

## Problems of Palm Oil Plantation Industry in Indonesia

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**ABSTRACT:** This paper reviews the development of the palm oil plantation industry in Indonesia from various perspectives supported by literature both abroad and domestically. poverty issues, farmer limitations, limitations of natural resources, environmental sustainability, climate, education and economic impacts. literature studies show that the palm oil plantation industry in Indonesia in general has not had an impact on the welfare of people living in plantation areas while eliminating community culture.

**Keywords:** Problem, Palm Oil Industry, Indonesia

### I. INTRODUCTION

The area of oil palm plantations in Indonesia in 2017 reached 12,307,677, with palm oil production of 35,359,384 tons/th and kernel oil of 7,071,877 tons/year. The problem of oil palm plantations is that the seeds grown are not certified, minimal maintenance and fertilization is not carried out properly so that the production of fresh fruit bunches produced is relatively low. Good productivity of palm oil crops can be achieved with intensive maintenance. One of the main sources of influence in the growth and productivity of palm oil is fertilization. Fertilization is the giving of 30 buckets of nutrients into the soil to maintain the balance of nutrients needed by plants and replace the nutrients lost carried by the crop.

The development of oil palm plantations in Indonesia began in 1970 and experienced rapid growth, especially in the 1980s. In 1980 the area of oil palm only covers an area of 294 thousand ha and continues to increase rapidly so that in 2009 reached 7.32 million ha, with a breakdown of 47.81% in the form of Large Private Plantations, 43.76% of people's plantations, and 8.43% of State Plantations. With an area, Indonesia is the largest palm oil producing country in the world. In 2009, Indonesia's palm oil production reached 20.6 million tons, followed by Malaysia in second place with production of 17.57 million tons. In 2014, according to data from the Ministry of Agriculture and data in the Mundi Index, the total production of Indonesian palm oil reached 31.5 million with 21.5 million tons exported abroad. Most of the palm oil production in Indonesia is an export commodity. The share of palm oil exports until 2014 reached 80% of total production. Indonesia's main palm oil export destinations are India with a 33% share, China with 13%, and the Netherlands with 9% of Indonesia's total palm oil exports.

The existence of Multinational Corporations (MNC) palm oil is a serious threat to some provinces in Indonesia if not balanced with strict regulatory supervision, because with mass and uncontrollable land clearing makes many local varieties will disappear, causing dependence on chemical fertilizers and pesticides as well as local biodiversity and food security will be weakened. Ecological disasters caused by the existence of oil palm plantations are also inevitable. From the results of research and surveys in various places directly, oil palm plantations are loaded with problems. Starting from environmental pollution, human rights violations, economic crimes, conflicts between companies and local residents that revolve around land grabs as well as land tenure of the population. Environmental pollution, starting from the soil that can not be restored because of dry, hard and molt, water pollution that becomes the main source of human life. The history, potential and opportunities for oil palm plantation development indicate that palm oil still has a positive prospect in the future, especially in relation to added value and competitiveness, in the framework of sustainable and equitable palm oil development. However, palm oil also faces various problems/constraints related to technology, economy, social, environment, and governance. These problems need to be addressed so as not to distort the competitiveness of

Indonesian palm oil products in the market. This paper seeks to explain how the presence of multinational companies in Indonesia has an impact in the economic, social, cultural, and community environment around the region that is a concession of plantation land owned by MNC palm oil.

## II. RESEARCH METHODS

Research method used is by collecting data and literature related to problems that occur in the palm oil plantation industry in Indonesia both in the form of research and documents on statistic Indonesia. Data collection is a technique that researchers do in collecting data. Data collection is done to obtain the necessary information in order to achieve research objectives.

## III. LITERATURE STUDY RESULTS

### a. Palm Oil Growth and Productivity

Various factors influence the growth and productivity of palm oil, both external factors and factors in the plant itself [1]. Factors in the plant itself include the varieties of plants used [2]. While external factors are environmental factors, including climate, soil, and cultivation techniques used [3]. To achieve maximum productivity of palm oil in the form of Fresh Fruit Bunches (FFB), it is expected that these factors are always in optimal condition [4]. In the Indonesian economy, the agricultural sector is traditionally known as an important sector because it plays a role among others as the main source of food and economic growth [5]. The role of this sector in Indonesia can still be improved if managed properly, given the increasing scarcity or decrease in the quality of natural resources, such as petroleum/petrochemicals and water and the environment globally, while in Indonesia these resources have not been optimally worked [6]. Into the future this sector will continue to be an important sector in poverty alleviation efforts, increase employment opportunities, increase national income and export acceptance and serve as a producer of raw materials to increase added value in the industrial and service sectors [7].

In the agricultural sector, plantation subsectors are expected to continue to play an important role through their contribution to GDP, export receipts, employment, poverty reduction, and regional development outside Java [8]. Palm oil is one of the plantation crops that has an important role for plantation subsectors [9]. In terms of environmental conservation efforts, palm oil plants which are annual tree crops can play a role in the absorption of greenhouse gas effects such as CO<sub>2</sub> and are able to produce O<sub>2</sub> or other environmental services such as biodiversity conservation [10]. In addition, palm oil plants are also the main source of food and nutrition of the domestic population menu, so its scarcity in the domestic market has a very real effect in the economic development and welfare of the community [11].

### b. Palm Oil Agribusiness Problems And Challenges Towards Multinational Companies

The company's partnership with farmers is an important role in the development of the national palm oil sector to overcome both challenges [12]. Palm oil companies should be able to help people's plantations to increase productivity, both through the selection of superior seeds and improved plantation governance [13]. People's palm oil plantations in Indonesia will face two major challenges. First, external challenges related to negative campaigns, sustainability issues, and market acceptance, especially in developed countries. The second is the challenge from within the country. Namely, productivity and efficiency are still low on average and the development of people's plantations [14]. To address these challenges, palm oil plantation companies must establish partnerships and help people's plantations to increase productivity. People's plantations, he said, increasingly play an important role in the national palm oil industry [15].

The application of agribusiness concept in small-scale farming is what characterizes Indonesian agribusiness [16], in addition to the development of modern agribusiness in several large-scale businesses [15]. The development of agribusiness concept in small-scale farming is one of the historical descriptions of Indonesian agribusiness [17]. Initially attention was paid to farmers and their farms. Then explored the business aspects of the farm, and put comprehensively together with other socioeconomic aspects owned by farmers [18]. Then seen the relationship of farmers' business with other businesses such as processing, storage, transportation, downstream industry even to retail and market [19]. All of them are in one series but the ownership is almost all different from each other.

This shows that the agribusiness sector still plays an important role in the national economy. In addition, the absorption of labor in the agricultural sector as many as 39.96 million people in 2019, if calculated in the agribusiness system this number is certainly greater. Thus, the performance of agribusiness nationally contributes positively and of course can still be continuously improved. Plantation commodities are still the prima donna of exports in Indonesia [20]. We can see that for the ASEAN region itself plantation commodities have a large market share when compared to other countries [21].

The challenges of the future of agribusiness include two interconnected sides. On the first side, the challenges of agribusiness system and business activities and the other side, the challenges in agribusiness education to be able to remain in accordance with the development of agribusiness practices. Thus the challenges faced by agribusiness as a concept and practice do not become lighter [22]. Agribusiness discussions are no longer as intense as they used to be. Jargon of different agricultural development and not yet steady understanding of many people about agribusiness makes agribusiness no longer a mandatory terminology in the discourse of agricultural development and agricultural economy [23]. Even in many conditions agribusiness is practiced but not recognized as agribusiness.

The challenges facing agribusiness systems and businesses include: 1) increased demand for agribusiness products; 2) the condition of farmers who are still shackled by poverty and all limitations; 3) the carrying capacity of natural resources is increasingly limited and the demands are getting stronger on the sustainability of natural resources; 4) extreme climate and climate uncertainty; and 5) conditions of various things that affect agribusiness development in a linear manner; and 6) the implications of these challenges to agribusiness education.

#### **c. Poverty and Limitations of Farmers**

In the future the growth of the desired agricultural sector is not only high, but must be quality and evenly distributed [7]. Agribusiness systems and businesses provide a strong foundation in creating agricultural and economic growth with equitable and quality. This is because the agribusiness system is driven by all economic actors in all subsystems [9]. Economic growth is heaved and synergized from the creativity and innovation of the actors (especially farmers) to create added value in agricultural products. Farmers are one of the important agribusiness actors, perhaps even the most important actors [11]. In fact, many argue that the approach of the system and agribusiness is an effort to overcome the problems faced by farmers. This effort needs to be closely watched especially by understanding the real conditions faced by farmers. The narrow area of land is one of the limitations for farmers to be able to increase production and conduct their activities efficiently [14].

Land limitations have become a major problem in agriculture in Indonesia, this condition will make it difficult for farmers to cultivate capital and the ability to develop their farming [11]. This capital limitation makes it difficult for small-scale farmers to extend or intensify. Access to limited markets, including inadequate infrastructure, also adds to the problems facing small-scale farmers to grow. Institutional farmers who are part of the agribusiness support subsystem, can drive business activities together, so that it is more efficient and profitable. This can be done if, farmers who have land nearby and farming activities together, both to obtain production factors collectively by farmer groups/combined farmer groups/cooperatives, to marketing conducted through the group [4]. The contract system and partners with other agribusiness actors in the field of processing will run if farmers are accommodated in the form of groups or organizations.

#### **d. Limitations of Natural Resources and Sustainability Demands**

Recent developments both empirically and the results of the study show that depletion of fossil fuel reserves will increase world oil prices. This decline is predicted not to last long, petroleum will increase again as the global economy, including the United States, improves. Limited availability of fossil fuels and rising petroleum prices, several years ago prompted various countries to look for alternative renewable fuels. Efforts made to find renewable energy, due to the limitations of natural resources that produce fuel have been carried out by developed and developing countries. Brazil is a successful developing country that develops renewable energy sourced from sugar cane (bioethanol). Agribusiness products become prima donna and sought after, because it is proven to produce biofuels, such as palm, sugar cane, soybeans, corn, and other grains.

Indonesia is very likely to become a major global player in meeting the 4 F agribusiness product group (food, feed, fiber, and fuel). These four groups can be produced in Indonesia, and are the main needs of the world community. In order for Indonesia to excel and become a major player, not only is it enough with the conventional old approach, but it needs to be supported by a comprehensive policy with a business and agribusiness system approach. In addition, it is very necessary to pay attention to how to pay attention to environmental sustainability as a form of maintaining sustainable development. In many conditions it turns out that it is not simple because the increasing practice of winning competition is done in a 'fair' manner under the guise of isyu and environmental sustainability demands. Indonesia's agribusiness systems and businesses must be observant of this development. Applying the principles of environmental sustainability remains a must, but it must also remain vigilant with the veiled 'un-fair' competition practices.

#### **e. Climate Uncertainty**

Climate uncertainty has an impact on agricultural production in general. In addition to climate anomalies, currently the earth is also experiencing global warming, this condition causes the emergence of new diseases and pests that attack various plants [24]. Climate change also has consequences for changes in planting and harvesting, thus disrupting the supply side of agricultural products. Climate change, if not immediately anticipated then production will be disrupted within a certain period of time will lead to price increases [25]. Climate change on the one hand also causes flooding and drought. The need to provide agricultural infrastructure (irrigation and reservoirs) is a condition so that agriculture can be guaranteed to continue to run [26]. Climate change mitigation will help farmers in carrying out their planting activities, so that with the information obtained can reduce the risk of crop failure losses due to climate change [13].

That climate uncertainty adds to the challenge of managing farmers' agribusiness bases in tropical climate conditions. Naturally the rainy and dry season causes many agricultural commodities can only be harvested in certain months, which causes the continuity of production can not be guaranteed throughout the year. This condition is a common challenge experienced by Indonesian agribusiness players, due to consumer demand and foreign markets that require a guarantee of supply contingency. In addition to efforts to be able to create new varieties and technologies that are able to stimulate plants to bear fruit throughout the year, logistics and processing approaches must be increasingly put forward. Logistics approaches also need to be directed to address the problem of crop buildup during harvests that depress prices at the farmer level and the problem of supply shortages to users.

#### **f. Implications On Agribusiness Education**

Competitive agribusiness systems and businesses are characterized by high efficiency, able to respond to market changes quickly and efficiently, produce high value-added products, use technological innovation as a source of productivity growth and added value. Thus, creating competitive agricultural development requires quality human resources. In this context, the development of agribusiness education is absolutely necessary to offset the transformative changes of the fundamentals of agribusiness development going forward. In that context the development of agribusiness education is absolutely necessary to offset the transformative changes of the fundamentals of agribusiness development going forward. Agribusiness players or farmers of the future are people who have the ability to do business, managerial skills, leadership, and entrepreneurial spirit (entrepreneurship). The character of such human resources can only be provided by agribusiness higher education, because higher education has the capacity and capability in developing agribusiness disciplines, both as multidisciplinary and transdisciplinary.

Improving the quality of agricultural human resources is a driving factor in development, which was once only unskilled and uneducated is now directed to skilled and educated human resources, who are well mastered technology and have an entrepreneurial spirit. Agricultural human resources referred here not only to farmers, but also all other stakeholders (government officials and entrepreneurs). In addition, preparing the younger generation as prospective entrepreneurs becomes a necessity, so that the stagnation of ongoing farmer regeneration can be immediately overcome. The preparation of the younger generation to become farmers certainly needs to be done early, namely introducing the concept of agribusiness and entrepreneurship from kindergarten to college. So far, the development of agribusiness education is still focused on higher education.

Various efforts are needed by concocting a curriculum as interesting as possible regarding the strong fundamentals of agribusiness, accompanied by technical understanding of crop subsectors (food, plantations, and horticulture), livestock, fisheries and forestry to learners. Thus will grow interest and desire to run a business in agriculture (upstream to downstream). Maintaining the process of regeneration in agriculture is very important, is part of maintaining the sustainability of agricultural and agribusiness activities. It is expected that the younger generation who have a good understanding in agribusiness education can run and drive agribusiness activities in rural areas to the global market.

**g. Impact in the Socio-Economic, Cultural, and Environmental Communities Around the Area That Concessions Oil Palm Plantation Land**

**Socioeconomic Impact,** The expansion of oil palm plantations has economic, environmental, and industrial development impacts CPO. According to [17] the contribution of palm oil-based industries has an important role in economic growth, poverty alleviation, and improved income distribution. Palm oil development has a positive impact on economic growth indicated by investment, output, and foreign exchange growth [28]. Palm oil-based industries also have a significant contribution to the welfare of households derived from palm oil businesses. In addition to economic benefits, the expansion of oil palm plantations has the potential to cause environmental problems [26]. Expansion of oil palm plantations can lead to deforestation, rising carbon emissions, and climate change, thus disrupting environmental conditions [29]. Stated that efforts can be made to reduce deforestation by means of land swaps [30]. In addition, the exchange of land from forest to non-forest and increased productivity of oil palm by independent farmers [5].

**The Impact of Community Culture,** The change of people's culture is much faster than nature, society gives birth to technology or material culture that has the main use in protecting the community against the environment. The system of living equipment or technology of society before the establishment of the company is still very simple and relies on human power mostly. At that time people were very difficult to then change the economy because the yield of the harvest is also very dependent on natural conditions. Such as tools to clear land and cultivate land, tools for harvesting, as well as tools for the transport of crops. In society there will be a process of interaction, social interaction occurs because the parties have needs or interests that can not be fulfilled by themselves so that the parties concerned need to be interconnected with each other or interact with each other, both physically and intellectually.

The establishment of oil palm plantations brings a change in livelihoods for people who used to only farm with food crops and horticulture now there are those who work in plantation companies as employees of companies, foreman, and daily laborers such as loading and unloading of oil palm, fertilizing, and cleaning grass in plantation companies, some communities have privately owned palm oil plantations and plasma palm oil from the company. Not only that, it becomes the destination of job seekers, both job seekers in the local area and job seekers from outside the area and there is a workforce brought by the company itself, with a dense population there are people who use this opportunity by opening new business opportunities such as opening food stalls, restaurants, workshops, merchants and building shops.

Change always has a negative and positive impact. Therefore, in responding to changes, wisdom and a deep understanding of the value, direction of the program, and strategy are required in accordance with the nature of the change itself [26]. Oil palm plantations, which in the process of implementing transforming forest ecosystems into monoculture ecosystems, inevitably create both types of impacts. Moreover, if around the garden area dwells a large number of residents, then it is almost certain that their lives will have an effect both economically, socially, and culturally.

**Environmental Impact,** Related to environmental disturbances due to oil palm expansion was stated in research conducted in Ivory Coast, South Africa, it was mentioned that one palm tree trunk needs water 1.25-2.31 mm/day and can absorb water up to a depth of 5.2 m [35]. Palm oil plantations can disrupt groundwater supplies for other crops outside oil palm plantations, because the draining of groundwater by oil palm plantations is very much [34]. India suggested the average water needed for one palm tree trunk ranges from 2.0 to 5.5 mm/day or 140-385 /ha/day with a total of 143 trees/ha [34]. More than 30% of land use in Sub Das Landak is used as an area of oil palm plantations, this will have a big impact on water balance because the water

needs for oil palm are very large [36]. It is known that the percentage of water discharge reduction due to oil palm planting ranges from 30 to 40%.

The existence of oil palm plantations access to water becomes difficult for the community [37]. In addition, the expansion of oil palm plantations will open opportunities for the development of crude palm oil (CPO) processing industry. Such industrial activities create externalities to people in industrial areas. Externalities arising are liquid waste from CPO processing industry activities. Said that externality occurs when one economic activity (both production and consumption) affects the well-being of other economic actors and existing events occur outside the market mechanism [32]. Externalities arising from industrial activity are often overlooked and not taken into account in the cost component of an activity [31, 33, 10]. Therefore, to reduce the losses suffered by the community externalities that arise must be internalized. Cpo processing industry has internalized in the form of wastewater treatment plant (IPAL), but over time the current condition of IPAL is not able to accommodate liquid waste from industrial activities so that when the intensity of rain is high and the volume of fresh fruit bunches production is increasing, the liquid waste overflows and is wasted into the river flow so that it again gives rise to externality.

#### IV. CONCLUSION

Based on the results of the discussion of the paper on the existence of oil palm plantation companies caused a change in the culture of the community. The change starts from the change in people's livelihoods which then the processes of innovation, diffusion, and integration affect the cultural elements of society. In addition, there are palm oil plantation companies. Positive impacts such as employment opportunities, business opportunities, increased community income, educational assistance, and the increasing and growing of organizations in the community. The problem of oil palm agribusiness challenges to multinational companies is constrained by several factors, namely, poverty and limitations of farmers, limitations of natural resources and demands for sustainability and climate uncertainty. In addition to these three factors there are also several things that become socioeconomic barriers, community culture, and environmental impacts.

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