Indonesia's CPO exports. This is also in accordance with the GDP theory where it has a positive relationship, the higher the GDP of a country, the higher imports of consumer goods in that country.

**The Effect of Price on the Volume of Indonesian Palm Oil Exports in the World Market 2000-2019**

Sig value. For the effect of X3 on Y of 0.025 <0.05 and the value of tcount -2.450 <ttable -2.131, meaning that Price (X3) has a significant and negative effect on the Volume of Indonesian Palm Oil Exports in the World Market in 2000-2019. These results can be seen from the significance level of 0.025 which is smaller than 0.05. The price variable regression coefficient (X3) is -0.009, meaning that if the other independent variables are fixed and the price increases by 1 Euro, the export volume of Indonesian palm oil will decrease by 0.009 million tonnes. The results of this study indicate that prices have a negative effect on export volume. This is because the higher world palm oil prices will cause the purchasing power of importing countries to decrease so that their demand will also decrease. Due to the decreasing demand from importing countries for palm oil, it has caused the export volume of Indonesian palm oil to also decline.

**The Effect of Productivity on the Volume of Indonesian Palm Oil Exports in the World Market 2000-2019**

Sig value. for the effect of X4 on Y of 0.314 > 0.05 and the value of tcount 1.044 <ttable 2.131, so it can be concluded that H0 is accepted, meaning that Productivity (X4) does not significantly affect the Volume of Indonesian Palm Oil Exports in the World Market in 2000-2019. The regression coefficient of the productivity variable (X4) is 2,370, meaning that if other independent variables are fixed in value and productivity increases by 1 ton / ha, the export volume of Indonesian palm oil will increase by 22,425 million tonnes. Productivity refers to the use of technology where the higher the productivity, the more sophisticated the use of technology. Productivity has a positive but insignificant effect on palm oil. This is because palm oil is a group of plantation commodities where this commodity does not use high technology, so that the productivity of commodities in plantations is lower than other commodities such as in the industrial sector.

IV. CONCLUSION

Simultaneously, it shows that RED Policy, EU GDP, Prices, and Productivity have a significant effect on the Indonesian Palm Oil Export Volume in the World Market 2000-2019. The RED policy variable has a significant effect on the volume of Indonesian palm oil exports in the world market. The coefficient of the RED policy variable is positive, which means that the volume of Indonesian palm oil exports in the world market is higher at the time the RED policy is implemented compared to when it is not implemented. The EU GDP variable has a significant and positive effect on the volume of Indonesian palm oil exports in world markets, if the EU's GDP increases, the volume of Indonesian palm oil exports will also increase. The price variable has a significant and negative effect on the export volume of Indonesian palm oil in the world market, if the export price increases, the export volume of Indonesian palm oil will decrease. The productivity variable has a positive but insignificant effect on the volume of Indonesian palm oil exports in the world market.

The policy issued by the European Union, namely the RED policy, is one of the factors in increasing the volume of Indonesian palm oil exports. This shows that the policies issued by trading partner countries will affect how Indonesia's export volume will run. Therefore, it is very good if Indonesia can respond correctly to how a policy of another country is issued. In addition, Indonesia can expand and establish good relations with other countries that import palm oil from Indonesia. Productivity shows a positive but insignificant effect on the volume of Indonesian palm oil exports. This shows that the commodities in the plantation sector do not rely too much on sophisticated technology in the process. Therefore, if Indonesia wants to increase the volume of palm oil exports, it should not focus on productivity but on other factors that can increase the volume of exports in the plantation sector commodities.

## REFERENCES

- [1] Agusalam, L. (2017). Percepatan Pertumbuhan Agroindustri Indonesia Melalui Kebijakan Pajak Ekspor : Model CGE Comparative Static. *Jurnal Ekonomi Kuantitatif Terapan*, 10(2), 110.
- [2] Arief, R. A., Cangara, A. R., Badu, M. N., Baharuddin, A., & Apriliani, A. (2020). The impact of the European Union (EU) renewable energy directive policy on the management of Indonesian palm oil industry. *IOP Conference Series: Earth and Environmental Science*, 575(1), 1. <https://doi.org/10.1088/1755-1315/575/1/012230>
- [3] Astuti, I., & Ayuningtyas. (2018). Pengaruh Ekspor dan Impor Terhadap Pertumbuhan Ekonomi di Indonesia. *Jurnal Ekonomi Dan Studi Pembangunan*, 19(1), 3.
- [4] Braungardt, S. (2019). How to Include Cooling in the EU Renewable Energy Directive? Strategies and Policy Implications. *Energy Policy*, 26(1), 260–267.
- [5] Dewi, P. K., & Dewi, M. H. U. (2019). Pengaruh Penanaman Modal Asing, Cadangan Devisa, dan APBN Terhadap Utang Luar Negeri Indonesia Melalui Impor Tahun 1996-2015. *Jurnal Piramida*, 4(1), 129.
- [6] Dusser, P. (2019). The European Energy Policy for 2020–2030 RED II: what future for vegetable oil as a source of bioenergy? *OCL - Oilseeds and Fats, Crops and Lipids*, 51(26), 9.
- [7] Fazaalloh, A. M. (2019). Penanaman Modal Asing dan Pertumbuhan Ekonomi di Indonesia : Suatu Analisis Kausalitas. *Jurnal Ekonomi Kuantitatif Terapan*, 12(1), 17.
- [8] Gaskell, J. C. (2015). The Role of Markets, Technology, and Policy in Generating Palm-Oil Demand in Indonesia. *Bulletin of Indonesian Economic Studies*, 51(1), 24.
- [9] Grozdanovska, V. (2017). International Business and Trade. *International Journal of Sciences : Basic and Applied Research (IJSBAR)*, 31(3), 107.
- [10] J Taa, R., Febrinia, K., Jefri Rumbino, J., Parakletos Pandiangan, Y., Iglestyanna, R., & Sitompul, C. M. (2020). the European Union, Indonesia, and the Renewable Energy Directive. *Sociae Polites*, 21(1), 21–40. <https://doi.org/10.33541/sp.v21i1.1587>
- [11] Kartika, I. T., Cangara, A. R., Nasrun, M., Darwis, & Marifat, I. D. N. (2020). Interaction between the European Union's renewable energy directives and Indonesia's sustainable palm oil policy. *IOP Conference Series: Earth and Environmental Science*, 575(1), 1. <https://doi.org/10.1088/1755-1315/575/1/012228>
- [12] Kartikasari, D. (2017). The Effect of Export, Import, and Investment to Economic Growth of Riau Islands Indonesia. *International Journal of Economics and Financial Issues*, 7(4), 664.
- [13] Khatiwada, D. (2018). Evaluating the Palm Oil Demand in Indonesia : Production Trends, Yields, and Emerging Issues. *Informa UK Limited*, 5(1), 1.
- [14] Kurnia, J. C. (2016). Advances in Biofuel Production from Oil Palm and Palm Oil Processing Wastes : A review. *Biofuel Research Journal*, 25(1), 332–346.
- [15] Mariyah. (2018). Penentuan Umur Optimal Peremajaan Kelapa Sawit di Kabupaten Paser Kalimantan Timur. *Jurnal Ekonomi Kuantitatif Terapan*, 11(1), 104.
- [16] Nasution, A. S., & Wulansari, I. Y. (2019). Analyzing Impacts of Renewable Energy Directive (RED) on Crude Palm Oil (CPO) Export and Forecasting CPO Export from Indonesia to European Union (EU) for 2019-2020 Using ARIMA Intervention Analysis. *Advances in Economics, Business and Management Research*, 1(1), 1. <https://doi.org/https://doi.org/10.2991/icot-19.2019.28>
- [17] Ningsih, E. A., & Kurniawan, W. (2016). Daya Saing Dinamis Produk Pertanian Indonesia di ASEAN. *Jurnal Ekonomi Kuantitatif Terapan*, 9(2), 124.
- [18] Pompeye, N. (2017). The Competitiveness Analysis of Indonesian Cocoa Beans Export in the World Market. *Sch j Econ Bus Manag*, 4(7), 399–408.
- [19] Pramudya, E. P., Hospes, O., & Termeer, C. J. . A. M. (2017). Governing the Palm-Oil Sector through Finance: The Changing Roles of the Indonesian State. *Bulletin of Indonesian Economic Studies*, 53(1), 24.
- [20] Purnamingsih, P. E., & Winaya, I. K. (2019). Implementasi Kebijakan Dinas Koperasi, Ukm dan Perindustrian Perdagangan Kota Denpasar (Studi Kasus Peningkatan Daya Saing Ukm dalam Menghadapi Masyarakat Ekonomi Asean). *Jurnal Piramida*, 14(2), 129.
- [21] Ramona, E. (2016). The Concept of International Trade and Main Classic Theories. *SEA – Practical Application of Science*, 2(11), 243–247.
- [22] Setyari, N. P. W. (2017). Teori Produktivitas Industri Produk Ekspor Indonesia. *Jurnal Ekonomi Kuantitatif Terapan*, 10(2), 22.
- [23] Sitohang, T. A., & Sudiana, I. K. (2017). Pengaruh Net Ekspor, Kurs Dollar, dan Inflasi Terhadap Cadangan Devisa Indonesia Pada Kurun Waktu Tahun 1990-2016. *Jurnal Piramida*, 15(1), 152–178.
- [24] Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(2), 1147–1156. <https://doi.org/10.33258/birci.v3i2.954>