



The Society's Effort in Increasing the Economy Through the Palm Oil Waste

Resdati^{1*}, Hesti Asriwandari¹, T Romi Marnelly¹, Achmad Hidir¹, Yusmar Yusuf¹

¹ FISIP, Universitas Riau, Indonesia.

Received: November 1, 2023

Revised: February 16, 2024

Accepted: May 25, 2024

Published: May 31, 2024

Corresponding Author:

Resdati

resdati@lecturer.unri.ac.id

DOI: [10.29303/jppipa.v10i5.5931](https://doi.org/10.29303/jppipa.v10i5.5931)

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Abstract: This research was implemented in Sukamaju Village, Sub regency of Singingi Hilir, Regency of Kuantan Singingi to know the potential of palm oil waste that is used by the society of Sukamaju Village as the manure and to describe the society effort of Sukamaju Village in using the potential of palm oil waste for increasing the economy level and decreasing the bad environment impact because of the palm oil waste. For obtaining the accurate data, the method of descriptive qualitative research is used by collecting the data, using the deep interview technique, direct observation and documentation. The analyze result shows that there is a quiet big waste potential in Sukamaju Village then processed to be the valuable manure. Moreover, this manure manufacture process is obtained from the palm oil waste from two big factories namely PT. Surya Agro Reksa and PT. Agrolestari. The process of waste production of palm oil includes the manufacture from the waste ponds, where the first pond of waste still has the high level of acidity so that it has not been able to be used yet. So the level of middle pond of waste water has been able to be channeled to the agriculture for make the plant fertile, and in the last level of solid waste is used as the natural manure of the land fertilizer. The analyze result shows that the waste of the palm oil can increase the fertility of land and plant, so it decreases the budget outcome of chemical manure. The socialization effort is needed to pressure massively for the information distributing connected the right waste processing.

Keywords: Community; Efforts to utilize palm oil waste; Potency

Introduction

Palm oil plays a central role in the economic and agricultural context of Indonesia, serving as one of the main commodities that significantly contributes to the country's economy (Ariyanto, 2016; Creswell, 2017). In 2022, Indonesia solidified its position as the world's largest palm oil producer, reaching a peak production of 54.8 million tons. This phenomenon marks Indonesia's dominance in the palm oil industry, not only on a local scale but also playing an integral role globally (Assifa, 2012).

The allure of palm oil lies in its remarkable multifunctionality, playing a vital role as a raw material in various industrial sectors (Bessou et al., 2017; Rueda et al., 2015). Its primary uses involve the food sector, where palm oil serves as a crucial raw material in the

production of food and beverages (Gesteiro et al., 2019; Gunstone, 2011). The cosmetic industry also benefits, as palm oil often becomes a key component in the manufacturing of beauty and skincare products (Edo et al., 2022; Kadandale et al., 2019). Furthermore, its role in the biodiesel industry emphasizes its positive impact on the renewable energy sector (Lam et al., 2019; Zahan et al., 2018).

Indonesia's success as a leading palm oil producer is not only measured in terms of production but also in terms of sustainability and environmental aspects. Despite making a significant contribution to the country's revenue, (Dudwick, 2006) challenges related to deforestation and environmental impact have become critical focal points. Sustainable policy development is imperative to manage the tension between industrial

How to Cite:

Resdati, Asriwandari, H., Marnelly, T. R., Hidir, A., & Yusuf, Y. (2024). The Society's Effort in Increasing the Economy Through the Palm Oil Waste. *Jurnal Penelitian Pendidikan IPA*, 10(5), 2824–2831. <https://doi.org/10.29303/jppipa.v10i5.5931>

development and environmental preservation (Damsar, 2015).

Additionally, palm oil has become a global subject of debate regarding ethics and human rights. Unsustainable Field (2010) plantation practices, including unfair labor practices and land conflicts, draw attention from human rights organizations and environmental groups. This demands serious attention from governments and stakeholders to formulate policies that not only support economic growth but also ensure sustainability and social justice (Dwiranto, 2013).

Therefore, palm oil in Indonesia is not merely an ordinary export commodity; it encapsulates the complexity of economic, environmental, and social dimensions. Wise policy transformations and innovative actions are required to ensure that palm oil production remains a driver of economic growth without compromising ecosystems and human rights. In this context, palm oil represents both challenges and opportunities, requiring a holistic approach and a balance between economic interests and sustainability (Hasbullah, 2006).

Palm oil, as a primary commodity in Indonesia's economy, plays a crucial role in supporting the stability and economic growth of the country. Specifically, palm oil has marked itself as one of Indonesia's largest and most important export commodities. In 2022, palm oil exports from Indonesia achieved remarkable success, reaching a value of 27.9 billion US dollars, indicating significant dominance in the global market share. This success is not coincidental but a result of the superior quality of Indonesian palm oil and efficiency in the integrated supply chain (Moleong, 2012).

The contribution of palm oil exports to the country's foreign exchange cannot be overlooked. The financial gains from international palm oil sales are a major support for Indonesia's foreign exchange reserves. In the era of economic globalization, where dependence on foreign currency is increasingly crucial, the role of palm oil as a pillar of the country's foreign exchange provides significant economic resilience

Apart from macroeconomic aspects, palm oil also has complex impacts on the microeconomic level, especially in providing employment for local communities in the palm oil plantation sector. Involvement of communities in this industry creates job opportunities, strengthens purchasing power, and enhances the well-being of local communities. However, it should be acknowledged that while providing significant economic contributions, the palm oil industry also faces challenges related to environmental sustainability and social aspects. Therefore, wise and sustainable policies are needed to ensure that palm oil exploitation does not harm the environment and the rights of indigenous communities.

The importance of palm oil in Indonesia's economy also reflects its complexity in relation to the global market and geopolitical dynamics. Fluctuations in palm oil prices, influenced by factors such as global demand, international trade policies, and climate change, require careful risk management from the government and industry players. Moreover, Indonesia's role as a leader in palm oil production also positions it strategically in international trade negotiations and regional economic cooperation (Winarno, 2016).

Palm oil production, as a high-value industry with significant economic benefits, still faces serious challenges related to the environmental impacts it generates. Alongside the high production of palm oil, there is a consequential issue that warrants attention – the waste produced in various forms, such as empty fruit bunches (EFB), palm kernel shells (PKS), and palm oil mill effluent (POME) (Kusnadi, 2000). Scientifically, EFB is the byproduct of the palm oil extraction process, CCO is the hard shell protecting the palm fruit, and PKS is a fiber residue from oil extraction. If not managed carefully and efficiently, these byproducts have the potential to cause serious ecological impacts (Pasaribu et al., 2021).

The waste from palm oil, especially if inadequately managed, can trigger various environmental problems that need thorough consideration. One of the main impacts is related to water pollution, where the waste may contain harmful chemical compounds that can damage water quality and disrupt aquatic life. Specifically, elements such as free fatty acids and other organic compounds may be released into the water environment, causing ecosystem imbalance and endangering living organisms (Wahyu, 2018). Additionally, air pollution can also occur through waste incineration or other activities that produce greenhouse gas emissions and particulate matter.

However, in the context of palm oil waste management, efforts have been made to develop sustainable solutions that can mitigate these negative impacts. Some approaches involve modern technologies, such as the use of bioremediation systems and environmentally friendly waste management methods. The use of these methods is expected to reduce the environmental impact of palm oil waste while simultaneously generating added value through the reuse of waste as a source of energy or raw material for other industries.

Reksa. The society is allowed to take the waste free if they don't destroy the waste surface or in the other word erode the side that has been made the dike. Sukamjau village has the big potential to increase the use of palm oil waste. Various plants grow fertile because they are given the sokid soil manure of palm oil waste result. This plant is such as wide-leaved decorative grass

that is used by the farmer to be sold to the animal husbandry of cow, leafy vegetable, spinach, chili and other plants. But the big potential is not accompanied with the knowledge of society and the support of government in maximum. So the use of palm oil waste is only used by the certain people and it's not sold widely until the region corner in the whole of Indonesian. The use only reaches the region of village to village that is still in one area scope. So the clear and planned concept map is still needed in using the palm oil waste so that it can increase the economy of Sukamaju village society as the producer of palm oil.

The goal from this research is to know the society's effort in increasing the economy through the use of palm oil waste in Sukamaju village, Sub Regency of Singigi Hilir, Regency of Kuantan Singingi. Besides that, this research has goal to explain the impact of the use of palm oil waste as one of the effort to decrease the environment pollution both the pollution of water, air, and soil. So besides increasing the value of economy and social, this research also solves the problem of the environment because of the industry waste of palm oil. This research also tends to the society to know the value of selling from the palm oil waste in the national and international market.

The subject of this research that was taken namely the society of Sukamaju village, the group of palm oil farmer, the people of Sukamaju village, PT. Adi Mulya Grup. The method of the data collecting that is used is the method of interview, observation and documentation. The interview method is implemented to know clearly and deeply about the waste processing to be the product that has economic value that can help the society's economy.

The documentation method is used to obtain the data about the society list that is become the research subject, the observation method is used to know the objective condition when the use and the processing activity of the waste and to know the factors that can influence the society's effort in using the waste of palm oil.

Method

The Location and Time of the Research

This research was implemented in Sukamaju Village, Sub regency of Singingi Hilir, Regency of Kuantan Singingi, about the society's effort in increasing the use economy of palm oil waste. For knowing the society's participation in increasing the economy by the use of palm oil waste so the data about the whole total of society in Sukamaju Village, Sub regency of Singingi Hilir, Regency of Kuantan Singingi is needed to be known that includes 6.719 people. The total of man inhabitant is 3.512 people and the total of woman

inhabitant is 3.206 people. Then, Sukamaju village has the location with the wide area 53 km² where it has border with Sei Tesso/Kampar in the north, in the south Beringin Jaya village, in the west the garden of PT. AA, and it has border with Sei Tesso/Kampar in the east. Needed to be known that this research was implemented in January 2022.

The Decision Way of Sample Measure of Data Source The decision of data source is still temporary and will be developed after the researcher is in the field. The sample of the first source enters the field chosen by the people that has power and authority in the social situation or the observed data, so it can "open the door" wherever the researcher collects the data with the research sample taking the figures who are considered valid in this research namely the village people in Sukamaju, the group of farmer society of palm oil, the group of farmer society of wide-leaved decorative grass, chili farmer, farmer of leafy vegetable and spinach, and the society group of palm oil. The used method is verstehen or also known with the interpretative understanding, namely a way or effort to understand an action of subjective meaning for itself and related with other people.

The Kind and Source of Data

The research is implemented with the descriptive method and the qualitative research because it is showed to know the social phenomenon or indication in the natural condition systematically and accurately about the characteristic of population and certain region (natural setting). In the qualitative research, the researcher enters certain social situation that can be certain education institution, does the observation and the interview to the people that are considered knowing about that situation. Moleong (2012), explains that the qualitative research is shown as the research to understand the related phenomenon about what the subject experiences, such as the behavior, the motivation, the description, the language, and a natural context through the use of natural method. In the qualitative research, the perspective that is used is emik, namely basing on a perspective of the informant that is obtained through the approach with the basis data of narration and expression where it is not followed with the interpretation and evaluation of the researcher. Moreover, the method and the type of the research that is meant and used is descriptive with qualitative characteristic.

The data source that is used in this research has two sources namely primer and seconder. The primer data is obtained from the result of interview or survey (field observation) by visiting directly the society of Sukamaju village meanwhile the seconder data is obtained by the researcher from indirect source by collecting data from

the some books and some sources, of Google or internet, and collecting information and reference that has connection with the observed problem.

The Technique of Data Collecting

In the process of collecting data for this research on the utilization of palm oil waste in Sukamaju village, various techniques were employed by the researcher. Firstly, interviews were conducted directly with members of the Sukamaju village community through face-to-face interactions. Subjects or correspondents knowledgeable about the correct and credible use of palm oil waste in Sukamaju village were chosen based on the research proposal. Questions were posed to the community to understand how the increased potential and impact of palm oil waste usage manifested in Sukamaju village. Additionally, field observations were systematically carried out to determine the location of Sukamaju village and investigate how the community economically benefited from utilizing palm oil waste. The observation method involved systematic data collection to ensure accuracy and reliability. Furthermore, documentation played a crucial role in the data collection process, involving the retrieval of information from various sources such as journals, newspapers, and websites related to Sukamaju village.

Once the data was collected, the researcher employed a qualitative data analysis approach. The first step in the analysis was data reduction, where the economic development strategy based on local commodities in the Kuantan Singingi regency was explored. The readiness of cow livestock wool was found to increase alongside the availability of palm oil plants, which produce stem leaves liked by the cows, thereby meeting the needs of livestock wool. The next step was data display, where the potential of palm oil waste in Indonesia was highlighted. The research indicated that palm oil is a supreme commodity in Indonesia, leading to the involvement of various groups in building the palm oil industry. Factors such as fluctuations in world oil prices, the potential contribution of liquid and solid waste to CO₂ emissions, and global warming issues were discussed in relation to palm oil investment. The final step, verification, concluded that the cultivation technique for palm oil could enhance knowledge about the managerial aspects involved in palm oil land processing. The by-products successfully created through the TBS (Fresh Fruit Bunches) process were identified as valuable organic manure for soil improvement.

Result and Discussion

For examining the research in order to be the discussion that has the ground in the explanation so the

researcher uses the relevant theory with the study, namely:

Functional Structural Theory

The society is become as a unity that has the function in the system and there is composition that divides the system in the elements to be involved each other and can be seen as a whole system. The main discussion in this theory is an effort to look at the structure or the part that is connected between one side and another side in the society. Dwiranto explains that the theory of functional structural has the agreement and a unity that are in the society to be agreed further by the member in the system and make a norm in order to be a balance in the society life. In the study of this theory, the researcher can look at a phenomenon in the field involved the society of Sukamaju village in reaching its goal to process the palm oil waste to be the product that increases the economy level of local society and explains the arranged system in society in dividing the task in order to get the arranged and integrated pattern.

Rational Choice Theory of James Samuel Coleman

Rational choice theory is considered relevant in this research because it's connected with the social behavior in individual's self in a decision making that has connection with the rational action in the life. Therefore, there is a main big line that has perspective about the actor as the choice of individual or group. This theory was sparked by James Samuel Coleman that was born in United States of America in 19 May 1926. James explained that an individual or group has to be able to use the resource in maximum to reach its goal. So from the explanation of Coleman, there are two elements that must be fulfilled by the individual or the group in order to reach the goal based on the rationality, namely:

In this passage, the concept of resource is introduced as a potential present in both the environment and individuals within a group. Resources play a crucial role in facilitating the achievement of goals, making the process smoother. The two types of resources identified are material and non-material. Coleman's explanation suggests that macro elements in resources influence choices in the lives of individuals or groups. The term "actor" refers to the individual or group actively engaged in taking actions to achieve a goal, driven by the desire to move through the necessary steps to reach that goal.

The Survival Strategy of Trade Theory, as articulated by Edi Suharto, outlines three strategies: active, passive, and net strategies. Active strategy involves leveraging the roles of household members, such as encouraging the wife to contribute to income generation, to address economic challenges. Passive strategy focuses on saving and minimizing expenses to

navigate economic turmoil. Net strategy involves utilizing social networks to establish formal and non-formal relationships, showcasing the importance of social interactions in society, especially in economically disadvantaged communities.

The Social Capital Theory draws from the concepts of net, norm, and trust, emphasizing their potential in enhancing societal productivity. Social capital encompasses various elements, including group dynamics, trust, norms, social networks, and empowerment. Trust is highlighted as a crucial component in shaping social capital, fostering agreements and rules within society. Social norms represent unspoken rules guiding behavior within a society, indicating the strength or weakness of group relations. Social networks involve the ability to engage in social relations, emphasizing voluntary interactions, similarity, and politeness.

The Businessman Theory introduces the notion of a businessman as someone driven by a spirit to work and build. It encompasses two perspectives: the Economy Theory, which views businessmen as individuals who capitalize on opportunities and maximize potential for innovation, and the Behavior Theory, which emphasizes financial management, effective product marketing, and networking skills as essential aspects for business success. Overall, these theories provide insights into the dynamics of resource utilization, human action, survival strategies, social capital, and the entrepreneurial mindset.

The Development of Waste Industry of Palm Oil in Indonesian

The industry of palm oil in Indonesian gets more and more developed in a row the increasing global market demand. Therefore, Indonesian expands the palm oil plantation in order to produce the higher result productivity. Counted 14.3 million Ha. Based on the data from The Statistics Center Dienst in 2019 that Indonesia becomes the country with the largest palm oil plantation in the world. The province that becomes the largest palm oil plantation in 2018 is Riau that reached the number of 2.7 million hectares. The big potential of palm oil in Indonesian pushes the government together with interrelated institution to keep expanding the palm oil land in order to push the economy growth. Besides that, there is a palm oil needs that gets increasing in proportion to straight with the palm oil industry result waste. So it makes the problem such as the ecosystem pollution in the environment and chemical essence danger for the society life that lives around the factory of palm oil processing. This thing has impact to the decrease of society's health and the death ecosystem if the waste is not processed exactly.

The palm oil has various kinds of waste from the harvest result or replanting process of palm oil plant that produces the stem, the fruit that has been processed by the factory of palm oil produces eggshell and fiber of fruit so the last result makes liquid waste and solid waste. The waste volume will get increasing with the bigger palm oil production. Based on the data of the Plantation General Directorate in 2011, in 2005 the export volume of CPO touches the number 11.745.954 ton with the price U\$\$ 4.139.286.000 and rein creases in 2009 that In 2005 there were 1.02 million of family head that became the palm oil farmer. Until 320 units of palm oil factory with the capacity of 13.520 ton fruit stems and there were 6 produces that produced the capacity of 124 million sprouts per year. The factory of palm oil gets increasing the existence from 2000 with the capacity of 96.166 ton Fresh Fruit Stem/hour. The province with the most existences of factory of palm oil in North Sumatera 84 units, Riau 44 units, South Sumatera 20 units, Aceh 14 units, Jambi 13 units, and West Kalimantan 13 unit

Moreover, there is the production increase of palm oil that indicates that the waste from the industry will be a new problem in the society environment. Because the factory founding of palm oil around the living area of the society can trigger the environment pollution including water pollution, air pollution, and soil pollution if the waste from palm oil industry is not managed well. Although it has been through the waste processing step in order to be thrown safely to the river area around the society environment. But the chemical material that is contained in the palm oil waste will keep giving impact to the ecosystem. Therefore, the right plan is needed with the conceptual processing so that the waste doesn't destroy the nature and the life surroundings. Because of the pollutant effect in the liquid waste of palm oil causes the pollution especially in the watery side. If it's related with the higher palm oil production so it can be the decrease of water quality because the palm oil waste is thrown into the river as the last disposal place.

The Plantation General Directorate, the Agriculture Ministry of RI related the data in 2016 that the palm oil became one of success center of national development. So some provinces started to build the palm oil plantation to increase the development in its region. The page of information article of palm oil explained the data in 2015 as many 11.3 million Ha, the palm oil plantation was built in 5 big provinces in Indonesian. Sumatera Island becomes one of island with the biggest palm oil production existence that produced national CPO. The province that donated this CPO production among others Riau, North Sumatra and South Sumatera, Jambi, etc. Besides Sumatera Island, one of province that accommodated this production was West Kalimantan Island. Because the big land potential became the good

development to build the palm oil plantation. The page of palm oil information joined in explaining that the presentation from 5 big provinces contribution as much 64% in the palm oil production in Indonesian. The accumulation total from the 5 province contribution in increasing the national CPO production is 71%.

Riau province is an area that is in Sumatera Island with the unique characteristhique as the province with the biggest palm oil plantation in Indonesian. The people plantation had 1.44 million hectare of palm oil land until in 2015 Riau province could donate the CPO production as many 3.85 million ton. This condition could increase the proud and the appreciation of people and could build the land ownership in their own area. Besides the people plantation, Riau province also had Private Big Plantation that included the wide land 931.662 hectare and CPO production as many 3.59 million ton.

One of region in Riau province that contacts with palm oil industry and waste from its processing result is in Sukamaju village Sub regency of Singingi Hilir, Regency of Kuantan Singingi. For the people of Sukamaju village, the palm oil waste is like coint with two sides. Where there is advantage and disadvantage with the palm oil industry waste. This case relates with the life desir of any people that depend on the economy to the palm oil plantation. So, the founding of Factory of Palm Oil, the palm oil plant that is maintained can be sold and processed by Factory of Palm Oil. The waste from Factory of Palm Oil is used by some people for the private needs.

The local society still processes the palm oil waste with the limited knowledge such as using palm leaf rib from the palm oil stem, collecting the solid waste that is called as solid soil by the surroundings and used as the manure for the plant. The use of palm oil waste in the society of Sukamaju village is still limited with the minimum knowledge and education from the government and realted institution. Some people only use the palm oil waste personally with the information that is got autodidact. This case is also influenced by the special group that has not been built yet to educate and control the waste use structurally in order to increase the society's economy.

Remembered that the potential of industry result waste of palm oil in Sukamaju village is so big with the founding of two companies of palm oil namely PT. Surya Agro Reksa and Pt. Agrolestari by perusahaan Adi Mulya Group. The both are two factories of palm oil that were built in Sukamjau village. Each factory has different function in the form of land ownership and its processing PT.

Surya Argo Reksa doesn't only process the company land but also the society land of Sukamaju village until Beringin Jaya village. Meanwhile, PT

Agrolestari only focusses on processing the land of company that is spread out region of Sukamaju village, Beringin Jaya, until Gunung Sahilan that have belonged to the region of Kampar Regency.

If the waste dcan be used exactly and managed so the society can increase their life economy level until they don't only depend on the plantation result but also can decrease the effect of environment pollution and minimalize the ecosystem destroy in the nature. Therfor, the alternative is needed to solve the waste problem. Because the waste is not only considered as a bad side but also positive side that can return the waste position as one of parasite that previous is considered bad by the society.

The use of palm oil waste has started to be implemented one of in the region of Jambi province. The society use the eggshell and fiber of palm oil as the substitution of electrical energy and fuel that can produce the energy as much 4.900 kWh (Wahyu, 2018). The big reach from Jambi province through the use of palm oil waste into the compost manure is revealed by Supari as the chairman of farmer group of Mekar Jaya in Daran Kempas village that produced total 1 milliard.

The Waste Potential of Palm Oil for the Society in Sukamaju Village, Regency of Kuantan Singingi Riau Province

Generally, the big waste potency of palm oil in Sukamjau village has not still been used maximum. Whereas, if it's processed well au the reach in Jambi Province can be implemented in the region of Sukamaju village as one of the plantation land owner of palm oil. Only some societies that know the use and the permission process of waste taking that are ready to move and use the access for the private interest. If observed, there are cabins of agriculture that spread around the factory of palm oil where the cabins consist of various plants such as Leafy vegetable, Chili, and Spinach and other plants. Those plants don't use much chemical manure because they are supported by the solid soil that is the waste from palm oil industry. So the farmer can be more thrifty 50% from the buying result of solid soil of 1 truck from the chairman of waste processing. The farmer only pays for the heavy tool in order to take the solid soil. Even the farmer can take the solid soil free if they don't use the service of heavy tool that has been provided by the company. The chemical manure that has the average price 100.000-400.000 can be decreased the use because the chemical manure only has role as the plant stabilizer if the fertility element of solid soil has been decreased.

The empowerment of farmer group in the waste processing of palm oil indeed is still said passive. But some individuals in the society move actively to use the palm oil waste that is often connoted as negative thing.



Figure 1. The use of solid waste for the manure of palm



Figure 2. The solid waste



Figure 3. The plant of leafy vegetable, chili, and spinach from the manure of solid waste



Figure 4. The plant of wide-leaved decorative grass from the manure of solid waste of pal



Figure 5. The solid waste of palm oil that becomes the manure to replant the palm oil

Conclusion

The waste of palm oil can become the replacement alternative of chemical manure use. Because it has been tested in the plant in the society of Sukamjau village that grows fertile by the increase of nutrients in the plant. Besides that a little market increases the selling value to pack the product so it is become the potential opportunity to be processed. The positive side is to build the green environment through the right waste process of palm oil and to increase the economy level of the local society

Acknowledgements

The writer says thank you to the Chairman of Research and Service Institution, the Society of Riau University that have supported and given the facility in this research. And the expression of thank you to the Society of Sukamaju Village and the Official of PT. Adimulia for every information and openness in giving the data both in written and oral directly in the field.

Author Contributions

All authors contributed to writing this article.

Funding

No external funding.

Conflicts of Interest

No conflict interest.

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