

The Banning of Palm Oil

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Abstract

In this paper, I argue that palm oil should be banned. Palm oil is a significant commodity that is mainly used in the biofuel and pharmaceutical industry. As a result of increased demand, intensive palm oil cultivation has been linked with many harmful environmental and social impacts. I support my position on the banning of palm oil with the following arguments. First, I argue that palm oil is a major driver of deforestation. Second, I argue that palm oil cultivation contributes to global warming. Third, I argue that the expansion of palm oil production has had negative impacts on indigenous populations. I also consider the opposing side of banning palm oil. The opposing positions argue that palm oil is important for human health, for the efficient production of vegetable oil, and the development of local economies. I conclude my paper by recommending that governments promote sustainable palm oil cultivation.

Keywords: palm oil, deforestation, habitat fragmentation, global warming, greenhouse gases, water pollution

The Banning of Palm Oil

In this paper, I argue that palm oil should be banned. Palm oil is a significant commodity that is mainly used in the agricultural, biofuel, and medicine sectors. Its cultivation and trade have improved the livelihood of numerous communities by providing various jobs. Additionally, palm oil cultivation played a key role in developing the economy of many countries in Southeast Asia, such as Malaysia and Indonesia. However, Palm oil has sparked great controversy because of the adverse environmental and social impacts associated with its cultivation (Ayompe et al., 2021). Therefore, I address the concerns regarding palm oil cultivation by showing evidence related to the harmful environmental and social effects it causes.

I support the position that palm oil should be banned with the following three arguments. First, I argue that palm oil plantations contribute to global deforestation, which leads to ecosystem instability and loss of biodiversity. Clearing rainforests destroys the habitat of animals and makes them more vulnerable to natural disasters (Nicholas et al., 2018). Second, I argue that unsustainable plantation practices that are currently being implemented resulted in the release of potent greenhouse gases such as carbon dioxide and methane (Ayompe et al., 2021). The immense release of these greenhouse gasses plays a significant role in climate change. Third, I argue that the continuous expansion of palm oil cultivation had negative impacts on the indigenous people of Indonesia. The use of pesticides and fertilizers has adverse effects on both human health and the environment (Petrenko et al., 2016).

I also consider three alternative positions that argue against the banning of palm oil. First, some people argue that the cultivation of palm oil plays a key role in improving the economy of Indonesia and Malaysia (Purnomoa, et al., 2020). Second, opponents may argue that there are no vegetable oil alternatives that are as efficient as palm oil (Nomanbhay et al.,

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2017). Third, critics argue that the fruit extracted from palm oil trees contains many nutrients that are beneficial to human health (Agostini-Costa, 2018). While these positions have merit, I show that the expansion of palm oil cultivation created many conflicts between indigenous communities and stakeholders (Petrenko et al., 2016). Additionally, I show that more productive alternatives to palm oil do exist including heterotrophic algae that require less land for growth (Liu et al., 2014).

This paper is important as it sheds light on some of the significant environmental and social impacts that are taking place in southeast Asia. Additionally, many of the issues mentioned are global environmental issues that could potentially have adverse effects on us if not addressed. The unique aspect of global issues is that much can be done at the individual level. If sustainable practices are not met, then it is our role to protect the environment by spreading awareness and boycotting products containing palm oil.

The Adverse Impacts of Palm Oil

Environmental advocates have raised concerns regarding the sustainability of the palm oil industry. This industry has been expanding at a rapid rate as a result of the increase in palm oil demand. Consequently, the swift expansion has been associated with many adverse environmental and social impacts. These impacts include deforestation, potent greenhouse gas emissions and water pollution.

Impacts of Deforestation on Species and Ecosystems

The primary reason why palm oil should be banned is that it contributes to global deforestation. Palm oil is produced from a tropical palm scientifically referred to as “*Elaeis guineensis*” (Petrenko et al., 2016). The optimal growth conditions for this plant include high annual rainfall and humid climate, which is present in tropical areas. Therefore, if farmers plan to cultivate palm oil, a vast amount of rainforests and peatlands must be cleared to provide land containing optimal growth conditions for cultivation. This issue became more severe because of the increased demand for palm oil leading to heavy deforestation.

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Consequently, heavy deforestation contributes to the destruction and degradation of the habitat of many species. This negatively impacts the population of affected species and the ecosystem.

The deforestation of rainforests is a major contributor to the habitat fragmentation of numerous species. Habitat fragmentation occurs when vast rainforests are converted into much smaller isolated patches of land. As mentioned by Robertson and Schaik (2001), habitat fragmentation can occur when roads are built in a region where deforestation is taking place. This issue results in the formation of irregularly shaped fragments that make species more prone to extinction. In agreement with previous studies, Gregory et al. (2014) argue that the population of species living in smaller fragments are more prone to natural disasters such as storms and flooding thus, making them more prone to extinction. Additionally, populations living in smaller fragments are more vulnerable to food shortages and predation because of reduced dispersal. This information demonstrates that habitat fragmentation leads to the reduction and potentially the extinction of the population of many species.

In addition to it impacting the populations of species, deforestation is one of the major threats to ecosystems. Deforestation indirectly impacts ecosystems by reducing the population of keystone species. Keystone species are organisms that play a crucial role in maintaining the ecosystem and without them, the ecosystem collapses. An example of a keystone species are orangutans. As reported by McConkey (2018), Orangutans are excellent keystone species as they help in conserving and maintaining rainforests through seed dispersal. What distinguishes orangutans from other seed dispersing species is the fact that orangutans have an extremely diverse diet. This varied diet increases the diversity of the seeds dispersed, which plays a crucial role in maintaining biodiverse rainforests. Another example of keystone species are butterflies. These insects play an even bigger role in maintaining the ecosystem as the population of flowering plants depend on them for survival. The survival of plants and butterflies are interlinked, without butterflies flowering plants are

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unable to reproduce through pollination. According to Ghazanfar et al. (2016), pollination is the process in which pollen from male flowers is transferred to female flowers with the help of pollinators such as butterflies. However, as a result of habitat degradation, the population of such keystone species heavily declined. Consequently, this reduced their contribution to preserving the environment, eventually resulting in the instability of the ecosystem.

The Unsustainable Clearing Methods and Their Contribution to Global Warming

Deforestation in itself is one of the greatest contributors to global warming.

According to the United States Environmental Protection Agency (2021), global warming is the increase in the Earth's climate as a result of various human activities that emit greenhouse gases. The most common and impactful greenhouse gasses are carbon dioxide and methane. These gasses contribute to global warming by remitting heat back to the Earth's surface causing an increase in climate. The reason why global warming is of main concern is that it has serious implications on human health and the environment. Some health impacts include higher intensity and duration of heat, which could lead to a heat stroke. Additionally, some environmental impacts include rising sea levels, which is a major threat to aquatic organisms.

The current unsustainable clearing practices being implemented such as slash and burn and clearcutting amplify the contribution of deforestation to global warming. One of the main unsustainable clearing practices used in the palm oil industry to this day is clear-cutting. Clear-cutting occurs when a significant amount of rainforest land is cleared at once.

According to Patrik et al. (2020), the removal of trees through the process of clear-cutting is a major driver of global warming. Trees in a rainforest are the main carbon sinks of our planet. They regulate the amount of carbon dioxide in the atmosphere through the processes of photosynthesis. Photosynthesis is an essential process that plants use to convert carbon dioxide and water into sugars and oxygen. Therefore, trees get rid of harmful carbon dioxide and release oxygen, a gas that is important for human survival. Clearing a vast amount of rainforest land increases the concentration of carbon dioxide in the atmosphere as fewer trees

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contribute to regulating these concentrations. Consequently, the increased concentration of carbon dioxide in the atmosphere is a major contributor to global warming.

The impact of these unsustainable land clearing practices depends on the type of land being cleared. Rainforests and peatlands are the main land targets for palm oil farmers as it includes the most optimal conditions for the growth of the palm plant. The major difference between peatlands and rainforests is that peatlands are water-logged. Therefore, for farmers to clear land for palm oil cultivation, peatlands must be drained first. As reported by Ojanen et al. (2013), the drainage of peatland alone contributes significantly to global warming. Parallel to the function of rainforests, peatlands are also significant carbon sinks that contribute to removing carbon dioxide from the atmosphere. In addition, Qui et al. (2021) argues that draining peatlands results in large amounts of carbon dioxide emissions. These significant emissions occur because peatland soil contains great amounts of carbon. When peatlands are drained, the carbon contained in the soil is exposed to oxygen in the air and results in the formation of carbon dioxide.

Another unsustainable clearing method used in clearing land for palm oil plantations is called “slash and burn.” It is the cheapest and most common way of clearing land for cultivation. According to Varma (2003), the slash and burn technique involves cutting down a vast number of trees and burning them to increase the availability of nutrients in the soil. The main issue with this clearing technique is that fires could spread out of control, clearing more land than required. Additionally, the burning of trees releases significant amounts of carbon dioxide and methane, which are major contributors to global warming. Therefore, using the slash and burn technique to clear land has adverse impacts on the environment.

The Social and Environmental Impacts of Water Pollution

One of the primary reasons why palm oil cultivation should be banned is that it causes the pollution of nearby water resources. Palm oil cultivation, like any other type of agricultural practice, uses a variety of fertilizers and herbicides to increase yields. According

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to Darras et al. (2019), fertilizers are heavily used in palm oil cultivation to increase the growth rate and yield of palm plants. Additionally, herbicides are used to eliminate weeds that could alter the growth of palm oil. Despite the deleterious environmental and social impacts of herbicide and fertilizers, they are continuously used in the cultivation of palm oil. To illustrate, Dumelin (2009) highlights the potential environmental implications of using fertilizers on nearby lakes. During irrigation or rainfall, the nutrients present in fertilizers and herbicides are leached into nearby lakes causing water pollution. The contamination of such water bodies has severe implications on individuals whose livelihoods depend on these lakes.

The contamination of nearby water resources as a result of palm oil cultivation practices contributes to negative social and environmental effects. According to Khan and Mohammed (2013), nutrients leaching from heavy use of fertilizers can potentially reach nearby lakes causing eutrophication. Eutrophication occurs when algae grow uncontrollably because of the presence of high amounts of nutrients required for growth. This uncontrollable growth causes the depletion of oxygen in the water body and the death of aquatic life. Additionally, less severe impacts include an increase in turbidity or cloudiness of the river that consequently, results in a decrease in the recreational and intrinsic value of that water body. There is also evidence from a study conducted by Lasren and Gill (2012) that highlights the severe impacts of water pollution on villagers in Central Kalimantan. The villagers claim that the pollution caused by palm oil practices has negatively impacted their livelihood. Water pollution has caused the decline in the number of fish and aquatic plants that villagers depended on them for income and livelihood. In addition, villagers also claim that the cultivation of palm oil has polluted and depleted drinkable water, which deteriorated the standard of living in that area.

Human exposure to pesticides used in palm oil agriculture has been linked with severe health implications. Pesticides are chemicals used by palm oil farmers to prevent pests such as insects from destroying palm yields. According to Petrenko et al. (2016), humans can be

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exposed to toxic pesticides in two ways. First, pesticides can leach into nearby drinking water resources and exposure occurs through drinking. Second, farmers handling these harmful pesticides are directly exposed to it through inhalation. Exposure to these toxic pesticides even in small doses may have detrimental impacts on human health. To illustrate, Sulaiman et al. (2019) argue that exposure to pesticides causes negative impacts on human health and results in acute and chronic illnesses. Acute illnesses are conditions that occur immediately after impact and require urgent short-term care. Examples of acute diseases caused by pesticide exposure include skin irritation. Chronic illnesses occur because of continuous exposure to toxins for a long period of time and they require continuous medical attention. Examples of chronic illnesses caused by pesticide exposure include neurological defects and birth defects. Evidently, the use of pesticides has severe implications on human health.

The Positive Impacts of Palm Oil

Some critics argue that palm oil should still be cultivated despite all the negative environmental implications it causes. This popular belief arose because palm oil cultivation has been linked with many positive implications. These include the economic development of countries such as Malaysia and Indonesia, which are considered to be the largest exporters of palm oil (Purnomoa, et al., 2020). Additionally, palm oil is the most efficient vegetable oil in terms of land use and yield (Nomanbhay et al., 2017). Finally, palm oil has been linked with numerous benefits that can positively impact human health (Agostini-Costa, 2018).

The Role of Palm Oil in Benefiting the Economy

Many critics argue that palm oil cultivation plays a vital role in developing the economies of Malaysia and Indonesia. Over the last few years, there has been a significant increase in demand for palm oil. This increase in demand offered an incentive for governments to intensify the expansion of palm oil cultivation. To illustrate, Xu et al. (2020) show that between 2001 and 2016 the total area allocated for palm oil plantations in Malaysia increased from 2.59 million hectares to 6.39 million hectares. In addition, the total area

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allocated for palm oil plantations in Indonesia increased from 3.00 million hectares to 12.66 million hectares. This massive expansion of palm oil created many jobs and played a crucial role in improving the livelihood of indigenous populations. Additionally, expanding the area allocated for palm oil cultivation resulted in a significant increase in palm oil yields. This allowed Malaysian and Indonesian governments to export a larger amount of palm oil, thus enhancing the economic benefit.

Indeed, the expansion of palm oil did improve the Malaysian and Indonesian economies. However, this economic development occurred at the cost of indigenous communities, creating conflict between them and stakeholders. According to Petrenko et al. (2016), the benefits of the expansion of palm oil cultivation are not shared equally. Stakeholders receive significant benefits from the palm oil trade whereas indigenous communities are harmed. The expansion of palm oil restricted the amount of land indigenous communities use for housing and agriculture. Furthermore, the heavy use of fertilizers and pesticides polluted water bodies that communities depended on for their livelihood. The contamination of drinkable water sources because of pesticides negatively impacted the health of such communities. This information demonstrates the unequal share of the benefits associated with palm oil expansion, resulting in massive conflicts.

The Efficiency of Palm Oil in Terms of Oil Yield

Opponents argue that palm oil is the most efficient vegetable oil in terms of oil yield and therefore, should not be banned. A research study published by Nohmanbhay et al. (2017), claims that a single palm oil plantation can produce a significantly higher yield of oil than any other vegetable crop. Further, palm oil requires a low cost for growth and its yield is extremely stable and reliable in comparison to other vegetable crops. In agricultural terms, the stability of a crop means that the plantation would produce the same amount of crops each year. Accordingly, a stable crop would provide a more consistent income for plantation farmers. With this information in mind, opponents argue that the banning of palm oil would

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increase rates of deforestation and cause large economic losses. The banning of palm oil will force farmers to switch to other less efficient vegetable oils such as soybean and sunflower. Such vegetable oils will require a larger amount of land to grow to produce yields that satisfy the current oil demand. Therefore, banning palm oil will not only drive more deforestation but will also result in heavy economic losses.

Although the opponent's argument on palm oil efficiency has some merit, it does not consider that non-vegetable oil alternatives do exist. Over the years, extensive research has been conducted to find synthetic alternatives to palm oil. In a study published by Lui et al. (2014), researchers proposed the use of heterotrophic algal oil as a replacement for palm oil. They claim that algal oil can be extracted from a specific type of algae commonly referred to as *Chlorella*. This type of algae is extremely dense, meaning that it can produce a large yield compared to its size. Furthermore, it requires significantly less land to grow than palm oil. Thus, this alternative can be used to tackle the issue of deforestation without incurring heavy economic losses.

The Health Benefits of Palm Oil

Critics argue that the fruit extracted from palm oil trees contains many nutrients that are beneficial to human health. They claim that such nutrients are heavily used in the pharmaceutical sector to cure various diseases. Therefore, a ban on palm oil would deprive communities of many medical benefits. To illustrate, Agostini-Costa (2018) claims that palm oil contains many bioactive compounds that are used for medical purposes. Bioactive compounds are chemicals that can positively influence biological processes in humans thereby, promoting good health. An example of a bioactive compound present in palm oil that is of great interest to scientists is Tricin. This compound has the potential to cure various harmful diseases associated with the immune system. Further, Tricin is also an anti-carcinogen, meaning that it can be used to prevent the growth and invasion of cancer. These

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positive benefits associated with the nutrients extracted from palm oil affirm its importance to human health.

Although palm oil has been associated with many social benefits, experts claim that a considerable amount of consumable palm oil products exists in a form that poses a threat to human health. During the processing of consumable palm oil products, palm oil is oxidized by exposing it to high temperatures. The oxidation of palm oil is crucial as it plays a key role in improving the quality and taste of such products. However, palm oil in the oxidized state has been linked with many adverse effects on human health. To demonstrate, Ebong et al. (1999) claim that oxidized palm oil was responsible for causing tissue damage in the lungs and kidneys. Further, oxidized palm oil contains a variety of toxins that target vital body organs such as the heart, which could lead to death. Evidently, these effects of oxidized palm oil pose severe a threat to human health.

Conclusion

Palm oil is an important commodity that has been commonly used worldwide in the pharmaceutical and biofuel industry. Over the last few years, the demand for palm oil has increased considerably. This increase in demand has created an incentive for governments to intensively cultivate palm oil to develop the economy and provide a better livelihood for individuals. Despite the major role palm oil cultivation plays in benefiting the economy, it should be banned because it contributes to global deforestation, releases potent greenhouse gases, and results in the pollution of nearby water resources.

There are many reasons for suggesting the banning of palm oil. First, palm oil cultivation is a major driver of deforestation that leads to loss of biodiversity and the disruption of ecosystems. Evidence suggests that keystone species such as orangutans and butterflies experienced a loss in populations as a result of deforestation that led to ecosystem instability. Second, unsustainable land clearing practices such as slash and burn and clear-

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cutting significantly contribute to global warming. Research shows that such practices played a role in releasing potent greenhouse gases such as methane and carbon dioxide that reemit heat back into our atmosphere causing global warming. Third, the expansion of palm oil cultivation negatively impacted the communities of Indonesia. Case studies have shown that the use of fertilizers and pesticides to maximize palm oil yields has polluted water bodies that communities relied on for livelihood.

Opponents may argue that palm oil cultivation is important for developing the economy and the livelihood of communities. However, case studies have shown that palm oil cultivation has created major conflicts between the indigenous communities and powerful stakeholders. The conversion of forests to palm oil plantations has limited the communities access to food and water, which negatively impacted their livelihood. Critics may also argue that palm oil is the most efficient vegetable oil that exists and therefore, should not be banned. While that is true, critics failed to consider the fact that other alternatives to vegetable oils do exist. Studies have shown that a type of oil with similar properties to palm oil can be extracted from algae that require significantly less land to grow. Critics may also argue that palm oil can be used in the pharmaceutical industry and is therefore significant to human health. On the other hand, evidence suggests that palm oil has been linked with obesity and risks of heart diseases.

Because of the economic and social significance of palm oil, it is very unlikely for it to be completely banned. Nevertheless, much can be done by both the government and the public. As individuals, it is important to realize the severity of the environmental consequences associated with palm oil cultivation. With that realization in mind, we need to limit the amount of palm oil products we purchase to reduce the overall demand. Furthermore, governments should promote sustainable palm oil production and enforce strict regulations that prevent unsustainable farming practices from taking place.

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