

PALM OIL INDUSTRY SAVES GLOBAL DEFORESTATION?

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RESUME

In the last 20 years, the palm oil industry has received the spotlight from the global community, one of which is the linking of palm oil production growth with deforestation, where this issue has also become the theme of anti-palm oil NGO campaign. This also shows that the global community's strong commitment to choosing vegetable oil production sources that are efficient in deforestation and even zero deforestation.

Oil palm has been proven to be the most efficient vegetable oil crop in land use or saved deforestation. This is due to the higher productivity of palm oil compared to soybean, rapeseed, and sunflower crops in producing one ton of vegetable oil. This fact also proven from the simulation shows that the presence of palm oil has saved the global deforestation of 167 million hectares to supply vegetable oil by 2020. In addition, to meet the need for vegetable oil towards 2050 and without causing deforestation, increasing the productivity of palm oil to 6.5 tons is the best solution.

This fact makes it clear that the palm oil phase-out campaign and policy using arguments to reduce deforestation will trigger a wider expansion of global deforestation. Conversely, promoting the use of palm oil as the global vegetable oil will have an impact on saving global deforestation.

INTRODUCTION

In the last 20 years, the palm oil industry has received the spotlight from the global community including experts. Apart from its relatively fast growth, the study of Byerlee et al. (2017) categorized palm oil as a revolution in the tropical oils group.

A major spotlight regarding the development of oil palm plantations is also related to deforestation (Wicke et al., 2008; European Union, 2013; Vijay et al., 2016; European Parliament, 2017; Qaim et al., 2020). The linking of palm oil production growth with deforestation has also become the theme of the global anti-palm oil NGO campaign which has been very intensively carried out in various countries using narratives such as "No Palm Oil", "Palm Oil Free", "Zero Deforestation" (PASPI, 2015; Kumar et al., 2015). The campaign also initiated the European Union Government which most often uses the issue of deforestation due to oil palm expansion by formulation palm oil phase-out policy from RED II no later than 2030 (European Commission, 2019).

The phenomenon of deforestation in development isn't something new. Global deforestation has occurred since the pre-agricultural era until now (Matthew, 1983; Walker, 1993; European Union, 2013) which started in mainland Europe (Kaplan et al., 2009, 2017), then in the United States (USDA, 2014) and continues in other parts of the world. This shows that deforestation is a normal phenomenon in the development process (PASPI, 2020).

If deforestation cannot be avoided in the global development process, then the choice is how to minimize deforestation. The global community must have the courage to choose ways and types of activities that can minimize deforestation. In the context of global vegetable oil production, they must choose sources of vegetable oil production that are efficient in deforestation and avoid or reduce the supply of vegetable oils that are seen as drivers of deforestation.

The question is, are there any vegetable oil sources that the production processes are saved deforestation? In addition, it is possible for vegetable oil production without deforestation to meet their global demand in

the future (for example towards 2050) which is getting bigger as a result of growth and changes in the composition of the global population as well as global economic growth.

This article will discuss how much deforestation in the production of top-4 vegetable oils in the world and will also discuss how to increase the global vegetable oil production without deforestation to meet future demand.

SAVE DEFORESTATION

The top-4 main vegetable oil crops in the world namely oil palm, soybean, rapeseed, and sunflower, supply about 85-90 percent of the global vegetable oils. According to USDA data (2021) and Oil World (2020) shows that their growth relatively fast growth in the past 20 years.

During the period 2000-2020, the area of soybean crops increased from 75.5 million hectares to 127 million hectares. The area of rapeseed crops also increased from 24.7 million hectares to 35.5 million hectares. This was followed by an increase in the area of sunflower crops from 19.7 million hectares to 27.6 million hectares. Meanwhile, the area of oil palm plantations has also increased, but it is not too significant from 10 million hectares to only 24 million hectares.

Based on these data indicates that the expansion of the soybean crop is more than 5 times greater than oil palm. Meanwhile, the expansion of the rapeseed crop is almost 1.5 times greater than oil palm. Meanwhile, the expansion of the sunflower crop is about 1.2 times greater than oil palm.

With the various definitions of deforestation adopted by each country, it is difficult not to argue that the expansion of top-4 vegetable oil crops is linked to deforestation. This implies that the facts are not disclosed about the expansion of soybean, rapeseed, and sunflower crops causing more deforestation, while deforestation due to the development of oil palm plantations is less.

To find out which types of vegetable oil plants are the most efficient in deforestation, it can be seen from the productivity to

produce one ton of vegetable oil. Based on data on global vegetable oil production in 2020 (USDA, 2021) are soybean oil is 58.7 million tons, rapeseed oil is 27.3 million tons, sunflower seed oil is 21.5 million tons,

and palm oil is 83.5 million tons. The areas mentioned above indicate that there is a difference in oil productivity per hectare for each of these vegetable oil crops (Figure 1).

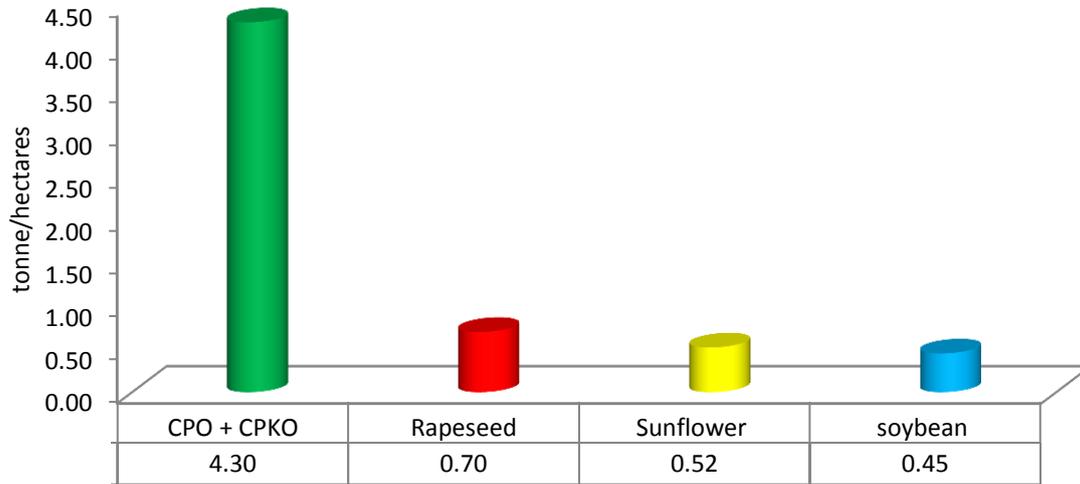


Figure 1. Comparison of Productivity of Top-4 Major Vegetable Oils (Source: Oil World, 2018)

The productivity of palm oil (CPO + CPKO) reaches 4.3 tons per hectare. Meanwhile, the productivity of rapeseed, sunflower, and soybeans to produce one ton of vegetable oil is only 0.7 tons per hectare, 0.52 tons per hectare, and 0.45 tons per hectare, respectively. This shows that the productivity of palm oil is almost 10 times higher than that of soybean oil, 8 times higher than that of sunflower seed oil, and 6 times higher than the productivity of rapeseed oil.

The data above shows that palm oil is vegetable oil which is the most efficient vegetable oil crops or save more deforestation. Meanwhile, soybean,

rapeseed, and sunflower crops are more wasteful in land use or wasteful of deforestation.

The presence of palm oil as the main vegetable oil in the world that is the most efficient in land use, means that the global community has saved deforestation in the production of vegetable oil. Regarding how much the reduced deforestation is due to the presence of palm oil as a source of global vegetable oil is shown in Table 1. If we look at the difference between two scenarios, namely S0 (World with Palm Oil) and S1 (World without Palm Oil). The difference in the area of S1-S0 is a reduction in deforestation (Table 1).

Table 1. Global Deforestation Savings Due to the Development of Oil Palm

Description	World with Palm Oil (S0)	World without Palm Oil (S1)	Additional Deforestation
Crops (million hectare)			
Soybean	127.0	239.0	112
Rapeseed	35.5	65.5	30
Sunflower	27.6	52.6	25
Oil Palm	24.0	-	-
Total	214.1	357.1	167.0
Vegetable oil production (million ton)	191	191	

The world with Palm Oil (S0) is the actual condition in 2020 where the total area of the top-4 vegetable oil crops is 214.1 million hectares with a total production of 191 million tons. Meanwhile, the world without Palm Oil (S1) is a scenario if palm oil does not exist. To achieve global vegetable oil production of 191 million tons in the S1 scenario, the global community must fulfill it proportionally from 54 percent of soybean oil, 25 percent from rapeseed oil, and 21 percent from sunflower seed oil.

With this S1 scenario, there will be an expansion of global soybean plantations which has increased from 127 million hectares to 239 million hectares, the area of global rapeseed crops has also increased from 35.5 million hectares to 65.5 million hectares; and the area of sunflower crops has also increased from 27.6 million hectares to 52.6 million hectares.

The difference between the S1 and S0 scenarios represents the addition of global deforestation as a result of conditions if palm oil did not exist. The additional crop area is 167 million hectares, namely 112 million hectares for additional expansion of soybean crops, 30 million hectares for additional expansion of rapeseed crops, and 25 million hectares for additional expansion of sunflower crops.

Thus, it is very clear that if the world's without palm oil, the producers of soybean oil, rapeseed oil, and sunflower seed oil that are distributed in various countries must carry out additional deforestation of 167 million hectares. Isn't eliminating (phase-out) palm oil the same thing as driving greater deforestation in the world?

On the other hand, promoting palm oil as the global vegetable oil will save global

deforestation. If the global vegetable oil production of 191 million tons and is entirely produced from palm oil, then the area of oil palm plantation is only needed for 45 million hectares. This means that there are global deforestation savings of 169 million hectares.

ZERO DEFORESTASI IN THE FUTURE, IS IT POSSIBLE?

The global demand for vegetable oil in the future, for example towards 2050, shows an increasing trend as a result of population growth and economic development. The interesting question to discuss regarding this prediction is that can it be possible to meet the future demand for vegetable oil without global deforestation?

On different assumptions, Corley (2015) and PASPI (2015) have compiled several scenarios for the supply of global vegetable oil in the future. Both studies still tolerance deforestation for the expansion of the vegetable oil crops. In this article, we try to find the best scenario for increasing global vegetable oil production without deforestation.

According to FAO-OECD data (2015), global vegetable oil consumption is around 19 kg per capita. Meanwhile, EU vegetable oil consumption has reached 24 kg/capita, China is 22 kg/capita, United States is 39 kg/capita, and India is still around 15 kg/capita. If in 2050, it is assumed that global vegetable oil consumption is 26 kg/capita, with an estimated population of 10 billion in 2050, then by 2050 the global community will need 260 million tons or an additional 70 million tons of vegetable oil.

Table 2. Scenario of Zero Deforestation in the Global Vegetable Oil Production Towards 2050

Description	BAU (S2)	Zero Deforestation (S3)
Crops (million hectare)		
Soybean	180.0	127.0
Rapeseed	50.0	35.5
Sunflower	39.0	27.6
Oil Palm	34.0	24.0
Total	303.0	214.1
Vegetable oil production (million tons)	260.0	260.0

Note:

S2: Business as Usual towards 2050

S3: Zero deforestation + increase in palm oil productivity to 6.5 tons of oil per hectare towards 2050

In the S2 or Business as Usual (BAU) scenario, the top-four vegetable oil crops are still expanding proportionally to meet the growth in vegetable oil consumption towards 2050. Therefore during the period 2020-2050, there will be an increase in the area of soybean still from 127 million hectares to 180 million hectares. The area of the rapeseed crops has also increased from 35.5 million hectares to 50 million hectares. Likewise, sunflower crops area also increased from 27.6 million hectares to 39 million hectares. While the area of oil palm plantation has also increased, but its growth is relatively smaller, from 25 million hectares to only 34 million.

In other words, if the BAU scenario occurs until 2050 there will still be deforestation of 89 million hectares for the expansion of top-4 vegetable oil crops. This is exactly not the best choice from the perspective of global community who wants zero deforestation.

However, if the global community wants no more deforestation to produce vegetable oil in the world (the area of top-4 vegetable oil crops will still be 214 million hectares until 2050), then third scenario (S3) is the best solution to meet vegetable oil consumption towards 2050. In this scenario, the crop area of the top-4 vegetable oil is fix, but palm oil productivity will be increased from 4.3 tons of oil per hectare in 2020 to 6.5 tons of oil per hectare towards 2050.

The room for increasing the productivity of palm oil is still wide open (Corley, 1998). The current average productivity of palm oil is only around 4.3

tons per hectare. Meanwhile, their potential productivity that have been developed reaches more than 8 tons per hectare. Improving Good Agricultural Practices or technical culture and replanting using superior seed varieties is a real effort to achieve a productivity level of 6.5 tons of oil per hectare towards 2050.

The productivity of soybean, rapeseed, and sunflower crops can certainly be improved, although the results are not too significant. Therefore, to meet the global demand for vegetable oil towards 2050, they cannot be relied on as a source of growth in global vegetable oil production in the future.

Thus, to meet the need for vegetable oil towards 2050 which is carried out without deforestation, efforts can be made through increasing the productivity of oil palm plantations in the world. To achieve this, international roles and cooperation are needed.

CONCLUSION

Oil palm is the most efficient vegetable oil crop in land use or saved deforestation. The productivity of oil palm per hectare is 6-10 times greater than the productivity of soybean, rapeseed, and sunflower crops in producing one ton of vegetable oil. This also can be seen from the simulation shows that the presence of palm oil has saved the global deforestation of 167 million hectares to supply vegetable oil of 191 million tons by 2020.

To meet the need for vegetable oil towards 2050 and without causing deforestation, the best solution that can be taken is through increasing the productivity of palm oil from 4.3 tons per hectare in 2020 to 6.5 tons per hectare towards 2050.

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