

Original Article

Analysis of Indonesian Crude Palm Oil Trends

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Abstract - Indonesia is a naturally resourceful country. One of these natural resources comes from the agricultural sector, especially plantations. Crude palm oil (CPO) currently becomes one of the leading export commodities in this sector. Indonesian CPO in 2019 increased in production compared to 2018 from 42.9 to 48.4 million tons. The increase in CPO export activities for industrial needs is due to product development and planting area expansion. The attention of related parties regarding the sustainability of these export activities also contributes to such an increase. Evaluation and strategic preparedness based on occurring possibilities are necessary to face global competition. This study aims to analyze trends of Indonesian CPO production, export volume and value, and production areas. It employed the Least Square analysis method with the time series data of 2015 – 2019. The findings showed that planting areas and CPO production were increased annually; accordingly, it increased its export volume and value in the global trade.

Keywords - Crude palm oil, Production, Trends.

I. INTRODUCTION

Indonesia has diverse natural resources, including agricultural, plantation, and animal husbandry products. Agricultural products, especially plantations, are among natural resources that are currently accelerating. One of these products is oil palm. Oil palm is a plant producing palm oil and palm kernel oil. The development can be seen from the planting area and the increase in production value. In 2019, the total area of oil palm plantations was 14,724,420 Ha [1].

Indonesian oil palm products valuable in the global export market include *Crude Palm Oil* (CPO) and *Palm Kernel Oil* (PKO). Based on the data from the Central Statistics Agency (2019), the CPO production rate in 2019 increased (48.4 million tons) compared to that of 2018 (42.9 million tons). Such an increase in production correspondingly contributes to the increase in CPO demands for industrial needs. CPO as an industrial material is considered crucial to be improved to compete with other similar products, e.g., soybeans, olives, sunflowers, and rapeseed [2]. Improvement efforts are required to maintain the trust of importing countries.

The fact that Indonesia has abundant natural resources compared to other countries also contributes to Indonesia's status as one of the countries with the highest CPO production globally. Other salient facets, such as product improvement, quality improvement, and transparent government policies on the export reference price determination to accommodate continuous developments, also play an essential part [3]. Based on the previous elaboration, this study aims to analyze the trends of Indonesian CPO plantations and the determining factors involved in the CPO export activities.

Evaluation and strategic preparedness based on occurring possibilities are necessary to face global competition and prevent the decline in production that has struck other exporting countries. These efforts are pivotal for Indonesia to correctly penetrate export destination markets and maximize export value through clear policies. This study scrutinizes trends of Indonesian CPO production, export volume and value, and production areas.

II. METHODS

This study employed a descriptive quantitative method. The data used in this study were derived from the database of the Central Statistics Agency [4], aiming to determine the possible forecasting based on these variables, i.e., CPO production, export volume, export value, and planting areas, ranging from 2015 to 2019. The secondary data were in the form of *time series* indirectly obtained from the initial data collection activities [5]. All the data were collected employing downloading process through the Central Statistics Agency's website (bps.go.id) in the form of excel format to facilitate offline data processing. This study was conducted from November to December 2021. The data were analyzed using the *Least Square analysis* method [6] with the following equation:

$$Y = a + bx$$

Where:

Y = Indonesian CPO Export Volume

a = Intercept

b = Time-varying regression coefficient

x = Trend



III. RESULTS AND DISCUSSION

A. The Trend of CPO Production

CPO is a derivative product of oil palm. In 2019, the production rate of Indonesian CPO was distributed into two categories: 1) 54.94% by both state companies (617,501 Ha) and private companies (7,942,335 Ha) and 2) 40.79% by smallholder plantations (5,896,755 Ha). Such a production has been considered good, with an average growth of 11.13% per year [7]. According to [8], Several factors influence the increase in oil palm production, such as the efficiency and the availability of large harvest areas, low production costs, promising domestic and international markets, and government policies that encourage the development of a sustainable oil palm industry. The increase in CPO production can be seen in the following results:

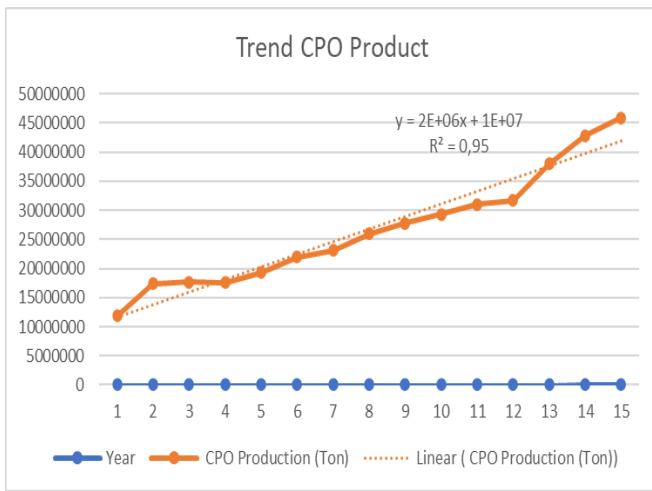


Fig. 1 The trend of CPO production

Based on Fig. 1, the Indonesian CPO production continues to increase every year with the following trend equation $Y=2E+06x$, indicating that the CPO production value will increase by 2,000,000 tons/year. This result is confirmed by [9], stating that the Indonesian CPO production has been steadily increasing due to expanding oil palm plantation areas. The increasing export demands in the global market also contributes to increasing CPO production [10]. The expansion of plantation areas is possible due to Indonesia's suitable climate and supports the growth and development of oil palms. Another factor supporting the increase in CPO production is the income optimization policies carried out by many oil palm industries. These policies were operated by optimizing the increase in CPO productivity, e.g., by optimizing the ripeness of harvest-ready fruits to increase the company's income. The average income optimization carried out by PTPN III reached 11.14% or 38,862.51 million rupiahs from 2016 to 2018 [11]. According to [12], palm oil production would increase from 38.5 million tons in 2017 to 40.5 million tons in 2018 because of the expansion of harvest areas and trade in oil palm seeds.

B. The Trend of Oil Palm Area

Oil palm plantation areas in Indonesia has been steadily increasing. It follows the increasing demand for oil palm products, either CPO or PKO, as leading agricultural export commodities. Oil palm plantation areas in Indonesia are spread across various islands, such as Sumatra, Borneo, Sulawesi, Java, Nusa Tenggara, Bali, Papua, and Maluku. In 2019, it reached 14,456,611 Ha, operated by private companies, state companies, and smallholder plantations [7]. The results of the analysis of the oil palm area are presented as follows:

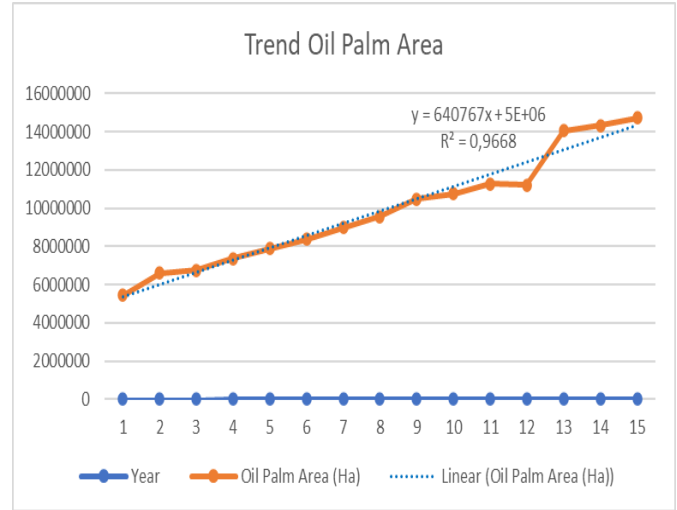


Fig. 2 The trend of oil palm area

Based on Fig. 2, the oil palm plantation area increases yearly with the following trend equation $Y=640767x$, indicating that the plantation area will increase by 640,767 Ha/year. The Roundtable should necessarily support such an expansion on Sustainable Palm Oil (RSPO) that can create an environmental-friendly palm oil industry. RSPO is a non-profit association whose plan aims to implement the global standard for palm oil commodities to all countries, including Indonesia, to create sustainability [13]. A good plantation area expansion should consider several aspects, including technical, managerial, administrative, organizational, and commercial ones, by calculating all possible impacts in the future [14]. Such an expansion also requires control for converting natural forests and peatlands into oil palm plantations based on applicable laws and regulations, including a forest moratorium followed by legal enforcement in the implementation. The utilization of abandoned agricultural lands can be carried out through legal permission insofar as its productivity can achieve the optimal outcomes based on the predetermined criteria [15].

C. The Trend of CPO Export Volume

The Indonesian CPO export volume was significantly increasing from 2013 to 2019. It occurred soon after the annulment of the European Union anti-dumping import duties and good sales growth in the global market [16]. The

end of the black campaign issues and the imposition of import duties urge Indonesian CPO to meet the Mutual Recognition Agreement (MRA) in policies. The RSPO certificate that has been long used as a standard in Indonesia can be reused [17]. According to [18], the increase in export volume is inseparable from the increase in production. The results of the analysis of CPO export volume is presented as follows:

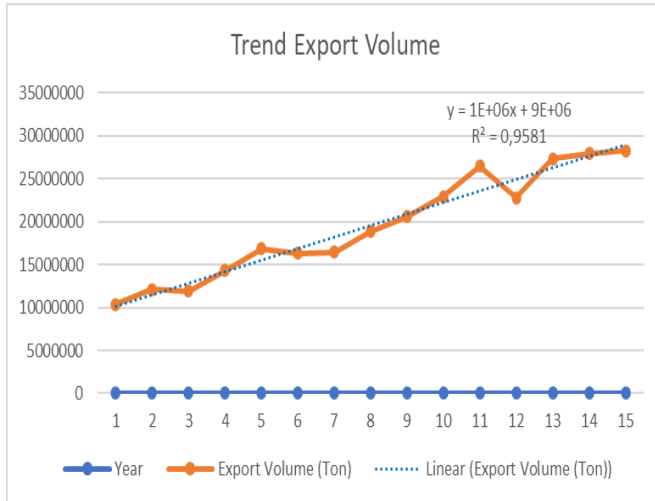


Fig. 3 The trend of CPO export volume

Based on Fig. 3, the Indonesian CPO export volume continues to increase every year with the following trend equation $Y=1e+06x$, indicating the CPO export volume will increase by 1,000,000 tons/year. It aligns with [19] stating that the Indonesian CPO export volume increases correspondingly with the increasing demand for CPO as industrial materials and the increasing Indonesian CPO production for the global market. As one of the leading export commodities, CPO provides maximum benefits, generates foreign exchange, assists regional development, and creates middle-income farmers [20]. Good export growth should be accompanied by clear policies, such as downstream policies for the competitive palm oil industry to produce high-quality CPO products that meet importing countries' standards [18]. The high-quality CPO production in downstream industries expectedly reduces or even nullifies negative impacts on domestic and global consumption rates, increasing the annual CPO export volume. The acceleration of infrastructure development and the availability of adequate energy are important to streamlining production inputs [21].

D. The Trend of CPO Export Value

The Indonesian CPO export value increased correspondingly with the increase in export volume. Such an increase occurred as the Indonesian economy developed due to the increasing global demand for CPO by 6.85% (mtm) in 2019, increasing *Purchasing Manager's Index* (PMI) of the Indonesian manufacturers (43.7). It was higher than other

ASEAN countries, such as Myanmar (36.5), Vietnam (40.2), and Malaysia (43.4) [22]. The results of the analysis of CPO export value is presented as follows:

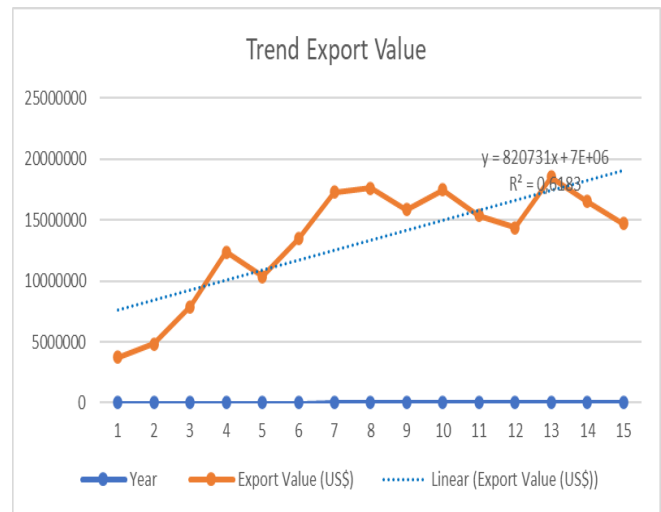


Fig. 4 The trend of CPO export value

Based on Fig. 4, the Indonesian CPO export value continues to increase correspondingly with the increase in CPO export volume every year with the following trend equation $Y=820731x$, indicating the CPO export value will increase by US\$ 820,731 next year. According to [23], the Indonesian CPO export value is determined based on the GDP value of importing countries and the distance between exporting and importing countries. Other factors, e.g., domestic consumption and the exchange rate (Rp/US\$), do not significantly influence the CPO export value. The occurring trade value influences the export value, as in the case of Nigeria, which becomes one of the prospective destination markets for Indonesian CPO due to the current not-so-high trade value between Indonesia and Nigeria [24]. According to [25], the increase in CPO export value is highly influenced by changes in global oil prices.

IV. ACKNOWLEDGMENT

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V. CONCLUSION

Based on the analysis results, this study concluded that the oil palm plantation areas were increasing annually and therefore directly influenced the production rate, especially that of CPO product as one of the derivative products of oil palm. Accordingly, it also increased both CPO export volume and value. The increase in CPO production due to the increase in plantation areas correlates to the increase in CPO export volume to several destination countries, ultimately correlating its export value. The increase in each analysis trend is elaborated as follows: 1) the equation $Y=2E+06x$ for the trend of CPO production indicated that the

increase in CPO production would be 2,000,000 tons/year; 2) the equation $Y=640767x$ for the trend of oil palm areas indicated that the increase in oil palm plantation areas would be 640,767 Ha/year; 3) the equation $Y=1e+06x$ for the trend of CPO export volume indicated that the increase in CPO export volume would be 1,000,000 tons/year, and lastly 4) the equation $Y=820731x$ for the trend of CPO export value indicated that the increase in CPO export value would be US\$ 820,731.

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