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What's Wrong with Palm Oil, Why is it Accused of Damaging the Environment?

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Abstract. The purpose of this paper is to analyze the strategies for empowering rural economies based on oil palm in an effort to control the potential environmental impacts in the development of oil palm plantations. The research location in Riau Province area. The commodity of palm oil is the most popular especially in the Riau region. The area of oil palm plantations in 2001 was 1,119,798 ha, increasing to 2,503,566 ha in 2017 with an average growth of 5.16% per year. Other plantations such as rubber and coconut actually experienced a decline. The expansion of the plantation area is followed by an increase in the production of crude palm oil. The CPO production capability in the Riau region is supported by 261 units of palm oil mill (POM) with a capacity of processing 12,470 tons per hour. Oil palm plantation activities contribute to the regional and national economy. Oil palm farming has proven to be able to improve the welfare of the community and reduce poverty. The government has issued a policy, the development of oil palm plantations must be in line with the goals of sustainable development (SDGs).

Keywords: sustainable plantation; multiplier effect; RSPO; ISPO; SDGs

1. Introduction

Nowadays, the development of the agricultural sector is quite rapid in Indonesia, specifically the plantation subsector developed in Sumatera and Kalimantan. Palm oil is a plantation commodity that is widely cultivated by the community and entrepreneurs [1]. Based on data from Plantation Statistics [2], the area of oil palm plantations increased sharply from 4.2 million ha in 2000 to 14.3 million ha in 2018 with an average growth of 7.08% per year, while other plantation commodities such as rubber and coconut actually decrease. The expansion of the plantation area was followed by an increase in the production of crude palm oil (CPO). CPO production of 7.1 million tons in 2000 increased to 42.5 million tons in 2018 with an average growth per year of 10.49%.

Especially in Riau Province, the commodity of palm oil is the most popular. This is evidenced by the rapid development of the oil palm plantation area, which was 1,119,798 ha in 2001 and it increased to 2,503,566 ha in 2017. During the period of 2001-2017, the average growth rate was 5.16% per year, while other plantation commodities such as rubber and coconut had decreased [3]. The expansion of the plantation area is followed by an increase in the production of crude palm oil (CPO). CPO production of 1,792,481 tons in 2001 increased to 7,458,298 tons in 2017 with an average annual growth of 9.32% [4]. CPO production is supported by 261 units of palm oil mills (POMs) with a capacity of processing 12,470 tons per hour. The POMs are not spread evenly, but only concentrated



in core plantation and plasma areas. Independent smallholders are on the losing side because the plantation land is spread out. The distance between the plantation and POMS is too far and the condition of the road is poorly maintained. This causes the low quality of fresh fruit bunches (FFB) to the processing plant.

Oil palm activities have an impact on the surrounding community and are reflected in opening up employment opportunities. These job opportunities include the emergence of food and beverage businesses (restaurants), the emergence of transportation businesses, home industries, the development of village bank units. On the other hand, rising purchasing power has led to the emergence of rural markets in residential and rural areas. In synergy, income and welfare levels of the community have also increased. In addition, the pattern of consumption and education in rural communities will increase.

Oil palm farming is successful program in empowering rural communities. Palm oil has an impact on economic growth and increases the economic multiplier effect in rural areas. Palm oil activities contribute to the development of rural economic institutions. Palm oil has an impact on accelerating economic growth in rural areas. The development of oil palm farming in Riau has increased the economic welfare of rural communities and contributed to the growth of regional economy especially in rural areas. Research result Asmit and Deddy [5], plantation activities have opened up business opportunities in rural areas. Economic growth in rural areas has expanded their business activities in the tertiary sector. The development of oil palm plantations in Riau has reduced the income disparity among rural communities. Research related to oil palm and food security by Gatto et al. [6], Nutongkaew et al. [7], and land-use change by Kubitzta et al. [8].

Oil palm farming contributes to the rural family income. Palm oil socio-economic research has been conducted by .trenie et al. [9], Martin et al. [10], Susanti and Maryudi [11], Euler et al. [12], Bennett et al. [13], Córdoba et al. [14], Navarrete et al. [15], Chin et al. [16], Romero et al. [17], Ibragimov et al. [18]. Palm oil farming increases prosperity in rural areas. Research result Santika et al. [19], oil palm brought economic benefit mainly to villages with past exposure to plantation management and the market economy. Santika et al. [20]. Oil palm farming has succeeded in reducing poverty levels in rural areas. The majority of people have relied on market-oriented livelihoods, associated with improved socioeconomic well-being compared to villages without oil palm development.

This study combines social and economic variables with the aim of determining environmental impacts as a result of developing oil palm plantations. Related studies have been conducted by Feintrenie and Levang [21], Veloo et al. [22], Marzban et al. [23], Prabowo et al. [24], Azhar et al. [25], Subramaniam and Hashim [26], Purnomo et al. [27], Varkkey et al. [28], Pye [29], Córdoba et al. [30], Folefack et al. [31], Issahaku and Abdulai [32], Yanti et al. [33]. Research by Syahza [1], made about the sustainability of oil palm plantations. Syahza et al. [3] discuss the impact of oil palm businesses on the regional economy.

As a reference material, several studies have been conducted that are related to smallholders, namely Poole and Donovan [34], Fendrychová and Jehlička [35], Grashuis and Elliott [36], Ihli et al. [37], Qinglei et al. [38], Mi et al. [39]. Research by Euler et al. [40], oil palm activities have increased the welfare of small-scale farmers in Indonesia. However, on the other hand, land conversion has occurred in rural areas. Huang et al. [41], The welfare of farmers must be balanced with the formation of economic institutions in the countryside. Related research was carried out by Bayard and Jolly [42], Zen and Dwiyanoro [43]. Martin et al. [20], Hansen and Østerås [44], Ehiakpor et al. [45], Bachke [46], Abdullah et al. [47].

The purpose of this paper is to analyze management controls based on strategies for controlling potential environmental impacts as a result of developing oil palm plantations. It is hoped that there will be an institutional arrangement strategy for oil palm agriculture in an effort to preserve the environment. The priority of this paper is to create added value so that efforts to accelerate community economic development can be increased in accordance with the demands of the Sustainable Development Goals (SDGs).

2. Why oil palm is developing in Indonesia?

Oil palm is an excellent crop in the plantation subsector. This condition is due to the open market potential, especially for its derivative products in the form of Crude Palm Oil (CPO). The investors also have a great interest in the oil palm plantation business. These activities have an impact on the economic multiplier effect in the region. In Table 1, the economic multiplier effect index from 2003 to 2018 is above 1. It means that investment has a positive impact on the money supply and economic activity in rural areas. For example, in 2014, the multiplier effect index was 3.43. This means that each investment of \$ 1 in the countryside, in the following period will cause a money supply of \$ 3.43. Likewise in the next period. In 2018, the multiplier effect index was 1.93, which means that every investment in palm oil for \$ 1 in rural areas will cause a total money supply in rural areas of \$ 1.93. The development of oil palm farming causes economic sectors in rural areas to develop, including village markets, cooperatives, village-owned enterprises (Bumdes), home industries or SMEs (small and medium-sized businesses), transportation, restaurants and daily household necessities.

The development of oil palm plantations in Indonesia has contributed to the rural economy. This can be seen from the increase in the welfare index of rural communities. In Table 1, it appears that the people's welfare index is always positive. From 2016 through 2018, the welfare index increased by 0.16. This means that the welfare of rural communities in the 2016-2018 period increased by 16% compared to the previous period. It turns out that oil palm farming contributes to the family economy in rural areas. Bakce et al. [48], oil palm waste contributes to farmer groups and rural farmers. Like empty bunches used for mushroom cultivation, the leaf sticks are processed for crafting food plates and fruit containers. All of this adds to the income of rural farming families.

Table 1. The Welfare Index and the Multipier effect (ME) in the Rural Economy

Description	Year						
	2003	2006	2009	2012	2014	2016	2018
Welfare Index	1.72	0.18	0.12	0,43	0,27	0,31	0,16
Economic Multiplier Effect	4.23	2.48	3.03	3.28	3.43	2.82	1.93

Source: Syahza et al. [3], has been modified.

Oil palm plantation activities have positive or beneficial external influences on the surrounding area. Benefits of plantation activities for socio-economic aspects include: 1) Increased welfare in rural areas; 2) Open employment and business opportunities in rural areas; 3) Contribute to regional development [1]. On the other hand, oil palm activities affect the socio-economic and cultural components of the community; 1) open employment for local workers; 2) Develop economic activities in rural communities; 3) The existence of infrastructure facilities that can be utilized by the local community, especially road facilities, schools, houses of worship, village markets; and 4) Education of agricultural labor, health education, primary and secondary education [3].

Nowadays, palm oil is a superior commodity both for the community and for agribusiness actors, especially large companies. For the community, especially the farmers, oil palm is the plants desired as a source of income for families to be prosperous. Oil palm farming activities in Riau have contributed to the rural economy, where farmers' income ranges USD 5,781.09 per year. The money supply in the countryside increases. The purchasing power of the people increases [4]. Oil palm activity is an effort to accelerate regional economic development and has succeeded in reducing poverty in rural areas. Therefore, the demand of land for oil palm farming is very high but on the other hand, to serve the demand for such land is very limited. Especially for the region of Sumatra and Kalimantan, the demand of land for oil palm farming is very high because both areas have been developing oil palm and most of the supporting factors have been built, especially for palm fruit processing industry namely POM (palm oil mill).

By observing it, the development of oil palm plantation area in Indonesia has increased sharply. In 2000, the area of oil palm plantation of 4.2 million ha increased to 14.3 million ha in 2018 with an

average growth rate of 7.08% per year. Along with the development of land area, it is also followed by an increase in CPO (Crude Palm Oil) production. In 2000, CPO production was 7.1 million tons and in 2018 it increased to 42.5 million tons with an average annual production growth of 10.49%. It is likely that the future of Indonesian CPO production is predicted to increase to 43-48 million tons per year. This condition causes Indonesia to be the main producer of palm oil world.

3. Palm Oil is oriented towards sustainable development goals (SDGs)

The development of oil palm plantations in Indonesia is very rapid. After the oil palm boom in 2003, the Indonesian government made palm oil a source of foreign exchange. Regions that develop oil palm, their people feel changes in the level of welfare. The development of oil palm farming has not been followed by a good business management system, especially independent smallholders. Management of oil palm plantations is still far from ideal conditions, the occurrence of uncontrolled land clearing, conducting oil palm farming at a slope above 10%, the occurrence of land conversion. This condition causes potential damage to the surrounding environment. All of that raises accusations to the Indonesian government, that oil palm causes environmental damage. In an effort to anticipate this allegation, the Indonesian government issued a policy through the Indonesian Sustainable Palm Oil (ISPO) certification system.

ISPO was established in 2009 by the Indonesian government. The ISPO policy is proof that Indonesia is very concerned about the environment. The ISPO certificate is given to oil palm plantation entrepreneurs and farmers who implement the principles of sustainable development. ISPO published is expected to reduce the impact of environmental damage and drivers of deforestation. The aim is to inform global palm oil consumers that Indonesian palm oil is environmentally friendly. As proof of Indonesia's participation in meeting commitments to reduce greenhouse gas (GHG) emissions and pay attention to environmental issues.

The efforts of government to curb negative accusations on the Indonesian oil palm abroad are conducted through a policy of ISPO implementation for oil palm companies. It is applied because Indonesia's CPO exports are very large so that the government requires all oil palm plantation companies until the end of 2018 to already have ISPO. Results of research by Syahza and Asmit [4], currently there are about 2,500 oil palm plantation companies in Indonesia. Out of that number, only about 566 companies have applied for ISPO. The government Plan is to ban CPO exports that do not have the certificate of Indonesian Sustainable Palm Oil (ISPO). The purpose of this policy is to prove to the world, especially the Western countries that Indonesia's CPO products are environmentally friendly. Syahza et al. [49], farmers' activities for replanting oil palm in the Sumatera area understand the importance of paying attention to environmental balance. Oil palm development must comply with RSPO and ISPO requirements.

To avoid or reduce negative negotiations on Indonesian CPO products, the government requires every company engaged in the field of oil palm to have an ISPO certificate. The aim is to protect Indonesia's CPO on the world market from the side of other vegetable oil competitors. There are several reasons why ISPO should be implemented in Indonesia, including: 1) the high interest in oil palm farming in Indonesia; 2) The area of Indonesian palm oil has reached 14.3 million hectares and the total production is around 42.5 million tons (in 2018), in 2019 it is estimated to reach 43-48 million tons so that the production protection business needs to be carried out, especially for foreign markets; 3) there is a negative view of Indonesian oil palm farming; 4) as a guarantee for the Indonesian government to care about the environment, a certificate of Indonesia Sustainable Palm Oil (ISPO) is given; and 5) all oil palm plantation companies in Indonesia must have an ISPO.

In the palm oil trade, Europe has adopted a Roundtable on Sustainable Palm Oil (RSPO) policy. The policy is still voluntary and not as an absolute requirement. For the Indonesian government ISPO was issued, a necessity in oil palm farming activities. For entrepreneurs who do not have ISPO, the government will provide sanctions. The results of research Furumo et al. [50], in the oil palm sector, the Roundtable on Sustainable Palm Oil (RSPO) has become the standard for sustainable production but there has been no evaluation of whether certification actually improves social and environmental practices on farms. We find that certification is making progress but is not a panacea for transforming

the industry. Going forward, new strategies should be sought in tandem with certification to overcome smallholder informality, enhance inclusion, and capture more value in sustainable supply chains.

The Indonesian government's policy of implementing ISPO in the palm oil business is very reasonable, namely: First, evidence of concern for farmers and palm oil entrepreneurs to improve the environment; Second, efforts to maintain competitiveness abroad; Third, supporting a greenhouse gas reduction program and evidence for purchaser countries, Indonesia's palm oil is environmentally friendly. In accordance with its objectives, ISPO provides direct and indirect benefits for actors in the development of Indonesian palm oil. More specifically, the benefits of ISPO are: 1) The ISPO certificate is an acknowledgment of an oil palm plantation business that is managed sustainably; 2) Companies that have an ISPO certificate prove that the palm oil production process is very concerned about the balance of the environment and the local community.

By examining it, ISPO assessment system has two stages. Firstly, the role of government in terms of the way to assess the plantation business and determine the class of garden, implements that class 1, 2, and 3 can apply for certification. Secondly, independent institutions are conducted with the help of a certification board accredited by KAN (National Accreditation Committee) or that has a cooperation with KAN, and for foreign representative, the auditor must have work permit. For companies that will take care of ISPO, the requirements that must be completed are: 1) the application of technical guidelines for the cultivation and processing of oil palm; 2) the postponement of granting the right of land permit for plantation business; 3) the existence of environmental management and monitoring guidelines; 4) there is evidence of responsibility towards workers; 5) evidence of social responsibility and economic empowerment of surrounding communities; 6) increasing business with a sustainable development perspective.

In relation to these requirements, there are several matters applied in the opening of new oil palm land under ISPO principles, among others [51]: 1) the availability of SOP (Standard Operating Procedure)/instruction or technical procedures for new land clearing of oil palm; 2) the land clearing without burning and with taking land conservation into account; 3) Land that cannot be planted is the one with a slope of more than 30%, peatland with a depth of more than 3 meters and a stretch of more than 70%; customary land, water sources, historical sites and others are preserved sustainably; 4) Prior to land clearing, there shall be obliged to conduct feasibility study and AMDAL (Environmental Impact Analysis); 5) For peatland clearing, it is only implemented on a cultivated area with a peat thickness of 3 meters, *sapric* (mature) and *hemic* (half-baked) maturity and under the peat, there is no layer of quartz sand or acid sulfuric soil layer as well as regulates drainage to reduce gas emissions greenhouse; 6) Specifically for peatlands, a water management system shall be established in accordance with the applicable regulations; 7) The construction of road facilities, terracing, dead-end ditch, planting cover crops in the framework of land conservation; 8) The availability of annual work plan (RKT) of new land clearing; 9) The documented opening activity (and statement of business actor that the clearing land is carried out without fuel). Syahza and Asmit [4], In anticipating environmental damage, the Government of Indonesia imposes the Indonesian Sustainable Palm Oil (ISPO) policy. The results of the ISPO policy show that Indonesian crude palm oil products are environmentally friendly.

ISPO certification to the company aims for potential development and market share in the future both internationally and nationally. On the other hand, it proves that the award to the company in its business activities has conducted the rules of preserving the environment or has conducted sustainable plantation development efforts. Therefore, ISPO policy must be accelerated in the implementation of oil palm plantation communities, especially for companies engaged in upstream oil palm. Emphasis on oil palm farmers must be implemented with government policy, because of farmers as suppliers of raw materials for the palm oil industry [4]. Government policies in an effort to accelerate ISPO include: 1) ISPO certificate holder is expected to obtain CSR (Corporate Social Responsibility) funds from CPO export duty (ED) for the development of oil palm farmers; 2) The recipient of ISPO certificate is granted with the payment clearance of CPO ED; 3) Companies that already have ISPO should not be complicated by business expansion; 4) ISPO holder can easily obtain the right to cultivate (HGU) permit; 5) Guidance (socialization) is done to farmers by independent institutions such as Higher Education, NGOs, and other institutions that care about the environment.

4. Conclusion

Oil palm plantation activities in Riau have an impact on regional economic activity. Oil palm farming is able to accelerate economic development in an effort to reduce poverty in rural areas. The development of oil palm plantations has impacted positively on the rural economy, among others: 1) Reducing income inequality in rural areas; 2) Increase the money supply in rural areas; 3) The formation of economic institutions in rural areas; 4) Provides external influence to the surrounding area. The effect is seen in improving the welfare of surrounding communities, expanding employment opportunities, creating business opportunities, and contributing to regional development; 5) Oil palm activities have succeeded in reducing income inequality among rural communities. In addition, it can also reduce the level of imbalance between districts/cities in Riau.

Oil palm plantation activities affect the socio-economic component in rural areas, including: 1) Absorption of local labor; 2) Village community development activities; 3) Development of infrastructure facilities, especially roads in rural areas that can be utilized by local communities; 4) Agricultural, health and education extension; and 5) Payment of corporate liabilities to the country (taxes and other compensation costs).

The Government of Indonesia through the Ministry of Agriculture requires that all palm oil growers must be ISPO certified. ISPO certification to the company aims to prove that the company in its business activities has conducted the rules of preserving the environment, or has conducted sustainable plantation development efforts. In order to accelerate the implementation of ISPO, government policies are required, among others: 1) ISPO certificate holder is expected to obtain CSR (Corporate Social Responsibility) funds from CPO export duty (ED) for the development of oil palm farmers; 2) The recipient of ISPO certificate is granted with the payment clearance of CPO ED; 3) Companies that already have ISPO should not be complicated by business expansion; 4) ISPO holder can easily obtain the right to cultivate (HGU) permit; 5) Guidance (socialization) is done to farmers by independent institutions such as Higher Education, NGOs, and other institutions that care about the environment.

Efforts to be made in relation to sustainable development programs include the following: 1) involve surrounding communities in the policy formulation that has an impact on their livelihoods and lives; 2) encourage local communities to develop their knowledge to improve their standard of living; 3) facilitate their knowledge to gain widespread recognition through the 'intellectual property rights' mechanism.

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