International Journal of Progressive Sciences and Technologies (IJPSAT)
ISSN: 2509-0119.

http://ijpsat.ijsht-journals.org
Vol. 27 No. 2 July 2021, pp.689-699

Political Economy Policy in the Context of Renewable Energy through Biodiesel Development in Indonesia

Handrie Kurniawan[1], Bambang Utoyo[2], Refly Setiawan[3], Esti Melinda[4]

[1, 2] Department of Development Studies, Social and Political Science Faculty, University of Lampung, Indonesia.
[3]Department of Public Administration, University of Bandar Lampung, Indonesia.
[4]Department of Public Administration, University of Bandar Lampung, Indonesia.

Abstract – In Indonesia, the policy of using fossil fuels to non-fossil fuels (including biofuel biodiesel) continues to increase. Currently, the largest source of raw material for biodiesel in Indonesia comes from palm oil. It is believed that biodiesel development can generate benefits for the community in each region, such as local job creation, infrastructure development, revenue generation for local governments and less national dependence on fossil fuels and energy imports, as well as minimizing the negative impact of fossil fuels on the environment. The results of this study indicate that the limited domestic market, especially due to the uncompetitive price of diesel fuel, low diesel prices and high prices are constraints in the production of domestic biodiesel for absorption. Domestic political aspects related to the use of biodiesel by parties that have been determined by the government are also an important issue in ensuring the sustainability of biodiesel. In addition, the issue of sustainability in the upstream (oil palm plantations) and the dumping problem stated by the European Union and American Governments are also major problems in Indonesia's biodiesel export.

Keywords – Biodiesel, National Energy Policy, Political Economy, Oil Palm, Regional Development.

I. INTRODUCTION

Indonesia is an archipelago country that has abundant natural wealth. In Indonesia, the development of Biodiesel continues to be carried out by the government which involves people from various regions. Until now, Indonesia still relies heavily on fossil-based fuels as a source of energy. Data obtained from the Ministry of Energy and Mineral Resources of the Republic of Indonesia shows that with the available crude oil stock of around 9 billion barrels, with an average production growth rate of 500 million barrels per year, these supplies will run out within 18 years. To reduce dependence on petroleum and meet global environmental requirements, the only way is to develop environmentally friendly alternative fuels (Desfiandi et al., 2019).

The development of biofuels as an alternative energy that is environmentally friendly (green and clean energy) is not new. Judging from its history, the use of ethanol for vehicles has started since 1806, when one of the German engineers, Nikolaus August Otto, used ethanol from yeast fermentation to run vehicle engines (Borras et al., 2010). Furthermore, biofuels were widely introduced since the 1900s at the World's Fair in Paris, where at that time the inventor of diesel, namely Dr. R. Diesel successfully tested the use of peanut oil to run one of the vehicle engines (Demirbas, 2017).

The petroleum crisis due to the OPEC petroleum export embargo and the Iranian revolution and World War II in the 1970s made biofuels an alternative fuel in various countries, especially non-OPEC countries (Bracmort, 2018). In response to this, Brazil made a mandate and imposed a subsidy for blending ethanol and America innovated with corn-based ethanol (Bernadine, 2012). In

Corresponding Author: Refly Setiawan

the early 21st century, concerns about climate change, oil dependence and energy security led to increased support for alternative energies, such as biofuels, electricity and hydrogen. Along with increasing attention to global environmental problems and the instability of petroleum supplies in the Middle East, biofuels have become the center of attention of governments in various countries in the world (Ayadi et al., 2016).

In Indonesia, bioenergy, including biofuel, which is part of new and renewable energy, has also been a concern of the government since the 1980s. Energy diversification policies, including the development of new and renewable energy in Indonesia, have generally been initiated since the 1980s. Efforts to develop the energy mix as a form of government concern for the importance of energy began with the issuance of Presidential Decree No. 46 of 1980 concerning the National Energy Coordination Agency. In the Presidential Decree, the Indonesian government still focuses on saving fuel oil and replacing it with coal. Regarding biofuels, the policy of biofuel utilization was emphasized by the issuance of Presidential Instruction No.1 of 2006 concerning the Provision and Utilization of Biofuels as Other Fuels. Article 3 Paragraph 2 of the Regulation of the Minister of Energy and Mineral Resources Number 25 of 2013 concerning the Provision, Utilization and Management of Biofuels as Other Fuels, states that business entities holding a fuel trading business license are required to use biofuels as other fuels in stages (Dharmawan et al., 2016).

Biodiesel development also cannot be separated from several driving factors, motivations, and benefits, such as: the role of biodiesel as a solution to energy security problems, biodiesel as a solution to reduce import pressure and overcome energy security threats (Cotula et al., 2008). In addition, bioenergy is more capable of maintaining environmental sustainability than fossil energy (Dharmawan et al., 2016). Biodiesel development as a means of responding to falling prices for agricultural commodities which are also the raw material for biodiesel (for example palm oil), and biodiesel development can also directly or indirectly improve the local and community economies (Balogun & Salami, 2016). In addition, the increase in biofuel production is also influenced by the perspective of developing countries which sees biofuels as an opportunity to connect to international markets with new demands in the energy market (Boons & Angelica, 2010) .

In Indonesia, the main raw material source for biodiesel is currently palm oil, which reaches 90 percent. This is because palm oil-based biodiesel is considered more competitive and efficient for commercial scale than other sources, and the supply of raw materials in Indonesia is quite large (Direktorat Jenderal Energi Baru, 2016). However, various obstacles also accompany the development of palm oil-based biodiesel in Indonesia and also in various other biofuel producing countries. The issue raised in biofuel development is inseparable from the potential trade-offs, where on the one hand biodiesel as bioenergy is an opportunity for the government and the Indonesian people to reduce dependence on imported fossil fuels, as well as stimulate economic growth through new job opportunities, increase home income, stairs, and has positive implications for regional development. However, on the other hand, the production of biomass for bioenergy, such as biofuel (biodiesel) is also considered a threat to social justice and environmental sustainability where oil palm plantations as the main raw material for biodiesel are considered to have the potential to damage the ecology if not managed properly (Amortegui, 2012).

Another problem faced in the development of palm oil-based biodiesel at this time is the gap between the target and the realization of biodiesel use, even though the government has mandated the use of B30 in 2025. The main cause is market uncertainty, both national and global. Since 2015, biodiesel exports to European and American countries have decreased significantly due to various environmental and dumping issues, while the domestic market is still limited to Pertamina for the transportation sector (public service obligation) PSO and has not been fully absorbed by the industrial sector and power generation (Shurtleff & Akiko, 2017). Therefore, in this paper, we will discuss the extent to which the political economy of bioenergy affects the development of palm oil-based biodiesel in Indonesia.

II. Literature Review

A. National Energy Policy

Political economy policies in the context of renewable energy in Indonesia today are closely related to the national energy policy implemented by the government (Setiawan, 2016). The national energy policy which is used as a basis for developing and increasing the capacity of energy supply in the future is called mixed energy which has a composition of coal, natural gas, petroleum, geothermal, and others (Setiawan, 2017). Actors and observers in the Indonesian energy sector see other sources, including abundant geothermal energy sources, considering that Indonesia is located in a ring of fire area, but currently there is still a small use of these energy sources (Setiawan & Melinda, 2020).

The dependence of the Indonesian nation on energy from fossil fuels will be a threat to us, one of which is the depletion of petroleum sources if new sources of oil are not found, increased pollution (CO2) is generated from the use of energy from fossil fuels so that it will trigger the greenhouse effect (Dutu, 2016).

Choosing biodiesel as an alternative fuel based on the availability of raw materials is the right step. Rapeseed oil is a raw material for biodiesel in Germany and soybean in America. Meanwhile, the raw material used in Indonesia is crude palm oil (CPO). In addition, there is still a lot of great potential shown by jatropha oil (Jathropa Curcas) and more than 40 other alternative raw materials in Indonesia (Alam et al., 2019).

Until now, government regulations governing the biofuel industry in Indonesia are still in the form of presidential regulations and other applicable laws and regulations in Indonesia, namely:

a) Presidential Regulation of the Republic of Indonesia No. 5 of 2006 concerning the National Energy Policy;

b) Presidential Instruction of the Republic of Indonesia No. 1 of 2006 concerning the Procurement and Use of Biofuels as Alternative Energy;

c) Presidential Decree No. 10 of 2006 concerning the Formation of the National Team for Biouel Development (Desfiandiet al., 2019).

B. Study of Biofuel Development

Studies on the importance of biofuel (biodiesel) development, including in developing countries, have continued to increase in the last decade (Desfiandi et al., 2019). The development and utilization of biomass-based biodiesel will provide benefits for the government and society, such as reducing dependence on and importing fossil fuels, increasing the economy of the community (farmers), and increasing job opportunities (Mohammadi et al., 2017). The mandate in the development and use of biofuels in various countries also continues to increase, especially to meet domestic needs, where some believe that biofuels offer technological solutions that lead to 'win-win solutions' for the environment and economy (Foley, 2015).

Studies on the impact of biofuel production (green fuel) on community livelihoods, land ownership, supply and price of food commodities, population growth, infrastructure development, migration, and employment, will basically be able to provide useful information about the costs and benefits that exist from production of biofuel raw materials in rural areas (Mol, 2007). Understanding the impact of biodiesel production on community welfare will make it easier to identify and implement sustainable biodiesel development (Hernandez et al., 2014). However, the debate regarding the various benefits and costs arising from biofuel procurement continues to grow (Cherp & Jewell, 2011).

The current rapid development of biofuels cannot be separated from the high price of world crude oil. However, along with the drastic drop in world oil prices in mid-2014, the production and demand for biodiesel was constrained in various countries (Naylor & Higgnis, 2017). Zilberman et al (2014) tried to create a political economy model of biofuels with the constraints of low oil prices in Brazil. The results of the study show that reducing the price difference between gasoline and ethanol is expected to increase demand for gasoline, reduce exports, and reduce demand for ethanol. This result is reinforced by the trend of domestic consumption and production of gasoline and ethanol. In this article it is also explained that the policy parameters analyzed will be effective in meeting Brazil's political economy objectives if the price of biofuel is set to be cheaper and the price of gasoline is also lower. However, fiscal constraints and market realities can become obstacles to the sustainability of biofuel policies in Brazil.

III. RESEARCH METHOD

This study uses primary data and secondary data (Farida & Setiawan, 2018), where surveys are used to obtain primary data at the farmer level and in-depth interviews with other relevant stakeholders, namely biodiesel business actors and associations of Indonesian palm oil companies. Secondary data were obtained from scientific publications, reports from related agencies, and reports from palm oil-based biodiesel companies. This study of the political economy of biodiesel will be discussed using qualitative and quantitative descriptive approaches (Setiawan et al, 2020). This paper discusses the political economy policy of Indonesian biodiesel which is complemented by the perceptions of oil palm farmers in North Sumatra and Riau Provinces about the existence of oil palm. The response of this oil palm farmer is important because the main raw material for biodiesel at this time is palm oil. The research location was conducted in four villages in Pelalawan Regency, namely Terantang Manuk Village, Kesuma Village,

Sidomukti Village, and Lubuk Kembang Bunga Village, as well as four villages in Asahan District, namely Aek Songsongan Village, Aek Bamban Village, Marjanji Aceh Village, and Bandar Village. Island.

IV. Result And Discussion

Political Economy Policy Arguments for Biodiesel Development in Indonesia

One of the efforts to improve long-term national energy security is through reducing dependence on non-renewable fossil energy, by substituting it for new and renewable energy sources, particularly biofuels (biodiesel, bioethanol, biomass, and biogas) (Rahayu et al., 2015), Based on the data, Indonesia's oil reserves have continued to decline since 2001, with a rate of return on reserves of less than 60% (Direktorat Jenderal Energi Baru, 2016). These problems certainly have the potential to make Indonesia's petroleum imports continue to increase, so serious steps are needed, including increasing the energy mix.

As we know, national energy policies are part of public policies related to government decisions or decrees to take energy development actions that have a good impact on society. In this case, energy policy can be expressed as a public economic policy relating to various problems and issues that surround it, such as environmental, social and political issues (Dharmawan et al., 2016), Various regulations and policies are of course issued by the Government to ensure energy security. , including developing various new and renewable alternative energies to support the national energy mix policy, one of which is the development of biodiesel as a blending material for diesel fuel.

The government's efforts to achieve the energy mix target by promoting the production and use of new and renewable energy continue to be strengthened by the issuance of Government Regulation No. 79 of 2014 concerning the National Energy Policy, which contains an optimal energy mix policy, in which the role of renewable energy is 23% in 2025 (biofuel 4.7%) and increased to 31% in 2050. In addition, Presidential Decree No. 1 of 2014 concerning the Compilation of National Energy General Plans, Provincial Regional National Energy General Plans, and Regency / City Regional National Energy General Plans.

One of the forms of New and Renewable Energy that is developing in Indonesia is bioenergy, in which biodiesel is one of the parts included in the bio-fuel group. The development of the biodiesel program in Indonesia itself has continued to progress since 2006. This of course cannot be separated from the position of Indonesia at that time which began to become a net importer of petroleum, namely in 2005. This caused a shock because Indonesia was a country in the 1970-1980s. the world's largest oil producer, where nearly 85% of Indonesia's revenue comes from petroleum. In 2005, the world oil price also increased very rapidly, reaching US $ 100-150 / barrel.

The policy on the use of biofuels was emphasized by the issuance of Presidential Instruction No.1 of 2006 concerning the Provision and Utilization of Biofuel as Other Fuels. Article 3 Paragraph 2 Regulation of the Minister of Energy and Mineral Resources No. 25 of 2013 concerning the Provision, Utilization and Trading System of Biofuels as Other Fuels, business entities holding a fuel trading business license are required to gradually use biofuels as other fuels.

One of the sources of raw material for biodiesel in Indonesia today is palm oil (CPO). The government has also set many regulations that can support the development of palm oil-based biodiesel. One of them is the application of a levy policy on CPO exports to support biodiesel development in Indonesia. The levy is based on Article 93 of Law No. 39 of 2014 concerning Plantation. These levies will then be returned to biodiesel producers in the form of biofuel subsidies as a form of mandatory compensation for biodiesel allocation of 15% in the previously implemented palm oil policy (Dharmawan et al., 2016).

In 2015, Indonesia's CPO production reached 32.5 million tons and the need for cooking oil was only 6-8 million tons per year. Some of the excess CPO is exported and the rest is used to produce various derivative products including biodiesel. This condition shows that palm oil-based biodiesel has a great opportunity to continue to be developed as a source of biodiesel raw material. By utilizing biodiesel by the community, it is hoped that it can reduce carbon emissions to the environment, as well as improve the welfare of the community due to increased employment opportunities and rising prices for palm oil (Renewable Fuels Association, 2016)

In line with the various benefits and great potential of palm oil-based biodiesel, various problems at home and abroad also continue to overshadow Indonesian palm-based biodiesel (Dharmawan et al., 2016). Viewed from a political economy perspective, the development of palm oil-based biodiesel cannot be separated from the suitability of policies related to biodiesel between the central government and the regions and the market. If it is related to the elements of policy problems, of course this is no longer a

problem because the commitment of the central and local governments in the application of new and renewable energy has been stated in Law No. 30 of 2007 concerning Energy.

Furthermore, what then becomes an issue is how the Law is implemented, which in fact has not yet been fully implemented because the national political economy preferences are still oriented towards the use of fuels derived from fossil energy (central policy). Nationally, national energy still focuses on meeting needs through fossil fuels compared to non-fossil fuels. The implementation of the biodiesel mandate in the regions has also experienced many obstacles, where regulations at the regional level related to biodiesel development in the regions are still very minimal, as well as regulations on the use of biodiesel for the community (Dharmawan et al., 2016).

In various regions in Indonesia there are still very few special policies that can provide positive support for the development and utilization of biodiesel, including those based on oil palm, even in oil-producing areas. This is because local governments still view biodiesel as the realm of the central government's energy policy. This indirectly shows that local governments have not yet supported the development of biodiesel in the regions optimally.

Analysis of the global political economy forces that pressure the biodiesel industry in Indonesia

Europe is currently a key player in the biofuel market, where European countries are the largest global market for biofuels and play a major role in overcoming the impact of the sustainability of biofuels itself (Lin et al., 2011). This condition is reinforced by the stipulation of a renewable fuel target of 10 percent which is mandatory for the transportation sector by 2020 by the Renewable Energy Directive (RED) in 2009 (Dharmawan et al., 2016). However, globally there are still doubts about the benefits of biofuels, including in various institutions in Europe itself, such as doubts about the environmental and social impacts that arise in the development of biofuels (Rezitis, 2015). In order to address growing concerns about the negative environmental and social impacts of biofuels, RED also establishes sustainability criteria that must be met, where the result is that only biofuels that meet the sustainability criteria are calculated against the 10% target and are entitled to financial support (Dharmawan et al., 2016). Apart from Europe, America is also the main destination country for Indonesian biodiesel exports, so the policies of America and countries in Europe towards Indonesian palm oil-based biodiesel will certainly greatly affect domestic biodiesel production businesses.

Environmental issues, sustainability, the issue of loss of biodiversity due to clearing of forest land into oil palm land, conflicts that accompany oil palm plantation businesses, and political anti-dumping issues are the main obstacles that have caused the decline in exports of palm oil-based biodiesel to Europe and America. This condition is one of the causes of saturation of Indonesia's bidoesel production due to the power of global capitalism. The challenges of the foreign policy economy for Indonesia's biodiesel exports were strengthened by the statement of a biodiesel producer manager in Riau. At present, the Indonesian government, through the Ministry of Trade and APROBI, as the biodiesel entrepreneur association, continues to work on resolving the problem with the European Union.

The role of the government in the international arena is also important in addressing the issue of the sustainability of palm oil-based biodiesel from social and environmental aspects. Strict and controlled law enforcement in the enforcement of palm oil product certification applications, such as Indonesia Sustainable Palm Oil (ISPO), the Roundtable on Sustainable Palm Oil (RSPO), and the International Standard for Carbon Certification (ISCC) needs to be a serious concern and disseminate it to various parties domestic and foreign.

Analysis of the strength of the national political economy that is pressing the biodiesel industry in Indonesia

Currently, less than 10% of palm-based biodiesel is used for domestic consumption. Although there is already a Law regarding the mandatory use of domestic biodiesel, its implementation still faces various obstacles. The main obstacle in the development of biodiesel in the country at this time is still lack of government law enforcement in ensuring the implementation of the mandatory use of biofuels in all sectors, both the PSO sector through Pertamina, and the non-PSO sectors. The use of domestic biodiesel is expected to increase in line with the stipulation of the mandatory biofuel (biodiesel) of 20 percent (B20) in 2016 by the government as a substitute for fuel oil or a mixture of fuel in the PSO fuel sector, non-PSO fuel, industrial and commercial fuels, and power plants. However, the government's low commitment in setting biodiesel prices is also an obstacle for biodiesel producers to operate optimally.

The issue of biodiesel pricing policy makes it difficult for biodiesel to compete with fossil fuel prices. The price of biodiesel in Indonesia is not competitive with the price of diesel, where the price of diesel is still much lower than biodiesel. To overcome

this problem, the government provides subsidies (currently known as incentives provided through the Oil Palm Plantation Fund Management Agency) for biodiesel in the amount of the difference between the biodiesel price and the diesel price. Biodiesel subsidies stopped in 2015 which caused biodiesel production to also drop dramatically, and increased again in 2016 due to incentives through funding the Oil Palm Plantation Fund Management Agency. As an illustration, the purchase price of biodiesel by Pertamina to biodiesel producers is set at IDR 5.150 / liter. The estimated price for biodiesel is IDR 8.000 / liter. PT. Pertamina buys at a price of IDR 4.000 / liter, and the shortfall IDR 4,000 / liter is provided through a price subsidy scheme (price difference incentives), where the gap reaches 43.75 percent (Dharmawan et al., 2016).

Determination of the biodiesel price set by the government is required to match the Singapore Mid Oil Plate (MOPS) price which is also a problem in itself in achieving the biodiesel production target according to the installed capacity and simultaneously achieving the energy mix target by the government. The selling price of domestic biodiesel (from producers to the government) is lower than the Mid Oil Plate Singapore price, making it difficult for biodiesel to compete (Hall, 2011). The incentive for biodiesel funds by the Oil Palm Plantation Fund Management Agency is still controversial from various parties. Apart from being considered dumping in the politics of international trade, there is also a perspective that states that the funds from the Oil Palm Plantation Fund Management Agency can be used to increase the productivity of smallholder oil palms and to support smallholder palm oil re-planting funds. The provision of incentives through funds from the Oil Palm Plantation Fund Management Agency for biodiesel entrepreneurs is also seen by some as the government's impartiality for smallholder farmers.

Implications of biodiesel development for regional development

Various literatures that show the positive and negative impacts of biofuel development for communities in rural areas and regions have continued to increase in the last decades (Hall, 2011). Energy and regional development are interrelated aspects, where raw materials from nature as alternative energy sources are often associated with potential trade offs between economy and ecology. Energy independence and environmental problems are major issues in the development and use of new and renewable energy. Therefore, the development of new and renewable energy based on the availability of potential resources in the regions will be more beneficial for the community, especially in increasing the capacity and livelihood of the community (Dharmawan et al., 2016).

In the case of palm oil-based biodiesel in Indonesia, biodiesel development does not directly impact the community and the region, because the main raw material, namely oil palm, is cultivated not solely for biodiesel production. However, in several regions of Indonesia, such as Pelalawan District - Riau Province and Asahan District - North Sumatra Province, oil palm plays a very important role in increasing the economic and social capacity of the community, although there are social and environmental problems that are still felt by the community due to plantation expansion. palm oil, which is one of the downstream products of biodiesel (Table 1).

In Table 1, it can be seen that the development of oil palm plantations in Pelalawan District (Riau Province) and Asahan District (North Sumatra Province) tends to have positive implications for the community's economy.

Table 1. Percentage of responses from oil palm smallholder respondents in Riau and North Sumatra regarding the impacts of oil palm plantations in 2020.

Category	Criteria	North Sumatra (n = 150 people),%			Riau (n = 150 people),%		
		N	TA	T	N	TA	T
Economy	• Labor recruitment	65	27	9	68	26	6
	• Number of plantation workers	6	80	14	33	35	32
	• Loss of road damage	0	85	15	29	40	31

	• Quality of facilities and infrastructure	87	13	0	29	52	19
	• Labor Wages	79	21	0	59	41	0
Social	• Land conflicts	3	92	5	23	59	18
	• Unemployment	0	58	42	3	77	19
	• Children's education	87	13	0	65	35	0
	• Quality of health services	88	12	0	28	72	0
	• Change of function of agricultural land	76	24	0	59	45	0
	• Corporate Social Responsibility	7	93	0	5	95	0
Ecology	• Forest function conversion	8	79	13	33	45	22
	• Land burning	0	66	34	4	38	58
	• Air pollution	0	100	0	0	79	21
	• River quality	3	89	8	0	57	43
	• Well water quality	0	100	0	0	85	15
	• Flood	6	94	0	52	45	3
	• River biodiversity (fish)	9	73	17	10	32	59
	• Forest biodiversity (Plant and animal)	14	47	39	20	40	40

Information: N = Up; TA = Fixed or No Increase; T = Down

Source: 2020 research results (processed data)

Based on the responses of respondents to oil palm farmers in Asahan District (n = 150), more than 60% of respondents stated that with the development of oil palm plantations in their areas there was an increase in household income, improvements in the quality of public facilities / infrastructure, such as roads, wells and educational facilities, as well as an increase in labor wages in the garden compared to rubber plantations.

Viewed from the social aspect, the development of oil palm plantations and the increase in the community's economy has made children's education one of the priorities of the community in Asahan Regency today. Based on the data in Table 1, it is known that as many as 87% of community respondents in Asahan District (n = 150) stated that children's education is currently better and higher than their parents, where currently many adolescents in Aek Songsongan Village have received higher education.

Regarding land burning which is often identified with oil palm plantations, all respondents (100%) of the community stated that there were no forest and land fires caused by oil palm in their villages. The issue of unsustainability pinned on oil palm plantations, especially community plantations, is inseparable from the lack of information and counseling on good, environmentally friendly and sustainable oil palm cultivation by the government, oil palm entrepreneurs, and other parties.

The increase in socio-economic aspects was also felt by respondents of oil palm farmers in Pelalawan Regency (N = 150), as shown in Table 1. As many as 68% of oil palm farmer respondents stated that since planting oil palm, the community felt the positive benefits of increasing household income, compared to just grow rubber. The price of rubber which continues to fall and the

price of palm oil tends to be stable (good), which causes people to prefer palm oil. The wages for workers in oil palm plantations are also considered to be better than those in rubber plantations. However, for the absorption of labor in oil palm plantations, especially community plantations, as many as 32% of oil palm farmer respondents stated that the number of workers in oil palm plantations is less, because for a land area of 2 ha, the average number of workers is only needed as much as two (2) people.

The growing development of oil palm plantations in Pelalawan Regency, Riau, has not only generated the interest of indigenous people. One of the social impacts that is felt is the increasing number of immigrants who open land for oil palm plantations in addition to companies in the Pelalawan area. Currently, according to community respondents, immigrants who have started to open a lot of oil palm land, especially those close to the border of the Tesso Nillo National Park are from North Sumatra.

This condition has implications for land boundary conflicts between indigenous people and newcomers and companies, as well as communities (especially migrants) and the national park. As many as 23% of community respondents stated that there was an increase in land conflicts even though conflicts between residents were always resolved by kinship. For land conflicts with national parks, oil palm farmer respondents stated that it was the unclear boundaries of the national park land that was the cause of the land conflict, because the community still considered the land being cultivated to belong to the community.

Conceptualization of ideas: reconstructing the political economy structure of biodiesel in Indonesia

The national biodiesel development policy certainly needs to be taken seriously by all parties, including the central government, regional governments, business actors, and the community in supporting the success of palm oil-based biodiesel as part of the national energy mix. Pertamina, as the main domestic buyer of biodiesel at this time, needs to make a balanced policy regarding the purchase price of biodiesel in collaboration with the central government (Ministry of Energy and Mineral Resources) in determining the price of biodiesel. The synergy of policies and the implementation of the development and use of biodiesel in supporting the national energy mix needs to be done both vertically and horizontally between government agencies and with various parties, both producers and users of biodiesel.

The complexity of the political economy, especially related to actors and interests in the development and utilization of palm oil-based biodiesel as a renewable energy source, needs serious attention in the formulation of appropriate biodiesel policies in the short and long term. The initial goal in developing biodiesel must be both used as a basis in realizing this biodiesel target itself. Furthermore, decisions taken regarding the sustainability of palm oil-based biodiesel must consider the optimum pay-off that will be received by each actor involved, including its effect on regional development, especially in areas where biodiesel feedstock is sourced.

Political economy factors in bioenergy (including biodiesel) can be classified into two (2) categories, namely (Dharmawan et al., 2016): governance quality and macroeconomic policies. The quality of governance is inseparable from the quality of political and economic institutions, with indicators including strict environmental policy instruments, quality of bureaucracy, corruption, government stability, and applicable laws. Macroeconomic policies include financial aspects, interest rates, trade openness (international), and the scarcity of crude oil. Referring to the writings of Dharmawan et al (2016), it is stated that high-quality governance will be able to help create a transparent and predictable framework in political and institutional dynamics to encourage economic actors to invest in the bioenergy sector.

In the context of developing palm oil-based biodiesel in Indonesia, high-quality governance is also felt to determine its sustainability. Guarantees by the government regarding sustainability in the upstream sector of palm-based biodiesel need to be a priority. The fact that oil palm plantations should be able to increase the people's economy and regional economic growth must be accompanied by serious efforts to ensure the success of reducing the negative impacts of oil palm plantations on significant social and environmental aspects.

The establishment of oil palm as one of the main raw materials for biodiesel in 2020 has been shown to be able to drive an increase in the price of palm fresh fruit bunches, which fell drastically that year. Further implications of oil palm plantations for regional development are also beginning to appear, such as an increase in community household income and access to education. However, with the problem of environmental quality degradation and land conflicts still a problem in several oil palm producing areas in Indonesia, which of course will have an impact on palm oil-based biodiesel exports, every party involved, including the government with authority, needs to make regulations which is law enforcement in overcoming these various problems.

Technology for biodiesel users also needs to be further improved by developing research and development, especially for vehicle engines and industry, so that the biodiesel user community is confident that the technology used will be successful. Broad information to the public about biodiesel and its advantages will be able to increase public and industrial understanding of diesel users, so it is hoped that the demand will also increase. In the long term, of course, the mandatory 30 percent biofuel policy can also be realized.

V. CONCLUSION

The low realization of biodiesel production compared to its installed capacity is caused by many factors, especially political economy and price. Some of the factors that affect the low absorption of biodiesel which can indirectly hamper the sustainability of the national bioenergy program are unclear implementation of the mandatory use of biofuel (biodiesel), selling prices that are not competitive with fossil fuels, and constraints on user confidence in the readiness of vehicle and engine technology industry if the use of B30 is implemented.

The sustainability of palm oil-based biodiesel will be difficult to succeed without the right, strong and coherence policy direction, both for the domestic market to support the government's energy mix target and for the export market. Diplomacy and the strength of Indonesia's foreign policy are needed to ensure that Indonesian palm oil-based biodiesel is sustainable and does not contain dumping. In order to support it, of course the government, palm oil entrepreneurs and smallholders need to be serious in ensuring that Indonesian palm oil production does not contain problems, both from economic, social and environmental aspects.

REFERENCES

[1] Alam, I. A., Hairani, H., & Singagerda, F. S. (2019). Price Determination Model of World Vegetable and Petroleum. *International Journal of Energy Economics and Policy*, *9*(5), 157.

[2] Amortegui, H.M.N. (2012). *A Prospective Analysis of Brazilian Biofuel Economy: Land Use, Infrastructure Development and Fuel Pricing Policies*. Graduate College of University of Illinois.

[3] Ayadi, M., Saurabh, J. S., Vinayak, L. P., Satinder, K. B., & Ridha, B. C. (2016). *History and Global Policy of*
[4] *Biofuels*. Pp. 1– 14 in Green Fuels Technology, edited by C. R. Soccol, S. K. Brar, C. Faulds, and L. P. Ramos. Switzerland: Springer.

[5] Balogun, B. O. & Salami, A.T. (2016). Effects of Biofuel Production on Selected Local Communities in Nigeria. *Journal of Petroleum Technology and Alternative Fuels*.7(3):18–30.

[6] Bernadine, F. (2012). *Indonesia Biofuels Scoping Exercise*. London.

[7] Boons, F., & Angelica, M. (2010). Constructing Sustainable Palm Oil: How Actors Define Sustainability. *Journal of Cleaner Production*. 18:1686–95.

[8] Borras, S.M., Philip, M., & Ian, S. (2010). The Politics of Biofuels, Land and Agrarian Change: Editors' Introduction. *Journal of Peasant Studies*. 37(4):575–92.

[9] Bracmort, K. (2018). *The Renewable Fuel Standard (RFS): An Overview*. Washington, DC: Congressional Research Service.

[10] Cherp, A., & Jewell, J. (2011). The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration. *Current Opinion in Environmental Sustainability*, *3*(4), 202-212.https://doi.org/10.1016/j.cosust.2011.07.001

[11] Cotula, L., Dyer, N., & Vermeulen, S. (2008). *Fuelling Exclusion? The Biofuels Boom and Poor People's Access to Land*. London: International Institute for Environment and Development (IIED).

[12] Demirbas, A. (2017). The Social, Economic, and Environmental Importance of Biofuels in the Future. *Energy Sources, Part B: Economics, Planning and Policy*,12(1):47–55.

[13] Desfiandi, A., Singagerda, F. S., & Sanusi, A. (2019). Building an Energy Consumption Model and Sustainable Economic Growth in Emerging Countries. *International Journal of Energy Economics and Policy*, *9*(2), 51-66. 1

[14] Dharmawan, A. H., Nuva, R. A., & Sudaryanti, D. A. (2016). *Isu Relevan Kebijakan Bioenergi Dalam Mendukung Ketahanan Dan Kemandirian Energi Di Indonesia*. State of the Art. Bogor.

[15] Dillon, H. S., Laan, T., & Dillon, H. S. (2008). *Biofuels, at what cost?: government support for ethanol and biodiesel in Indonesia*. International Institute for Sustainable Development.

[16] Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi. (2016). *Kebijakan Mandatori Biodiesel. Jakarta*.

[17] Dutu, R. (2016). Challenges and Policies in Indonesia's Energy Sector. *Energy Policy*. 98:513–19.

[18] Foley, G. (2015). Renewable Energy in Third World Development Assistance Learning from Experience. *Energy Policy,* 20(4):355–64.

[19] Hall, R. (2011). Land Grabbing in Southern Africa: The Many Faces of the Investor Rush. *Review of African Political Economy,* 38(128):193–214.

[20] Hernandez, M. A., Ibarra, R., &Trupkin, D. R. (2014). How far do shocks move across borders? Examining volatility transmission in major agricultural futures markets. *European Review of Agricultural Economics*, *41*(2), 301-325.https://doi.org/10.1093/erae/jbt020

[21] Lin, L., Cunshan, Z., Vittayapadung, S., Xiangqian, S., & Mingdong, D. (2011). Opportunities and challenges for biodiesel fuel. *Applied energy*, *88*(4), 1020-1031.https://doi.org/10.1016/j.apenergy.2010.09.029

[22] Mohammadi, S., Arshad, F. M., & Ibragimov, A. (2017). Future prospects and policy implications for biodiesel production in Malaysia: A system dynamics approach. *Institutions and Economies,* 42-57.

[23] Mol, P. J. A. (2007). Boundless Biofuels? Between Environmental Sustainability and Vulnerability. *Sociologia Ruralis*, 47(4):297–314.

[24] Naylor, R. S. & Higgnis, M.M. (2017). The Political Economy of Biodiesel in an Era of Low Oil Prices. *Journal of Renewable and Sustainable Energy Reviews*, 77(1).695–705.

[25] Rahayu, M. F., Chang, W. I., & Anindita, R. (2015). Volatility Analysis and Volatility Spillover Analysis of Indonesia's Coffee Price Using Arch/Garch, and Egarch Model. *Journal of Agricultural Studies*, *3*(2), 37-48.http://dx.doi.org/10.5296/jas.v3i2.7185

[26] Renewable Fuels Association. (2016). Fueling a high octane future. 2016 *Annual Ethanol*.

[27] Rezitis, A. N. (2015). Empirical analysis of agricultural commodity prices, crude oil prices and US dollar exchange rates using panel data econometric methods. *International Journal of Energy Economics and Policy*, *5*(3), 851-868.

[28] Farida, I., & Setiawan, R. (2018). Leadership in cope with prostitute in social department of bandar lampung. *Saburai international journal of social sciences and development*, 2(1), 1. Https://doi.org/10.24967/saburaiijssd.v2i1.325

[29] Setiawan, R. (2017). Partisipasi publik dalam program bantuan listrik pedesaan Masyarakat kabupaten mesuji. *Jurnal kebijakan & pelayanan publik (e-jkpp)*, Vol. 3 (3). 82-92.

[30] Setiawan, R., & Melinda, E. (2020). Optimization of the Implementation of Village Government in Indonesia. *RUDN Journal of Public Administration*, Vol 7 (4).

[31] Setiawan, R. (2019). Evolution of Tatarstan's Local Self-Governments and Challenges They Face. *'ADALAH.* Vol 3 (5).

[32] Setiawan, R., Abdurahman, A., Pertiwi, P. G., & Saputri, S. (2020). Reaksi Perekonomian Rusia Ditengah Pandemi Covid-19. *'Adalah,* Vol. 4 (1).

[33] Setiawan, R. (2016). Peranan Etika Aparatur Sipil Negara Dalam Pelayanan Publik Pada Dinas Kependudukan Dan Catatan Sipil (Disdukcapil) Kota Bandar Lampung. *Jurnal e-JKPP.* Vol. 2 (2).

[34] Setiawan, R., Sulthan, M. F., Abdurrahman, A. (2020). Government Policy in Public Services in the Republic of Tatarstan, Russia. *Jurnal Cita Hukum.* Vol. 8 (3).

[35] Setiawan, R., Pertiwi, G.P., Faizah, S.I.N. (2020). Ethnocultural Problems and Policies in The Republic of Tatarstan, Russia. *Jurnal Socius: Journal of Sociology Research and Education*. Vol. 7 (2).

[36] Setiawan, R., Faizah, S.I.N., Pertiwi, G.P. (2020). Manajemen Sistem Registrasi Penduduk Asing Melalui Elektronik Digital di Rusia. *EXPERT: Jurnal Manajemen Sistem Informasi dan Teknologi*. Vol. 10 (2).

[37] Sharman, A. & John, H. (2010). Evidence-Based Policy or Policy-Based Evidence Gathering? Biofuels, the EU and the 10% Target. *Environmental Policy and Governance*, 20(5):309–21.

[38] Shurtleff, W. & Akiko, A. (2017). *History of Biodiesel - with Emphasis on Soy Biodiesel (1900-2017)*. California: Soyinfo Centre Publishing.

[39] Zilberman, David, Gal, H., Scott, K., & Eunice, K. (2014). Political Economy of Biofuel. The Magazine of Food, Farm, and Resource Issues. *Choices: The Magazine of Food, Farm, and Resource Issues,* 29(1):1–6.