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The Analysis of European Union's Vegetable Oil Consumption: “Will The European Parliament Resolution Halt the Consumption of Crude Palm Oil in the European Union in the Future?”

Jan Horas V Purba

Sekolah Tinggi Ilmu Ekonomi Kesatuan, Bogor, Indonesia, E-mail: janhorasvpurba@gmail.com

Abstract: In the last five years, the crude palm oil (CPO) industry in Indonesia has faced various pressures, especially from the European Parliament, to stop or slow down the development of the palm oil industry in Indonesia. Positively, this policy is trying to encourage rapeseed oil and sunflower oil as a domestic crop in the EU and is expected to be a major source of vegetable oil in Europe, and at the same time keep the EU from having a high dependence on CPO imports. This strategy is not easy to do because, over the last two decades, CPO has grown into a major source of world vegetable oil and managed to beat the dominance of soybean oil in the world vegetable oil market. This is supported by cheaper CPO prices, and the highest productivity, so that CPO is easy to trade and flows to EU countries and is available in large quantities. On the other hand, it should also be noted that palm oil has contributed greatly to addressing global excess demand in global vegetable oils.

The objectives of this study are: (a) to analyze the consumption behavior of vegetable oils in the EU, (b) to forecast of EU vegetable oil consumption by 2020, and (c) to analyze the influence of parliamentary resolution of Europe on Vegetable oil consumption in EU.

The growth of EU vegetable oil production is 2.8 percent per year, while the growth rate of domestic consumption is much larger, at 4.8 percent per year. This situation creates a widening gap and can lead to an increasing dependence on imports. In 2016, total CPO imports reached 7.2 million tons, followed by sunflower oil 1.3 million tons, 0.3 million tons of rapeseed oil and 0.25 million tons of soybean oil. In 2020, the consumption is predicted will increase by 1 million tons from 22,96 million tons (2016) to 23,98 million tons (2020). The EU will drive an increase in domestic RSO production by 1 million tons, while CPO consumption will decrease by 461,000 tons, or 115,000 tons/year.

The resolution of the European Parliament encourages the EU government to increase domestic production, both RSO and SFO. The impact of this resolution is a 1.7% reduction in CPO imports per year. Unfortunately,

RSO is categorized as a thin market in the global market, therefore CPO is needed as an important source of vegetable oils and not easily removed. Thus, it is clear that the impact of the European Parliament to stop the consumption of CPO in the EU can't be done easily.

Keywords: Vegetable oil, widening gap, consumption pattern, thin market

INTRODUCTION

This research is motivated by the various pressures that occurred in the Indonesian palm oil industry in the last five years. In 2011, the EU amended the EU Food Labelling Regulation No. 1169/2011, which required all producers to include specific and detailed sources of raw materials. The new regulation of the EU has been mandatory since December 2014. This labeling policy takes place quickly and becomes a marketing campaign called Palm Oil free (POF).

This campaign on palm oil free is still running until today (PASPI, 2016^[1]). The world's palm oil producing countries are still facing a palm resolution issued by the European Parliament, on April 4 2017, and ratify the Report on Palm Oil and Deforestation of Rainforests in Strasbourg. The report specifically states that the issue of oil palm is a major issue linked to issues of corruption, child labor, human rights abuses, the disappearance of indigenous peoples' rights, and so on. (PASPI, 2017^[2]).

The other side of the resolution is the demand for palm oil investments to be diverted to sunflower oil and rapeseed oil, both of which are domestic EU products, and the EU wants to protect and enhance both commodities. The support that appears in this resolution is good enough to increase the production of both commodities. The EU itself is one of the leading producers of rapeseed, but with a higher level of vegetable oil consumption every year, has not been able to meet its domestic consumption, and the EU is the second largest importer of RSOs in the global market.

On the other hand, this policy is positively trying to encourage Rapeseed oil and sunflower oil as a domestic crop in the EU and is expected to be a major source of vegetable oil in Europe, and at the same time keep the EU from having a high dependence on CPO imports.commodity in vegetable oil sources in Europe. This then became the concern of European farmers and became an input for the European Parliament to protect its domestic interests.

Indonesia and Malaysia are the two largest palm oil producing countries, which have contributed greatly to addressing global excess demand in global vegetable oils. (Sipayung and Purba, 2015^[3]; Sawit, 2015^[4]). Therefore, the resolution is not wise if it becomes a movement that pushes to stop or slow down the development of the palm oil industry in the world.

From the economics perspective, The European Parliament Policy attempts to shift the supply curve to the right (by encouraging the world to plant and develop RSO and SFO), and on the other side, also shifting CPO demand to the left, by a resolution to stop CPO consumption in the EU. This policy has been systematically started with the "Palm Oil Free" labeling policy and other similar policies. This strategy is not easy to do because CPO is one of the substitute commodities that are needed to meet the consumption of VEG oil in the EU. This is supported by cheaper CPO prices, and consequently, the CPO is easy to trade and flows to the EU countries. In 2015, the CPO/RSO price ratio is 0.67, where the price of 2 tons of rapeseed oil is equivalent to 3 tons of CPO. The EU gains 1 ton of oil, with the same amount of money. In the following year, when the price ratio between CPO and rapeseed oil (canola) (RSO) tends to one, the

demand for CPO is still high. This reflects that CPO is an important commodity to meet the demand for vegetable oil in the EU.

This same experience also happened when Indonesia faced the black campaign attacking Indonesian palm oil industry when Indonesian palm oil industry began to develop in the early 2000s. The trade war that took place was the commodity of palm oil versus soybean oil, using health issues. The United States has earlier conducted anti-CPO black campaigns from the tropics to suppress CPO development, followed by European countries by developing environmental damage issues. (Purba, 2012^[5]). Othman's research shows, nine major types of vegetable oils are traded in the U.S. domestic market- soybean, sunflower seed, rapeseed (canola), peanut, coconut, palm kernel, palm, corn, and cottonseed oils. These oils are highly interchangeable in some uses. In the 1980s, however, palm oil had the largest annual global increase in per capita consumption. (Othman and Alias, 2000^[6]). The American Soybean Association (ASA) joined a generic promotion campaign which highlighted alleged health risks associated with the relatively high saturated fat content of tropical oils as compared to soybean oil (Othman, 1995^[7]). However, some studies do not support the negative campaign. In later studies, it was found that the statement was not proven. At this time the demand for United States CPO has increased.

Based on the description above, the main question in this study is, "Will the resolution of Palm Oil by the European Parliament halt the consumption of CPO in the EU in the future?" Long-term historical data is needed to answer this question, in order to obtain vegetable oil consumption behavior in the EU. Therefore, the objectives of this study are: (a) to analyze the consumption behavior of vegetable oils in the EU, (b) to forecast of EU vegetable oil consumption by 2020, and (c) to analyze the influence of parliamentary resolution of Europe on Vegetable oil consumption in EU.

THEORETICAL ANALYSIS

Market equilibrium is a market state where the supply in the market is equal to the demand in the market. The equilibrium price is the price of a good or service when the supply of it is equal to the demand for it in the market (Salvatore, 1990^[8]). In each marketing year, supply must equal with demand. Supply is the sum of beginning stocks, domestic production, and imports, while demand is the sum of domestic consumption, exports and ending stocks. (Mundi, 2017^[9]). Supply and demand analyzed in this study is a composite of four major vegetable oil which had the largest share, namely crude palm oil (CPO), soybean oil (SBO), rapeseed oil (RSO) and sunflower oil (SFO), as described below.

In open international trade market, the total import – as the reduction of the amount of demand and the supply - must be equal with export. (Figure 1). According to the purpose of this study, the amount of export and import will be determined by domestic production and domestic consumption. If domestic production is smaller, the country will import the commodities to meet its consumption (vice versa). (Figure 2).

The consumption pattern is measured from two things, the proportion of each source of consumption and its tendency. Suppose a country consumes three types of goods, then within a certain period can be obtained the consumption data of the country. (Figure 3a). The consumption pattern will be shown by the proportion of each item as shown in Figure 3b, These two pictures present 3 types of consumption patterns. In the first 6 years, the country only consumes goods A and B, and share of goods A reaches 67%

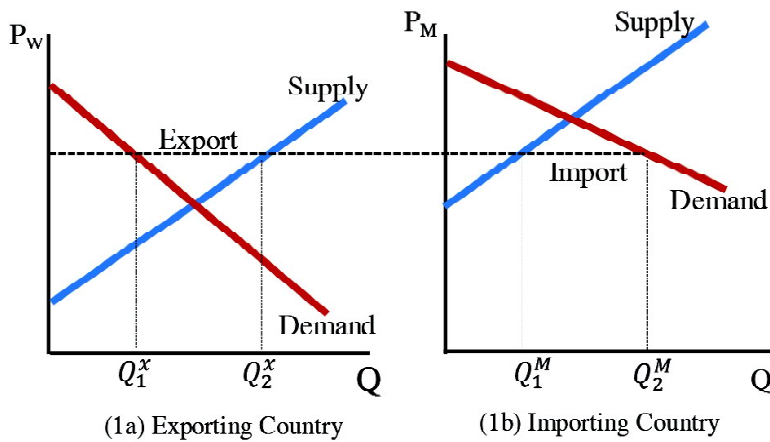


Figure 1: Free International Trade Market

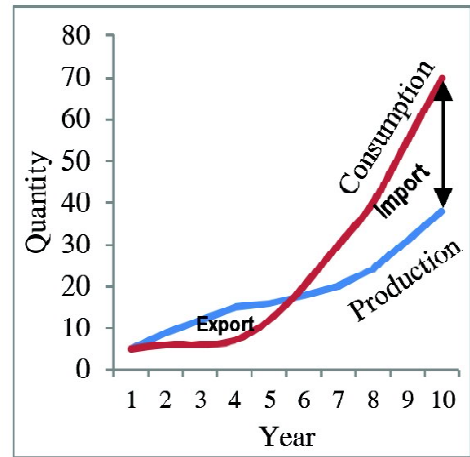


Figure 2: Gap between Production and Consumption

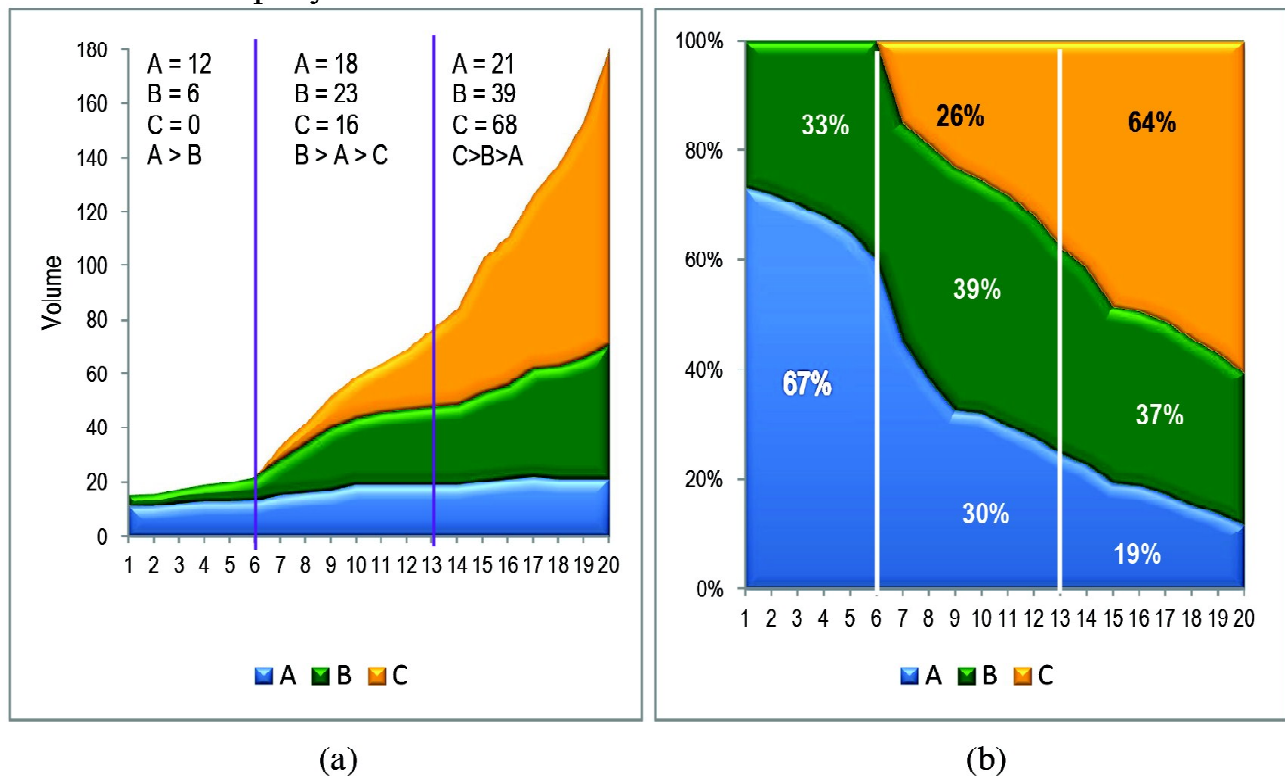


Figure 3: Consumption behavior of 3 types of goods in Volume (a) and in Percent (b)

and the rest is goods B. As per capita consumption increases (which is also influenced by increasing population and income), the country meets its consumption with commodity C by importing. Initially, the number of imports is still small (26%), and the consumption of B is 39 % and A 30 %. Data shows that in this moment, B increased more rapidly than A.

This indicates a larger growth of commodity B (domestic production), that influenced by higher yields or extensification programs. This consumption pattern lasts until the 13th year. Then, we find the third pattern, where the number of imports tends to increase. This shows the existence of a widening gap between domestic production and domestic consumption, which forced governments to intervene to avoid worse dependency in the long term.

In this study, trend analysis is needed to see the projection of consumption pattern in the next four years purposively (the year 2020), so that it can be compared and measured the amount of change that happened.

METHODOLOGY

This study is descriptive research. This study uses data from international data sources, including United State of Department of Agriculture, oil world and FAO and Indonesian Central Bureau of Statistics. The main concern of this study is vegetable oil which includes 4 commodities, namely soybean oil, palm oil, rapeseed oil and sunflower oil in the European Union. The model used in this study can be presented in a succinct manner as follows.

1. Commodity balance:

$$\text{Supply} = \text{Production} + \text{Import} + \text{Initial stock},$$

$$\text{Demand} = \text{Consumption} + \text{Export} + \text{Final Stock}.$$

2. Consumption behavior : Share (%) =
$$S_t = \frac{C_{CPO_t}}{C_{Veg_t}} + \frac{C_{SBO_t}}{C_{Veg_t}} + \frac{C_{RSO_t}}{C_{Veg_t}} + \frac{C_{SFO_t}}{C_{Veg_t}}$$

- a) Production :
$$Q_{Veg_t} = \sum_{i=1}^n Q_{SBO_t} + Q_{RSO_t} + Q_{SFO_t}$$

- b) Consumption :
$$C_{Veg_t} = \sum_{i=1}^n C_{CPO_t} + C_{SBO_t} + C_{RSO_t} + C_{SFO_t}$$

- c) Gap :
$$\text{Import} = C_{Veg_t} - Q_{Veg_t}$$

3. Trend (Forecasting) :
$$Y_{v(n+i)} = a + b X_{v(n+i)}$$

The estimation method used is ordinary least squares (OLS)

where,

Y = Volume of consumption of each commodity (million tons)

v = $V_1, \dots, 4$ (1=CPO, 2=SBO, 3=RSO and 4=SFO)

t = year 1999 (t_1) until 2016 (t_n)

$(n+i)$ = $i = 1, \dots, 4$ (2017 until 2020)

a = constant

b = trend coefficient

X = trend (time)

RESULT

Analysis of Demand Supply of Vegetable Oil in The European Union

Vegetable oil world is one of the important groups in the world food problem. There are 17 world vegetable oils, and 4 of them are the most dominant, and close to the world's vegetable oils, namely soybean oil (SBO), rapeseed oil (RSO), sunflower oil (SFO) and crude palm oil (CPO). Thus, in this analysis, the analysis of Vegetable oil is to cover these four commodities.

Vegetable oil production in the EU includes 3 other commodities, namely soybean oil (SBO), rapeseed oil (RSO) and Sunflower oil (SFO), while oil palm does not grow in the EU because this plant is a tropical plant.

In 2000, EU vegetable oil production was 9.75 million tons. In the same year, EU consumption has reached 12 million tons. This shows that EU domestic producers are still able to meet 81 percent of total consumption. In 2010, EU vegetable oil production rose 41 percent to 13.76 million tons. However, the increase in consumption is much larger that is 72.6 percent to 72.56 million tons. This shows that vegetable oil consumption is able to be fulfilled by 66 percent, and the rest is obtained by import. By 2016, EU vegetable oil production has reached 15.36 million tons and consumption volume of 22.7 million tons. This data indicates that about two-thirds (68 percent) of EU vegetable oil consumption is able to meet domestic production.

Supply and demand of Vegetable Oil in the EU is presented below (*Table 1*).

Table 1
Supply and Demand of Vegetable Oil in the EU, 1999-2016

<i>Year</i>	<i>Production</i>	<i>Import</i>	<i>InitialStok</i>	<i>Consumption</i>	<i>Export</i>	<i>Final Stock</i>	<i>Market Balance</i>
1999	9749	2775	60	10513	1974	97	12584
2000	9751	3650	97	12030	1268	200	13498
2001	9540	4312	200	12747	1259	46	14052
2002	9366	4381	46	12626	1120	47	13793
2003	9301	4668	47	13235	932	-151	14016
2004	10177	5754	-151	14765	820	195	15780
2005	10811	7166	195	17474	498	200	18172
2006	11543	7903	200	19023	443	180	19646
2007	12192	8141	180	19408	588	517	20513
2008	13365	8460	517	21262	666	414	22342
2009	14346	7943	414	22197	649	-143	22703
2010	13760	7712	-143	20759	841	-271	21329
2011	14199	8272	-271	20709	1179	312	22200
2012	14465	8983	312	22108	1713	-61	23760
2013	15753	9263	-61	22964	1449	542	24955
2014	16419	8665	542	23924	1785	-83	25626
2015	15775	8947	-83	23019	1694	-74	24639
2016	15364	9050	-74	22736	1550	54	24340

Source: United States Department of Agriculture, 2017 (processed)

In the period 1990-2016, Supply Demand Nabati in the EU increased almost twice from 12.6 million tons (1999) to 24.34 million tons. Vegetable oil production pattern European Union from the EU vegetable oil production pattern, it is clear that the main production of EU vegetable oil is Rapeseed (RSO), followed by soybean oil (SBO) or soybean oil and sunflower oil (SFO). In the period 1999 to 2008, there was a pattern, that the RSO came first, and the SBO was second and SFO third. In that period, RSO has a positive trend, which is an average of 7.8 percent per year increase, where RSO production increases 449 thousand tons every year. While SBO and SFO both tend to decrease, with negative trend 0.5% and 0.5% per year. The rate of decline in soybean oil (SBO) is greater than the decrease rate of SFO, where the average SBO is reduced 24 thousand tons per year, while SFO is reduced 23.56 thousand tons per year. This resulted, SFO managed to beat SBO well in 2008. When 1999 the RSO production reached 4.4 million tons, and in 2008 almost doubled to 8.5 million tons, but since 2009 to 2016, the production of RSO only increased 1 percent or tend to be constant with an average production of 9, 67 million tons per year. Similarly, the sunflower oil (SFO), in 8 years only increased 3 percent or was classified as constant with an average production of 2.88 million tons, and soybean oil (SBO) also tend to be constant with an average production of 2.47 million tons per year. In 2016, the pattern of vegetable oil production in the European Union consists of rapeseed oil by 63 percent, followed by 20 percent sunflower oil and soybean oil 17 percent.

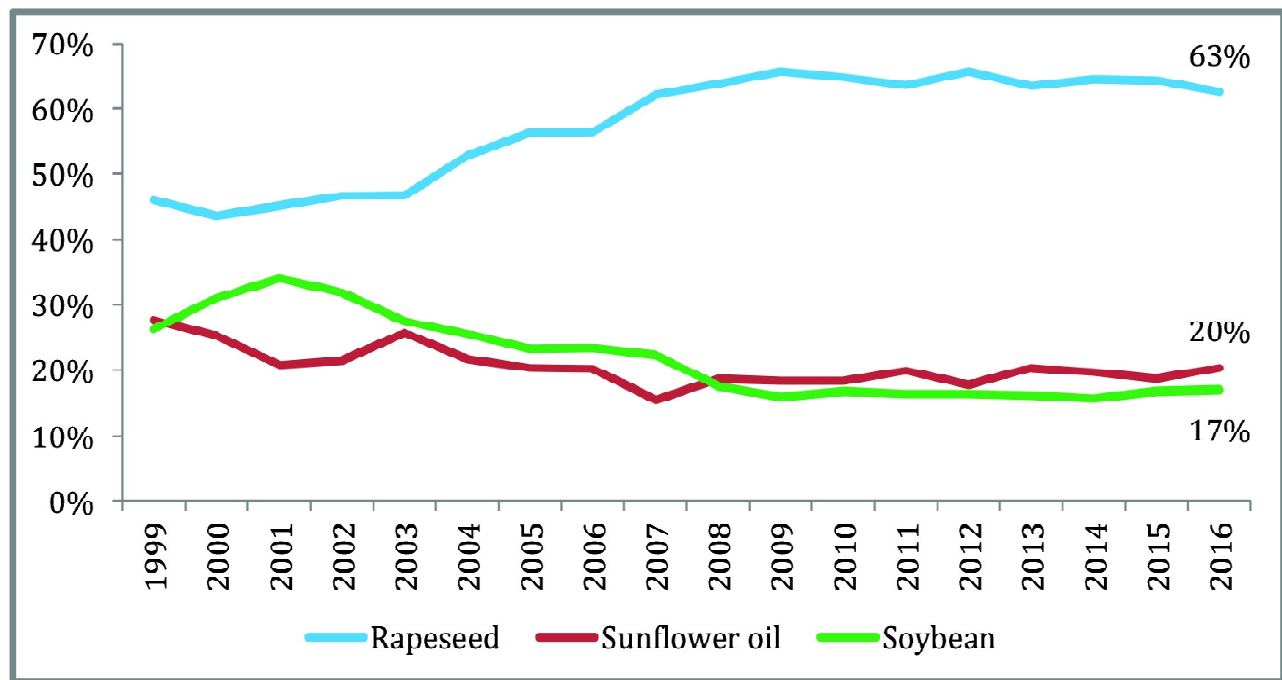


Figure 4: Pattern of Vegetable Oil Production in the European Union, 1999-2016

Source: United States Department of Agriculture (processed)

DISCUSSION

1. Consumption Pattern of Vegetable Oil of European Union

In 1965, the pattern of vegetable oil consumption in the European Union was prioritizing soybean oil (90.4%). The share of rapeseed oil (RSO) is still relatively small (6.83) and even palm oil (CPO) is 2.72%.

SBO dominance occurred during the period 1965 to 1990 (25 years), where the average consumption of SBO reached 50%, followed by sunflower oil (SFO) 22%, rapeseed oil (RSO) 21% and palm oil (CPO) 8%, as As shown in the following figure.

In 2000, the EU vegetable oil consumption pattern had changed, with RSO defeating the dominance of the SBO (44%), and the second position is CPO, which increased sharply to reach 23.7% share, followed by SFO with 71.3% share, and SBO slumped sharply from first to the fourth position, with 15% share.

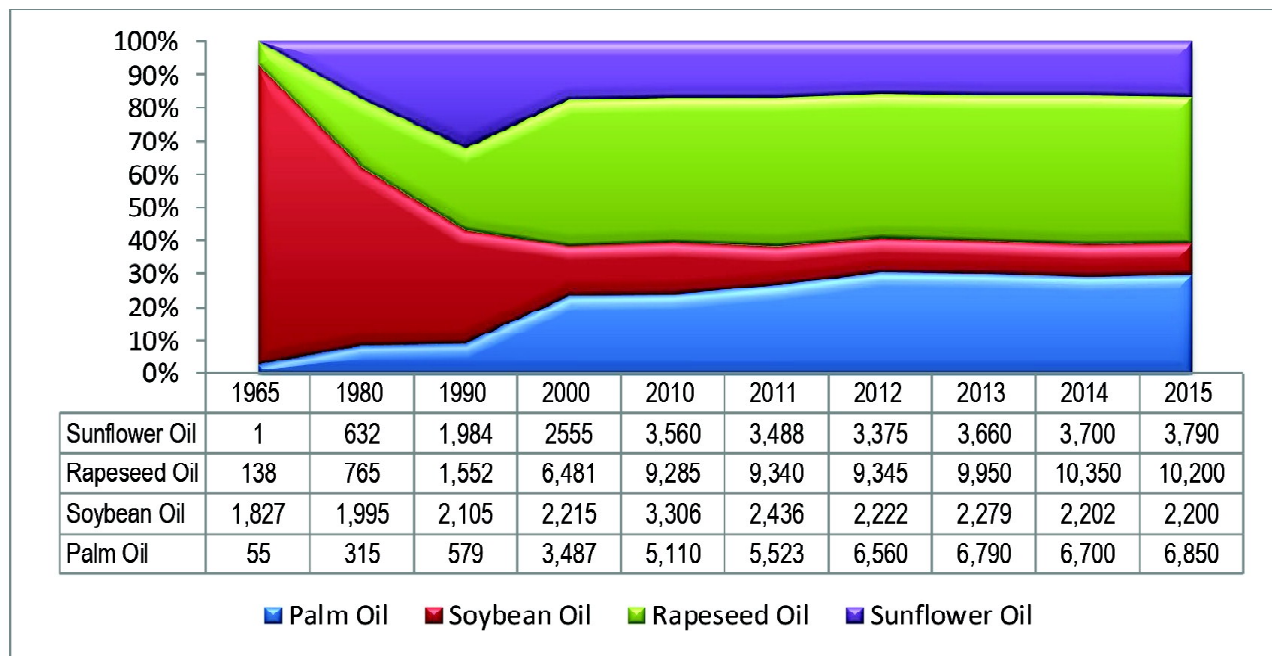


Figure 5: Pattern of Vegetable Oil Consumption in the EU Area in 1965-2015

Source: Oil World

Throughout 15 years (2000-2015), RSO still holds the first position reflecting CPO as the main source of vegetable oil in the European Union. RSO consumption increased 3.7 million tons, and RSO remained at 44% share. However, the consumption pattern of CPO also rose sharply, from 23.7% share in 2000 to 30.51% in 2012, then decreased to 29.19% in 2014, still rising again in 2015 to 29.73%. The share of SBO also declined considerably, from 15% in 2000 to 9.5% in 2015. This is due to the high CPO/SBO price ratio of 3.11 (PASPI, 2017), which means that the price of CPO is much cheaper, Where 1 ton of SBO is equivalent to 3.11 CPO, making it more profitable to import CPO.

Thus, the EU consumption pattern shows a change from the dominance of the SBO to the RSO, and the EU succeeded in developing RSOs into a major source. In addition, CPO is also an important source of vegetable oil and is not easily defeated.

2. Widening Gap and Import of Vegetable Oil in EU

In 1999-2016 the EU vegetable oil consumption pattern was relatively stable, therefore, this period was purposely selected purposely, as a basis for analyzing the widening gap in vegetable oil consumption of the EU, and this period was used as a projection basis until 2020.

(a) Widening Gap

The pattern of EU vegetable oil production and consumption above indicates a widening gap between domestic production and consumption. In 1999, the EU was able to meet 93% of its consumption from domestic production, or a gap of 7 percent. However, in 2006 domestic production was 11.5 million tons, while consumption reached 19 million tons. The gap between domestic production and consumption accounts for 29 percent. In 2016, with consumption of 22.7 million tons, the availability of domestic production only reached 15.36 million tons. The gap between production and consumption is 32 percent.

Overall, production appears to grow 2.8 percent per year, while consumption growth rate is 4.8 percent (almost 2-fold), resulting in a widening gap between domestic production and consumption (Figure 6).

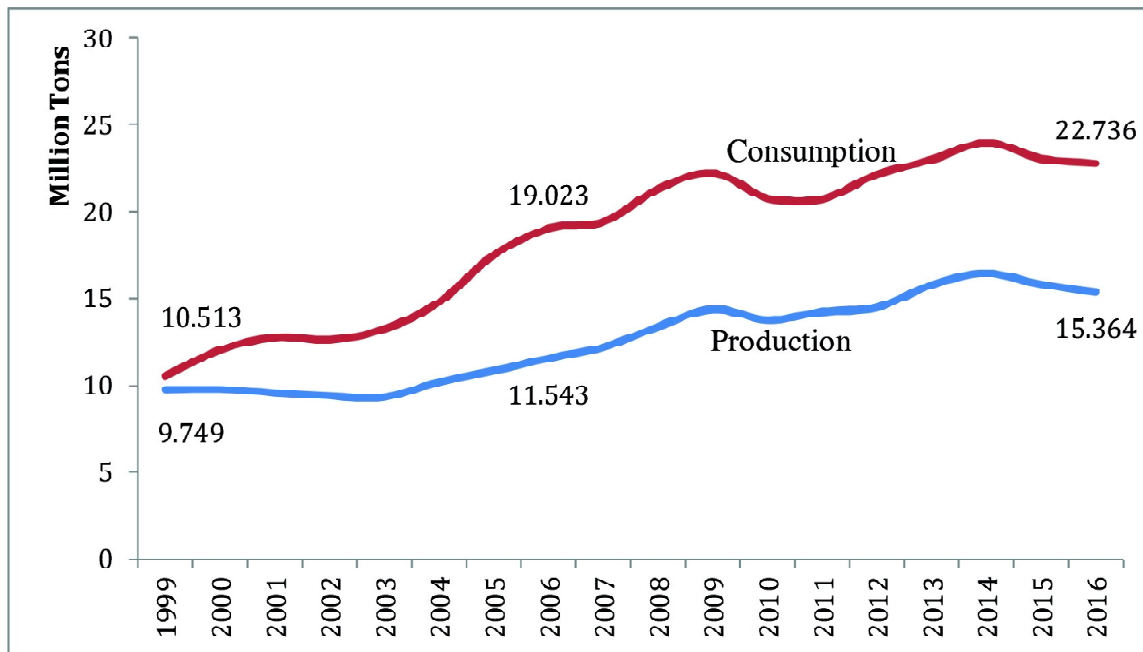


Figure 6: Widening Gap of Vegetable Oil Consumption in the EU

The details on each commodity are shown in Figure 6, where the largest gap is seen in CPO, ie 29%, RSO 1%, SFO 4%, and SBO tend to be self-sufficient, with 13% production, consumed 13%.

(b) Import of Vegetable Oil

To meet the demand of vegetable oil of the European Union, the policy is imported. Most of the EU vegetable imports are CPO, with trends tending to increase over the period of 1999-2016. In 2016, total CPO imports reached 7.2 million tons, followed by SFO 1.3 million tons, RSO 300 thousand tons and SBO 250 thousand tons (Figure 8).

In summary, CPO imports increased 1.39%/year during 1999-2016, but SFO, RSO, and SBO, the amount of import tended to increase by 1.76 percent per year in 1999-2006, then after 2006 declined by 0.63 percent per year. (Figure 9) This indicates that CPO has a relatively large role in meeting the demand for vegetable oil in the EU.

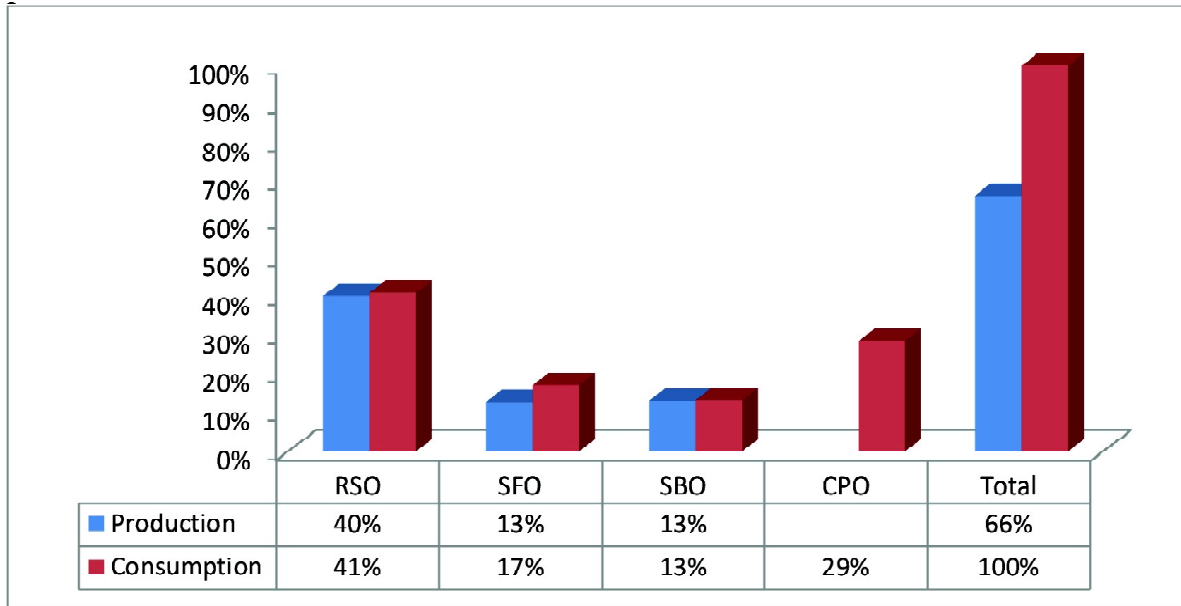


Figure 7: Widening Gap on RSO, SFO, SBO and CPO Commodities in the European Union, 1999-2016

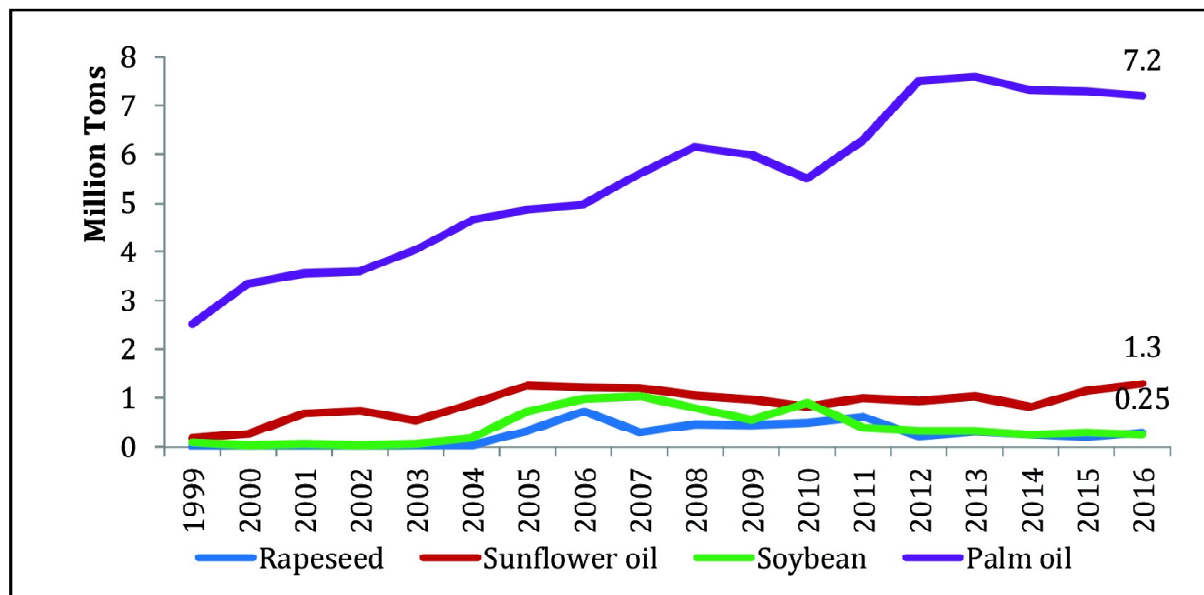


Figure 8: Imports of Vegetable Oil (RSO, SFO, SBO, and CPO) of the European Union, 1999-2016

3. Projection of EU’s Vegetable Oil Consumption in 2020

The proportion of CPO consumption in the EU is still relatively substantial, with almost one-third of Europe’s vegetable consumption being CPO. The largest consumption is Rapeseed oil, with a share of nearly half of vegetable consumption in the EU, while soybean oil tends to be constant at 1.95 million tons. In 2016, EU CPO consumption reached 6.5 million tons (higher than China) and will tend to decline by 2020, to 6.35 million tons. Rapeseed oil, although quite high, is down from 9.7 million tons (2016) to 9.5 million tons by 2020.

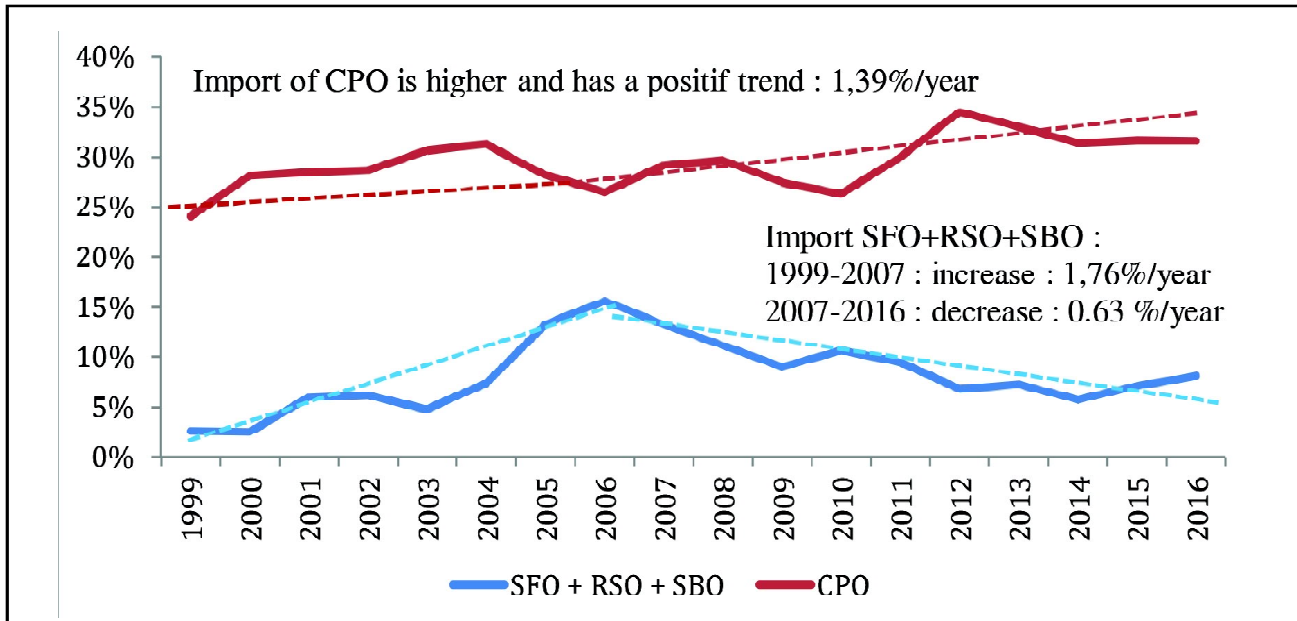


Figure 9: Trend of Vegetable Oil Import (RSO, SFO, SBO, and CPO) in EU, 1999-2016

The Europe Union is trying to develop local products (rapeseed oil) and also seeks to develop sunflower oil. Amid the pressure of oil palm in the EU, even campaigning “No Palm Oil” can’t be done quickly. Because the share of CPO consumption is still high. However, this needs to be observed continuously, and in the last three years (2014, 2015 until 2016), Indonesian’s CPO imports also tend to decline 0.1 million tons per year.

In the period of 2000-2016, the consumption pattern of rapeseed oil rose from 44 percent to 45 percent, followed by palm oil (CPO) increase from 24 percent to 28 percent, sunflower oil increase from 17 percent to 18 percent and soybean oil fell from 15 percent to 8 percent (Figure 10).

The European Parliament is facing strong pressure from the peasants of rapeseed oil (RSO) and sunflower oil (SFO) in the European Union to restore the positions of these two commodities into the dominant commodity in vegetable oil sources in Europe.

Table 2
Projection of EU Vegetable Oil Consumption Pattern 2020E

	Volume (000 Tons)		Percent		The Change	
	2016	2020E	2016	2020E	000 Tons	%
CPO	6 520	6 059	28.4	25.3	-461	-3.1
SBO	1 950	1 950	8.5	8.1	0	-0.4
RSO	10 400	11 400	45.3	47.5	1 000	2.2
SFO	4 090	4 569	17.8	19.1	479	1.2
Sum	22 960	23 978	100.0	100.0	1 018	4.43

In 2020, the consumption of vegetable oil increase from 22,96 million tons (2016) to 23,98 million tons (2020E). The consumption pattern of rapeseed oil rose from 45.3 percent to 47.5 percent, followed

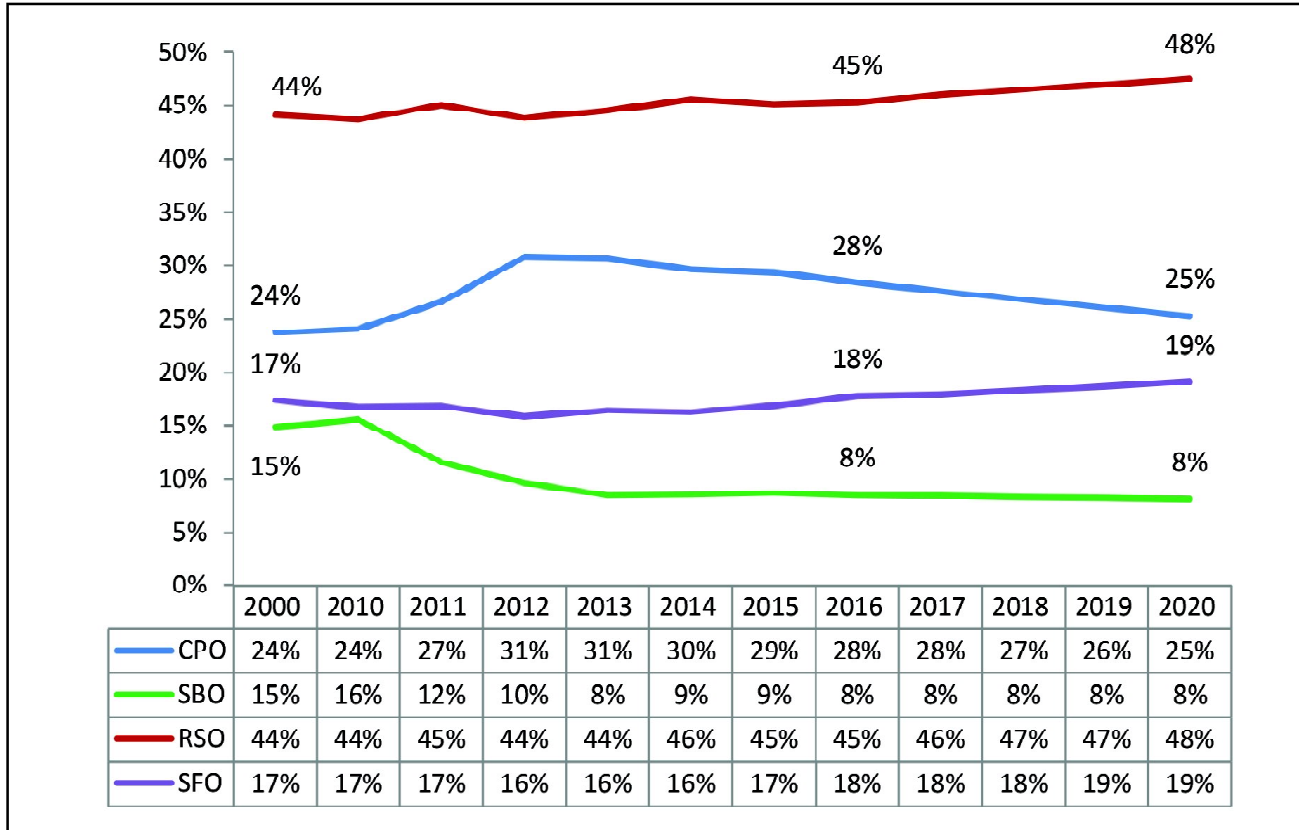


Figure 10: Projection of EU Vegetable Oil Consumption Pattern by 2020E

by palm oil (CPO) decrease from 28.4 percent to 25.3 percent, sunflower oil increase from 17.8 percent to 19.1 percent and soybean oil fell from 8.5 percent to 8.1 percent (Table 2).

CONCLUSION

In the period 1990-2016, supply and demand of vegetable oils in the EU increased almost twice from 12.6 million tons to 24.34 million tons. In 1999, the EU was able to meet 93% of its consumption from domestic production, or a gap of 7 percent. However, by 2016, with consumption of 22.7 million tons, the availability of domestic production only reached 15.36 million tons.

The gap between production and consumption is 32 percent. This can also be seen from the EU vegetable oil production rate of 2.8 percent per year, while the consumption growth rate is much larger, at 4.8 percent per year. This creates a widening gap between production and consumption. To meet the gap, the policy is import

In 2016, total CPO imports reached 7.2 million tons, followed by SFO 1.3 million tons, 0.3 million tons of RSO and 0.25 million tons of SBO. This suggests that CPO has a very high contribution in meeting EU vegetable consumption. The contribution of CPO accounts for 80 percent of total vegetable imports, while SFO is 14 percent, SBO 3 percent and 3 percent RSO. In addition, SFO, SBO, and RSO are thin market commodities in the global market.

Based on the findings in trend analysis (forecasting 2020), it can be concluded that the level of EU vegetable oil consumption increased by 1 million tons, from 22,96 million tons to 23,98 million tons. The EU will drive an increase in domestic RSO production by 1 million tons, to meet rising domestic consumption. CPO consumption will decrease by 461,000 tons, or about 115,000 tons/year. This reduction will be overcome by increasing domestic SFO production.

The European Parliament resolution has a positive impact on the EU's own domestic interests, which is able to encourage increased domestic production, both RSO and SFO. The amount of CPO reduction is 1.7% per year, and CPO is still needed as an important source of vegetable oil and has a fairly high proportion (25%). RSO commodity is classified as a thin market in the global market, so CPO is not easy to shift or be defeated. In 2017 the total RSO that can be traded is 27.7 million tons, which 9.75 million tons (35.19%) are imported by the United States, and 8.1 million tons (29.23%) are imported by the EU itself, and still compete with India and China, and 29 other countries in the world (USDA, 2017^[9]).

The resolution of the European Parliament can't be considered trivial, but it is also clear that the impact of the European Parliament to stop the consumption of CPO in the EU can't be done easily, (with the policy of "palm oil free" labeling or moratorium on oil palm plantations, and possibly other issues), and Indonesia can still perform its important role to feed the world (PASPI, 2015^[10]).

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