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by Eko Priyo Purnomo

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ARTICLE

Land ownership transformation before and after forest fires in Indonesian palm oil plantation areas

Eko Priyo Purnomo [a], Rijal Ramdani [a,b], Agustiyara [a,c], Queenie Pearl V. Tomaro [d] and Gatot Supangkat Samidjo [e]

[a]Department of Government Affairs and Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta (UMY), Yogyakarta, Indonesia; [b]Department of Geographical and Historical Studies, University of Eastern Finland, Joensuu, Finland; [c]Faculty of Humanities and Social Sciences, Khon Kaen University, Khon Kaen, Thailand; [d]Department of Political Science, Mindanao State University- Iligan Institute of Technology, Iligan, Philippines; [e]Department of Agrotechnology, Universitas Muhammadiyah Yogyakarta (UMY), Yogyakarta, Indonesia

ABSTRACT

Forest fires in Indonesia continue to pose as an alarming governmental, environmental, and societal concern. This study examines the context of land ownership transformation mainly before and after forest fires in palm oil plantation activities. The data were gathered through in-depth interviews, observation, and Geographical Information System (GIS) mapping. The majority of land transformations occurred from community property ownership to ownership by local elites, while the transformation from company to community and local elites was also found. Due to the injustice of land distribution, local communities occupy open access lands of companies' concessions. The deliberate use of fire is a common method among smallholder to clear land for oil palm and for sold for profit as planted land. Local elites benefit from these land transformations; however, smallholders are at an economic disadvantage. We argue that forest devolution and a clear definition of community land boundaries are critical in dealing with this issue.

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Land ownership transformation; forest fire; palm oil plantation; Indonesia

1. Introduction

It is no doubt that the massive forest fires and land transformation from protected forests to industrial plantations in Indonesia are direct consequences of the expansion of the palm oil industry, among other activities (Miettinen, Shi, & Liew, 2012). From 2000 to 2010 alone, palm oil plantations expanded by a staggering 27% in Kalimantan and 90% in Sumatra (Carlson et al., 2013). Some scholarly works argue that there are direct and indirect factors associated with forest fires, namely, logging activities, conversion to large-scale industrial agriculture, artificial drainage, forest clearing by smallholder farmers, poverty, climate change, and mismanagement of land use policy (Dohong, Aziz, & Dargusch, 2017). However, the main driver of forest fires is land clearing practiced by smallholder farmers on palm oil plantations and the interplay of elite interests (Purnomo et al., 2016).

Land ownership in Indonesia has raised many critical debates regarding the fragmented nature of land use administration (Sahide & Giessen, 2015). Moreover, the burning phenomena and the changing of land use or land transformation are questioned as well (Sahide & Giessen, 2015). During fieldwork conducted between 2015 and 2017, it was confirmed that 60% of the

CONTACT Eko Priyo Purnomo eko@umy.ac.id Department of Government Affairs and Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta (UMY), Indonesia

burnt forest between the years 2015 and 2016 were converted to palm oil plantations both of smallholders and industries; while the remaining 40% of the burnt areas were unplanted. With the prevalence of burning activities as a conversion technique of land use, it is vital to determine a possible relationship between burning activities and land ownership transformation in the selected areas. Thus, it is imperative to ask if there is evidence of transformation in land ownership before and after the burning activities. How does the transfer of land tenure from one party to another work? Moreover, what are the drivers of the land ownership transformation associated with forest fires?

This study was conducted in Bengkalis regency (Kabupaten) in Sumatra, Indonesia. The regency is very vulnerable as the region has experienced the greatest extend of forest fire in Indonesia during the last 10 years and major peatland areas (Barus et al., 2016). Data were collected through in-depth interviews, observation, and Geographical Information System (GIS) mapping. The results of this study contribute to the discussion on land transformation ownership in the burnt areas in which clear evidence exists of forest conversion into industrial plantations, mainly palm oil plantations-both of smallholders and industries. We argue that land transformation from state ownership to community ownership has never existed in the region as the majority of forest areas has been allocated as private property to companies since the Suharto regime. The injustice of this land distribution has led to the acquisition of companies' abandoned concessions as open-access lands by local communities. Indeed, local communities plan palm oil plantations and sold the planted lands to local elites. This case demonstrates how local elites benefit from the illegal land transformations while smallholder farmers are poorly positioned.

In this paper, transformation of land ownership is defined as the alteration of `land utilization from one party to another (Doss, Meinzen-Dick, & Bomuhangi, 2014). Transformation in land ownership is the result of changes in land rights (Doss et al., 2014), for instance, from state to private or community control. In Indonesia, specifically in the case of Bengkalis regency, the transformation in land ownership from state forest is often followed by conversion to industrial palm oil plantations. This transformation is an illegal activity, in accordance with the presidential Decree No. 88/2017 on the certificate of land rights in which the state forest cannot be owned by private ownership (Jegho, 2017). The existing data show that around 3.8 million hectares of palm oil plantations in Indonesia owned by smallholders do not have land rights or certificates, and 70% of those undocumented plantations are located in Sumatra (Jegho, 2017).

A number of scholars have conducted studies on this issue. For example, using secondary statistical data, Austin et al. (2017) found an increase in the number of palm oil plantations on forest and non-forest areas in the last two decades. He argued the Indonesian zero deforestation policy cannot stop the palm oil expansion to the forest and non-forest lands. Sahide and Giessen (2015) provided further evidence that the Indonesian land transformation is occurring in the state forest and non-state forest. Li (2017) focused on the phenomenological process after the palm oil land grab, including the violence of land customary rights 9 (rights to use and occupy), diverse farming systems, and ecological balance-sustainable way, and viewed palm oil expansion as the colonial style of multinational monoculture companies to the South East Asia. Otherwise, Pramudya, Hospes, and Termeer (2018) investigated the motivation behind government actions in reducing illegal land usage of palm oil plantations, arguing that government actions have had fewer effective impacts due to policy incoherency, violent contestation among stakeholders, and the historical context. Krishna, Kubitza, Pascual, and Qaim (2017) analyzed the market dynamics associated with agriculture expansion in forests, arguing that deforestation is unrelated with land market mechanisms. In addition, McCarthy (2010) pointed out how agrarian change of smallholder farmers in Indonesian villages is due to palm oil expansion.

Missing from this debate, however, is a discussion of the process of land ownership transformation in relation to palm oil plantation activities. Exploration of this issue is critical to portray the main and beneficial actor of land transformation at the local level and to support previous research on how local communities have utilized fires for land clearing and conversion to plan palm oil

plantations (Jegho, 2017; Sahide & Giessen, 2015). Other scholars argue that their local indigenous knowledge has not been comparable by the time, as the nature has been changing due to the process of deforestation and the large-scale palm oil expansion (Jegho, 2017; Sahide & Giessen, 2015). The findings of this study contribute to informing local and national policymakers in Indonesia in terms of land justice. We believe that the government plays a critical role in ensuring land equality and in the clear definition of local communities´ land rights (Jegho, 2017). Hence, smallholder farmers can be encouraged to develop an institutional arrangement towards sustainable natural resources governance based on their indigenous knowledge (Jegho, 2017).

2. Conceptual framework

In this section, the importance of land rights, factors related to land ownership transformation, and the patterns of land ownership transformation are discussed. There is no doubt that land rights are critical in rural areas and have grown to become a government concern as livelihoods largely depend on agricultural cultivation and natural resources (Doss et al., 2014; Purnomo, Anand, & Choi, 2018). However, in the Indonesian context of palm oil activities, smallholder farmers occupy land illegally, without permits (Jegho, 2017). Even though the government introduced a basic agrarian law (BAL) or *Undang – Undang Pokok Agraria* (Krishna et al., 2017), land distribution in Indonesia remains unequal. This is evidenced by the fact that the majority of land is allocated to local communities, while around 70% of the national territory is allocated as state forest land (Krishna et al., 2017). Smallholder farmers, on the other hand, engage in industrial plantation activities on untitled land. In addition, many indigenous communities in the surrounding forests claim these areas as indigenous land (Krishna et al., 2017). Overlapping land use claims are also prevalent in other parts of the world, like in the case of the indigenous people in Australia (Altman & Markham, 2015), in Bolivia (Anthias & Radcliffe, 2015), in Brazil (Da Silva, Piva, Falavigna-Guilherme, Rossoni, & de Ornelas Toledo, 2016), and mostly in Africa (Basupi, Quinn, & Dougill, 2017).

Industrial plantation activities are the most prominent factors of land transformation globally (either land use and rights) and also a main environmental concern of policy protection (Krishna et al., 2017). In Indonesia, illegal industrial plantations, mainly the palm oil industry, have expanded rapidly as a result of weak law enforcement (Pramudya et al., 2018). During the Suharto regime, which saw economic liberalization and corruption, this expansion was driven by companies. However, after the downfall of the Suharto regime due to the weaknesses of state apparatuses, palm oil expansion was carried out by smallholder farmers in response to a high international demand for crude palm oil (CPO) (McCarthy, 2010).

Due to the lack of property rights protections, land used by small farmers often remains untitled and subject to ambiguous ownership structures and thus conflicts (Krishna et al., 2017). Li (2017) has argued that due to the poor recognition of customary land rights and the absence of official documents or land titles, landholders feel insecure about the legal status of their land. These factors place the landholders in a vulnerable position against the manipulation and intimidation of government officials, local elites, and plantation corporations which consequently could lead to the landholder's sale of land to avoid having the land grabbed with no compensation (Li, 2017). In a cyclical process, sales and land transfers can be done without formal titling of lands. As a matter of fact, most land transactions are concluded through the signing of a civil agreement of ownership transfer, with the village officials as key witnesses in which no formal title is required (Krishna et al., 2017).

To analyze the process of transformation, we refer to Ostrom's concept of common-pool property rights. According to Ostrom, there are four regimes on common resource ownership, namely, state property rights, private property rights, open access property rights, and community property rights (Ostrom, 1990). State property rights refer to land ownership held by the central government. The state uses its authority to allocate land use, while users have the possibility to buy or rent this land from the state (Ostrom, 1990). Private property rights are resources owned by

a single individual or firm (McKean, 2000) in which related to the restitution and privatization of forest interest that can manage the resources (Gibson, Williams, & Ostrom, 2005) to maximize the utility and the long-term employment (Baland & Bjorvatn, 2013). Community property rights mean that the community can use and get an access on the commons (Purnomo et al., 2018). Finally, open-access property rights mean that there are no limits and no authority controlling resources, while community common rights are rights over land and resources held by local communities (Ostrom, 1990).

Therefore, because all Indonesian forest areas are categorized under state property, the transformation can exist in some forms namely; (1) from state property to private property (SR-PR); (2) from state property to community property (SR-CR); and (3) from state property to open-access property right (SR-OAR). SR-PG occurs when the government allocates forest areas to companies or individuals for cultivation under the scheme of forest production. SR-CR means that the state distributes the authority of the forest to the local community through decentralization and devolution (Agrawal & Jesse, 1999). And, SR-OAR occurs when the forests are out of control by the state (Ostrom, 1990). These types of changes in property rights will be utilized to analyze the process of forest transformation into palm oil plantations with new ownership after the fires.

Drawing on Ostrom, palm oil plantations in the case of Indonesia can be analyzed based on the following criteria (Ostrom, 1990). Firstly, the government should decide who has the right to utilize the commons. Secondly, the government regulates the duration, quantity, location, and appropriate technology on the utilization. Thirdly, the executive actively monitors the utilization activities. Lastly, local agencies do not have jurisdiction over conflict resolution (Dietz, Ostrom, & Stern, 2003). However, in many cases, due to the lack of government capacity, state control tends to be poor on monitoring boundaries and harvesting practices (Dietz et al., 2003). The condition of resources is characterized more like an open-access common pool (Dietz et al., 2003) in which many actors compete in carrying out illegal activities, claiming land and benefiting from profits from palm oil. This situation often leads to land conflicts and social violence (Basupi et al., 2017).

In response to the state´s ineffectiveness in land management, scholars have argued that local communities can sustainably govern natural resources according to their traditional and indigenous knowledge (Agrawal, 2001; Ostrom, 1990) (McKean, 2000). It is argued that the members of the community should have an equal share of rights and duties over common forest areas (McKean, 2000). However, before developing community institutions, the most critical issue is in crafting well-defined common boundaries (Agrawal, 2001). It must be clear who has the right to the natural resources and the boundaries of the communal lands (Dietz et al., 2003). Consequently, the public can identify whether they have the right to utilize natural resources or not (Dietz et al., 2003). In addition, the central government must decentralize the authority for governance over natural resources to the local community. Ostrom argues that many local community institutions have failed due to unclear definitions of common boundaries (Dietz et al., 2003). We will use this clear rights boundary criterion as a basis of the recommendation for future development towards sustainable smallholder farmers of palm oil plantation.

3. Research method

This study was conducted in Bengkalis regency, Riau Province in Sumatera Island, Indonesia. There are several reasons for selecting this area. Firstly, the regency has become the most vulnerable region for forest fires since 2013 and the province has experienced growing pressure of an expanding palm oil industry (Barus et al., 2016; Purnomo et al., 2016). Secondly, given that Bengkalis is situated on the border between Indonesia and Malaysia, the smoke from forest fires is experienced in Malaysia. The study area focused on four districts (Kecamatan) with high rates of

forest fires: Siak Kecil, Bukit Batu, Bengkalis (the capital city of Bengkalis regency), and Bantan. These districts can be seen on the sub-criteria map.

The data were generated from 2015 to 2017 through the following methods: in-depth interview, observation, and GIS mapping. In-depth interviews aimed to understand the processes and factors related to land transformation from state to private ownership, as well as the cultural and economic contexts related to land use among smallholder farmers and local elites. We conducted interviews with six smallholder farmers close to the burn areas regarding illegal logging, fire activities, and oil palm plantations. These informants also provided key detailed explanations on illegal land transactions. We also carried out in-depth interviews with three local politicians and three community leaders who are also the owners of a large scale of palm oil plantations. Interview questions focused on land administration, including purchases and registrations. We also conducted interviews with 10 NGOs representatives in order to collect information regarding the political and cultural contexts surrounding land use among smallholder farmers and their occupation of forest areas, as well as how local elites benefit from this process. To verify interview data and to gather information on the legal process of land transactions and ownership, in-depth interviews were also carried out with eight administrative officers of regency and village (Desa) government. All interviews were conducted in Bahasa Indonesia using a recorded advice.

Observations were made to confirm the existence of palm oil plantations in the burnt areas and to gather information on land use. We visited 12 burned locations, 2 to 3 times, over the period 2015–2017 in the 4 districts (Siak Kecil, Bukit Batu, Bengkalis, and Bantan). Forest firefighters in each of the districts guided us to the locations and provided information on the dates and spatial extents of forest fires.

We used Quantum Geographical Information System (Q-GIS) to map and visualize land-use transformations. Q-GIS allowed us to demonstrate the existence of palm oil plantations according to spatial data. The types of the map information were coded as points and polygons to differentiate before and after forest fires. Modeling within Q-GIS was carried out by entering the coordinates to temporarily locate the point of burnt areas during the observation. These points were then entered into the database using the CRS (Coordinate Reference System) to raster and create shapefile files in Q-GIS, a process which was adapted for this research.

In terms of GIS, the suitability and availability data of each burnt area were quantified through combined spatial data and observations to produce a dataset describing the characteristic of the land transitions occurring within them. We merged this dataset with available spatial data, including spatial data of palm oil plantations and designated forestry areas, to determine land transitions of each point associated with burnt areas (i.e. 12 locations are clustering with each point of burnt and planted). Data on forest cover as of year 2015 to 2017 were accessed in vector and shapefile formats from the Ministry of Forestry (http://webgis.menlhk.go.id) and were overlaid with vector layer detailing boundaries assembled from WWF-Indonesia (2017, https://www.wwf.or.id/tentang_wwf/reports/) and Greenpeace-Indonesia (2018, https://drive.google.com/file/d/0B0LCs8K-U_dFb1JOZTVNR29sblU/view). This allowed us to develop a detailed database combined with coordinates of the locations where observations were made making it possible to identify the land ownership transformations of different areas in each district. The spatial data were then converted to a sub-criteria map that could be overlaid and summed (Figure 1). Finally, the burnt areas-feature map was combined to produce a map of land transitions.

The selected areas ware used to determine the location coordinates of each of the burned areas and the Q_GIS software-spatial analyst. The particular areas have coordinates assigned according to CRS points to create a shapefile and merged with spatial data on burnt and planted areas, in order to measure the land transformation ownership schemes. CRS was defined with the help of coordinates and parameters such as: surface area of the research area, forestry area, oil palm plantation area, and burnt areas. These areas were referenced and analyzed to describe the potential of land transition ownership of each burnt area. Shapefile files acquired for this research

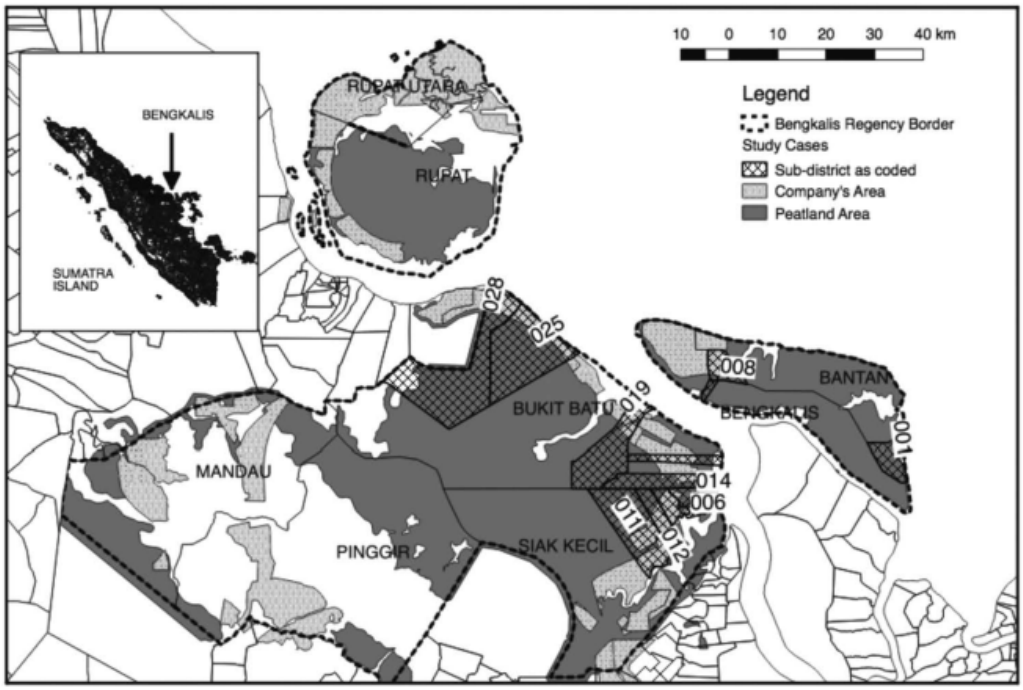

Figure 1. Location of confirmed area in Bengkalis Regency, 2017.

indicate the coordinates of each of the burnt areas observed in 2015 and 2016. We have evaluated these data to identify land transitions through observations made in 2017.

In the context of this research, it is hypothesized that underlying characteristic of land ownership transformation represents four districts of Bukit Batu, Siak Kecil, Bengkalis and Bantan in Bengkalis regency. Employing GIS analysis, these boundaries were intersected with peatland areas, palm oil plantations of companies, including the areas burned and planted after forest fires occurring within them. We have restricted the land uses to those that are the most significant for this research. It refers to software, data, and techniques used to capture, update, describe and analyze the geographical information (Berry & Metha, 2009). The software can be used as a basis of research focus (Fernandez, Delgado, Lopez-Alonso, & Poyatos, 2018) and can be considered as the database for showing the features such as a research work area, location, condition, and the growth status of selected research zones.

The scope of analysis contains the four districts and 12 village areas coded for analysis. The development of analysis identified attribute (burned or planted) after forest fires based on numbered areas. When the focus is put on the identification of burned areas, then coordinate-generated maps to compromise the average planted or unplanted after burned areas, the maps were based on the spatial data and coordinates observation-based that moderate using (Q-GIS). For all study areas, the following parameter was used: the surface area of peatland in the region and surface areas of palm oil plantation by companies. These were analyzed to investigate the potential and motives of each of the burned areas cases and the scale of the land and transformation map is 1:500.000. The layer describing the usage status of burned land of selected areas classified planted and unplanted. The Q-GIS analysis was based on the geospatial data through online-database (Shapefile or vectors files), coordinate capture, data visualization, geoprocessing tools of the forestry tracks occupied land with the percentage of the scheme of land ownership transfer. Through coordinate sensing of CRS from 2015–2017, all-12 districts have been mapped and interpreted by scaling and positioning each area according to its GIS coordinate. The data extracted burned and planted areas to analyze on the conversion of forest area into palm oil

plantation. The forestland covers represented by peatland and large-scale palm oil plantation to deduce the maps of the land transformation.

The parameter of classifications is cross-shapefile with the coordinates from observation indicates that are justified the burned and planted land after forest fires. The observation was done following identified from the maps of land status, land uses (palm oil or timber), forestry areas including peatlands, and conservation areas. The potential land transformation was reclassified based on the land system map, and combined with observed information on forestland use related to motives of land use transformation in order to generate understanding of land ownership as an important factor in changes in land use. Q-GIS overlaid maps from an online database with vector format (shapefile) and observed information that recorded land transformation in Bengkalis regency. For example, each of the areas that burned in 2015 to 2016 were coded with 028, 016, 014, 006, 010, 008, 012, 001, 011, 025, 013, 019, that are actually being planted in 2017 suited the compiled coordinates through GIS mobile apps as collectors' tool in the field. As a result, these steps could draw the occurring of the potential of forestland transformation.

There are several steps in visualizing the data presentation through GIS. First, we visited to confirm the burned areas by finding the coordinates of the location in order to verify the validity in which reliable key informants helped us. The second was checking and grouping the data to double-check the geographical images in the location. The third, we used a recorded instrument for the mapping of the database to collect various scales such as the area size and the border of the burned land. Therefore, the GIS map can demonstrate the detail of land transformation before and after the forest fires whether they have been planted or unplanted. To meet the research objective, the forestry map was obtained using the method of reclassification based on coordinates to landscapes of each area study, including grouping criteria of GIS procedures.

4. Results

4.1. The process of land transformation

The transformation of forestland to palm oil plantation has undergone several stages. Firstly, a massive expansion of logging activity happened after the downfall of the Soeharto regime between 1999 and 2005 (McCarthy, 2010). This was due to lack of state control and weak law enforcement of illegal logging activities (Pramudya et al., 2018). On the other hand, the economic situation was in crisis which affected local governments (Purnomo et al., 2018). In response to economic pressures, local communities in the surrounding forest areas cut and sold trees illegally. Logging was not only carried out by smallholder farmers, but also by pulp and paper companies, including some that expanded logging activities outside of their concessions.

Secondly, following logging, forestland transforms into peat scrubland. In the dry season, it is easily burned as the scrub is in a dry condition and the temperature in Sumatra is regularly between 35 C and 37 C. In pulp and paper concessions, and in the border between concessions and land occupied by smallholders, the company builds hundreds of canals not only to give access for their ships to transport the logs but also to minimize the volume of water to support their needs. This increases the dry conditions of the peat scrub. The findings of the research confirm that all of the burning activities are deliberately executed by local communities of smallholder farmers to expand their palm oil plantation.

Thirdly, two to three years following the burning, smallholder farmers register the burnt land with Village offices for the issuance of the SKT (*Surat Keterangan Tebus* or Letter of Compensation) once the land has been planted with oil palm (usually after the first year of planting). Potter (2015) pointed out that the SKT does not stand as strong legal evidence of ownership and it could easily be overruled by a formal title. However, once in possession of the SKT and of a relatively grown palm oil plantation, we observe that smallholder farmers sell the planted land to other parties either from Bengkelias regency or other cities inside and outside

Riau province, namely Pekanbaru, Dumai, Medan, and Batam. In contrast, some cases revealed the burnt land has been sold before it was planted as the price is 20 times lower compared to the price of planted land. For instance, in Siak Kecil district, a farmer shows that the price of 2 hectares of the burnt land is worth up to 160 USD, meanwhile, the three years-planted land's prices in the same size parcel are around 2000 USD.

Finally, the transformation process from the first party (local smallholder farmers) to other parties is officially registered with the Village office through the issuance SKGR (*Surat Keterangan Ganti Rugi* or Official Agreement Letter between Seller and Buyer). Even though the sale is registered in the Village office, this does not mean that the activity is legal. Regarding the basic agrarian law (BAL), the protected forest cannot be owned privately as it possesses the status of state property. Besides, a public notary to get an official certificate from BPN (Badan Pertanahan Nasional or National Land Agency) must mediate the legal process of the official transfer of land ownership.

These new owners are local elites; classified as political elites, business elites, cultural elites, and bureaucratic elites (Etzioni-Halevy, 1997). Political elites refer to the highest class of local politicians while business elites are people of the top business stratum. Cultural elites refer to the highest class of an ethnic leader while bureaucratic elites are top management of local government officers. Most of them occupy palm oil plantations from 50 to 500 Ha without an official permit from the government. Typically, the area consists of several lands or places as they bought it from local communities. The main problem with elite palm oil ownership is that because most of the local people close to the areas do not know who the owner is. However, we can get the information from the village office or local guide who is familiar with the context of palm oil plantation ownership.

4.2. The pattern of land transformation

In order to present the process of land transformation, we visited each of the 12-burned areas in 2015, 2016, and 2017 more than twice. The first visit after was the forest fires, during which we observed burned areas. During the subsequent visits, we found the existence of palm oil plantations in seven out of 12 locations, indicated by the codes 028, 016, 014, and 006. Five out of seven planted land areas were burned in 2015, and the majority of burned areas in 2016 had not been planted yet (Table 1). Noticeably, all those burned areas are peat scrub and dry land with the depth of the peatland around 3 m as around 75% of Bengkalis regency are peatland. This fact confirms interview data showing that the second stage of the transformation process occurred when the peat swamp forest turned into peat scrubland.

It is quite hard to declare whether the forest fires are deliberate or not deliberate. Interviews with local administrative and firefighter agency officers, and villagers suggested that burning tends

Table 1. The existence of palm oil plantation in burnt areas between 2015 and 2016.

NO	Codes Area	Burned period	Status of area
1	028	2015	Planted
2	016	2015	Planted
3	014	2016	Planted
4	006	2015	Planted
5	010	2016	Planted
6	008	2015	Planted
7	012	2016	Planted
8	001	2016	Unplanted yet
9	011	2016	Unplanted yet
10	025	2016	Unplanted yet
11	013	2016	Unplanted yet
12	019	2016	Unplanted yet

to be more deliberate in order to clear the land for palm oil plantations. Some argued that land clearing by using fires is a common method for smallholder farmers to open the land in which it is enormously expensive if they rented an excavator. In the native culture, they call it '*memerun*' that has been practiced since long time ago. However, almost all NGOs representatives and district administrate officers stand the '*memerun*' are contained and do not produce massive forest fires such as those experienced in the region during 2015. Large forest fires may be due to the dry conditions of the scrub peatland in which timber and pulp-paper companies massively developed canals in the Suharto period to transport logs and to control the water level in their concessions. For example, one NGOs representative said:

(1) *'Local communities could not be blamed in this case. Smallholder farmers plan palm oil is just for their survival. If the peatland is wet without canals built by companies, there will be no forest fires. "Memerun" has been practiced since our ancient Malay time.'*

The next stage of the observation is that we identified the status of the lands before and after the forest fire. Five out of 12 are state forest under the utilization right of several timber companies. However, the timber companies abandoned the areas after the cutting down of trees in the Suharto period. Currently, the areas are scrub peatland without any control from government and companies for example in the code number of 001, 011, 019, 025, and 028. Otherwise, the five others of the burned areas are also the abandonment land by the owners who are mostly coming from outside the Bengkalis regency. We call them local elites who can occupy the land for more than 50 hectares. Their areas have been coded as 006, 008, 010, 012, and 013, in which five to ten years ago the land belonged to local communities. Lastly, the fires occurred in 2015 and 2016 in the areas of Indonesian petroleum firm (Pertamina) (code number of 014 and 016). These areas are indicated on the GIS map in Figure 2.

Fires occurred on various land types; community land, forestry areas, palm oil, and timber industrial concession. In most places, they were peatland and inhabited by local communities

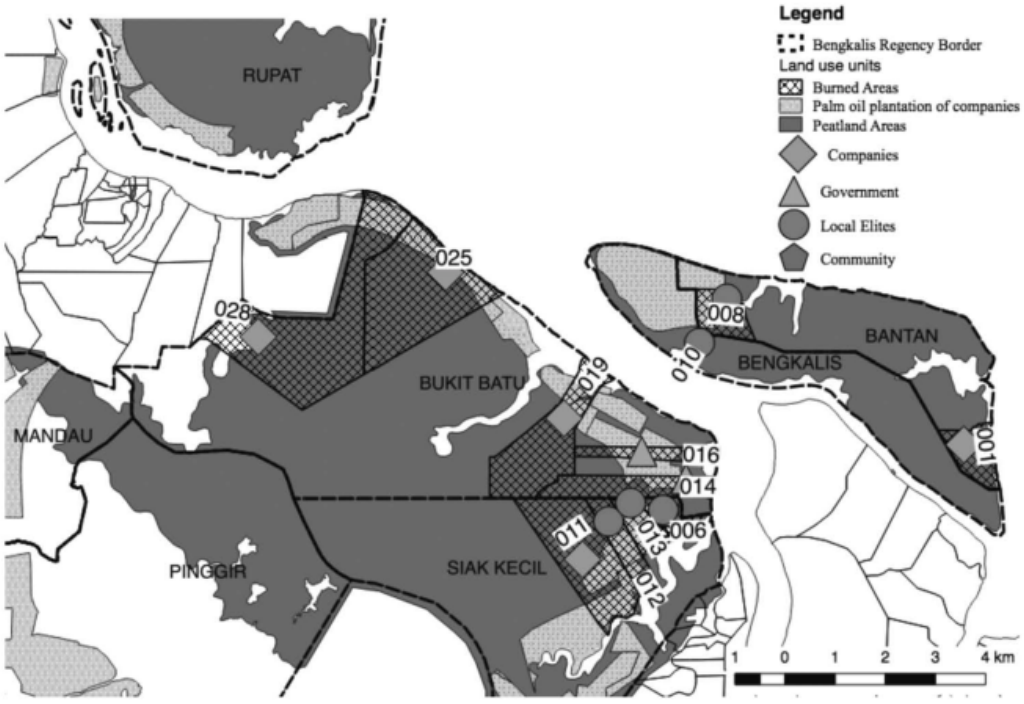

Figure 2. Burnt areas and the changing of land user in 2015.

Figure 3. Burnt areas and the changing of land user in 2017.

of various ethnicities such as Malay, Immigrants from North Sumatra, West Sumatra and Java. With new land uses access activities tending to contribute to extensive burnt areas. In term of demographic factors, most of locations observed had links to illegal logging beforehand. Fires had begun as the result of land claims, slashing, burning, and the transition of oil palm and acacia plantation. Burnt land (see Figure 2) in the observed locations have involved local communities or local elites. Land use transition includes the following process; planted land (see Figure 3) communities may claim and sell land (008); working together for cleared land (028,016); new settlement of land use (014,013) and oil palm and timber concession areas (012,006).

Those the abandonment areas are very vulnerable to fires and highly under pressure to be changed by many stakeholders. The scrub of the areas is not even cleared. When the temperature is in a hot condition and the wind is heavily blowing, they will be easy to be burned. Local communities, little piece by little, utilize the land to cultivate palm oil plantation. According to Indonesian forest law, the responsible institution of the abandonment areas should be the ministry of environment and forestry (KLHK) as the status of the land is state property. However, the central government is not able to control their forest area as the lowest level of forest hierarchical bureaucracy placed at the provincial level. At the same time, the local government of the regency in which the abandonment areas in their territory have no authority to distribute the land and to allocate the annual budget for fire mitigation.

Interestingly, the status of land has also been shifting following the function change of the area. For example, five areas have been shifting from companies' ownership to the local community and local elite ownership, while five other locations have been transformed from local community ownership to ownership by local elites, and the two others from the state property into local community ownership. In this case, the shifting of the new ownership does not indicate as an official land distribution. Although the process mostly registered in the village office through SKT (*Surat Keterangan Tebus*), it is powerless in regards to the Basic Agrarian Law (BAL). According to the BAL, state forests cannot be distributed for private ownership without

Table 2. The changing of land use in Bengkalis Regency from 2015–2017.

	The changing of land right transfer				
		To			
Coded Areas	From	Community	Company	Local Elites	Government
All selected areas: 028, 016, 014, 006, 010, 008, 012, 001, 011, 025, 013, 019	Community	-	-	5 areas	-
	Company	3 areas	-	2 areas	-
	Local Elites	-	-	-	-
	Government	2 areas	-	-	-

The data generated by the observation and in-depth interview with local communities.

a legal permit from the Ministry of Environment and Forestry (KLHK) and the National Land Agency (BPN).

From interview data and verification through observations, it was found that land transformation occurred between community, company, local elites and state ownership, with the most frequent observation being land transform from communities to local elites (Table 2).

5. Discussion

These processes of transformation imply that actors associated with illegal land transformation are not only local communities but also local elites motivated to expand their plantation operations. We argue that the main driver of illegal land right transformation is the uncertainty of land status in which the areas are abandoned or unmanaged properly by companies, local elites, and petroleum firm. This finding differs from Baland and Bjorvatn (2013) who observe that companies maximize the utility and the long-term employment. It clearly can be seen that the peat scrub land is more likely to be used as an open access-common pool resource in which there is no limit and no control to utilize it (Ostrom, 1990). Even though the forest is declared as state common or private cultivation rights of a company, the central government fails to control the natural resources properly due to the lack of resources and capabilities (Ostrom, 1990). In other words, this phenomenon massively occurs in every region in Indonesia due to the transition from the authoritarian government into weak leadership and powerless of local government on forest authority as well as in these selected areas.

The allocation of land right was merely prioritized for timber and palm oil companies while local communities did not get any clear right utilization of the land. The existence of those companies has a strong relationship with the liberalization of economic policy and the practice of corruption in the period of the Suharto regime (Munton, 2009) (McCarthy, 2010). In other words, most timber companies belonged to Suharto families and cronies. Hence, in order to fulfill their economic income, local communities access the forest area for illegal logging, burning scrub peatland and then planting palm oil. This finding is supported by Rianto (2015) arguing that 99% of forest fires in Indonesia is caused by human activities (Rianto, 2015). Potter (2015) argues that the expansion of human activities to the state common right leads to the enormous degradation of peat swamp forest, national parks, and wildlife reserves.

Moreover, the lowest level of administrative structure (Village office) legitimates illegal land acquisition from state property to private ownership of smallholder farmers and to local elites. This is widely practiced in Bengkalis regency as a result of bribery and lack of clarity surrounding authorization of the land registration process. According to Krishna et al. (2017), the illegal land acquisition by communities occurs due to the lack of property rights protection. Potter (2015) adds that local communities sell their plantations in order to avoid the uncertainty of land ownership, while Li (2018) suggests that this case has a strong relation with rent-seeking surrounded by manipulation and coercion. We show that the regency government is neglecting this illegal land acquisition practice as they lack power and capacity to govern forests.

The existence of palm oil in the burned areas implies that it is the common land use in the region. However, despite unclear boundaries of local communities´ lands, the process of palm oil cultivation is associated with high costs as peatland is not easily cultivated. The practice of land clearing by using fires is publicly accepted as a traditional form of land use among local communities. The local communities did not likely recognize that the natural condition has been dramatically changing from the wetland into dry peatland. Local knowledge could be dealt with the natural changing properly, however, in this case, their local knowledge (Ostrom, 1990) has not been comparable with the natural changing. The practice of corruption in the Suharto has enormously been resulting in this natural resource destruction as most timber companies mostly have closed relation with the central power of the Suharto regime (McCarthy, 2010). However, it has been changed in these selected areas of research as the company could not manage their land.

The majority of land transformation was from state property to private property of companies (SP-PP) and from communities to local elite property, while the transformation from state property to community property (SP-CP) not existed yet. Interestingly, as companies abandoned their concession, the exact transformation can be truly recognized from the state property to open-access property right (SP-OAP). Although local communities expanded the open-access common pool for palm oil cultivation, they could not be easily blamed as they never officially received an equal land distribution from central government. We argue the injustice of land distribution has been existing since the period of the Suharto regime. However, due to the uncertainty of land status and the high demand of palm oil plantation, local communities sold their land to local elites from outside the regency and the transaction is legalized by the grassroots level of administration. This transaction can be recognized as an illegal transformation from the community into a private property.

We argue that the bargaining position of smallholder farmers remains poorly represented compared with other stakeholders such as local elites. They have to deal with illegal and criminal activities of burning the forest, but they do not get a sustainable income from the planted land because they sold to new owners. Most of them still live with minimum access to clean water as their houses are situated in peatland areas. On the other hand, local elites as the highest class of society get the benefit as they easily bought the land from local communities (Etzioni-Halevy, 1997). They occupy a large amount of land without a permit and they can maximize the long-term values of the palm oil plantation. At the same time, they have a huge connection to the political center of society in the local region, so they can manipulate the administrative requirements of their ownership.

In this situation, the central government plays an important role in the equal allocation of land through devolution of forest governance, and a clear definition of community property boundaries (Agrawal & Jesse, 1999). If community land rights were clearly recognized, we argue, smallholder palm oil farmers will have the freedom to develop their own sustainable institution based on the indigenous knowledge on their hand (Ostrom, 1990). Besides, there must be a progressive reform of front-line bureaucracy who officially registered the illegal transaction of land transformation ownership (Sargeson, 2018). In the long term, the challenge is how forest authority can be transferred from the central to the local government of the territory. It is impossible the problem can directly be addressed if the authority is far away in the top of Indonesian political structure. If the forest authority is placed in the provincial or regency authority, both level of power can easily distribute the open-access land to the local community, in the certain quantity, location, and period (Dietz et al., 2003).

6. Conclusion

In conclusion, it can be seen that the uncertainty of land statutes abandoned by government and timber companies is the main driving force of illegal land right transformation. The abandoned

land is more likely as an open access-common pool without any control from the authority (Ostrom, 1990). This phenomenon occurs widely in many regions in Indonesia. Suharto regime prioritized the forest allocation for timber and palm oil companies. The transformation from state property to community property (SR-CR) never existed in the case of Bengkalis regency. Hence, local communities expand the open-access land to plant the palm oil through the unsustainable way in which they use fires to clear the peat scrubland. They claim that fire is their ancient method of land utilization. We argue that their local knowledge has not been relevant to the natural changing as the peatland currently in the dry condition (Ostrom, 1990). However, the local communities are poorly positioned. They have to deal with illegal and criminal activities of burning the forest, but they do not get a sustainable income from the planted land because they sold to new owners.

We call the new owners as local elites who have a highest-class structure in society (Etzioni-Halevy, 1997). They are the most beneficial actors who bought a large amount of palm oil plantation from smallholder farmers. They can maximize the long-term values of the plantation without any permit of a firm as they have closed relation to the local political power of society to manipulate the legal ownership requirements. The local government is likely neglecting these practices as many administrative officers, politicians, and local lawmakers get involved in the issue. The challenge for sustainable smallholder farmers institution is how the central government can allocate the open-access land to local communities with a clear definition of their right boundaries (Agrawal & Jesse, 1999). If it is so, local communities will have the freedom to develop their own sustainable institution based on the indigenous knowledge on their hand (Ostrom, 1990). However, this policy should be supported by the bureaucracy reform of local administrative offices to minimize the illegal transaction of land transformation ownership.

The complexity of land certification continues to pose as a challenge to other areas of administration, such as international regulation compliance (Jelsma, Schoneveld, Zoomers, & Van Westen, 2017), zero-deforestation implementation (Austin et al., 2017). and to targeted efforts for independent palm oil farmers Potter (2015). Law enforcement must be strengthened but more importantly, clearer land certification and registration management must first be put in place. Smallholder licensing, a clearer regulation for plantation registration, and a clearer agrarian differentiation would provide better law enforcement to counter the burning activities, land conversions, and the illegal expansions of palm oil plantations. This will also pave way for clearer identification of responsibility for the fires. Smallholder licensing and regulation would also provide ease in targeting capability development programs aimed at capacitating the independent farmers to the newly emerging farming standards, that is inclusive of the sustainability issues.

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ORCID

Eko Priyo Purnomo http://orcid.org/0000-0002-4840-1650
Rijal Ramdani http://orcid.org/0000-0002-7831-3918
Agustiyara http://orcid.org/0000-0002-5475-556X
Queenie Pearl V. Tomaro http://orcid.org/0000-0001-5343-6113
Gatot Supangkat Samidjo http://orcid.org/0000-0003-2865-114X

References

Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development*, *29* (10), 1649–1672.

Agrawal, A., & Jesse, R. (1999). Accountability in decentralization: A framework with South Asian and West African cases. *The Journal of Developing Areas*, *33*(4), 473–502.

Altman, J., & Markham, F. (2015). Burgeoning indigenous land ownership: Diverse values and strategic potentialities. In S. Brennan, M. Davis, B. Edgeworth, & L. Terrill (Eds.), *Native Title from Mabo to Akiba: A Vehicle for Change and Empowerment* (pp. 126–142). Annandale, NSW: The Federation Press.

Anthias, P., & Radcliffe, S.A. (2015). The ethno-environmental fix and its limits: Indigenous land titling and the production of not-quite-neoliberal natures in Bolivia. *Geoforum*, *64*, 257–269.

Austin, K., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., & Kasibhatla, P. (2017). Shifting patterns of oil palm driven deforestation in Indonesia and implications for zero-deforestation commitments. *Land Use Policy*, *69*, 41–48.

Baland, J.M., & Bjorvatn, K. (2013). Conservation and employment creation: Can privatizing natural resources benefit traditional users? *Environment and Development Economics*, *18*, 309–325.

Barus, B., Indraningsih, W., Purnama, A., Hu, W., Iman, L., & Yudarwati, R. (2016). *Implication of peat land protection in Indonesia: A case study in Bengkalis Island, Riau*. Paper presented at the 7th Rural Research and Planning Group (RRPG) International Conference and Field Study in Malaysia 2016 (RRPG7), Malaysia.

Basupi, L.V., Quinn, C.H., & Dougill, A.J. (2017). Historical perspectives on pastoralism and land tenure transformation in Ngamiland, Botswana: What are the policy and institutional lessons? *Pastoralism*, *7*(1), 24.

Berry, J.K., & Metha, S. (2009). An analytical framework for GIS modeling, 23. Retrieved from http://www.geoinformatic.org/archives/1533

Carlson, K.M., Curran, L.M., Asner, G.P., Pittman, A.M., Trigg, S.N., & Adeney, J.M. (2013). Carbon emissions from forest conversion by Kalimantan oil palm plantations. *Nature Climate Change*, *3*(3), 283.

Da Silva, J.B., Piva, C., Falavigna-Guilherme, A.L., Rossoni, D.F., & de Ornelas Toledo, M.J. (2016). Spatial distribution and enteroparasite contamination in peridomiciliar soil and water in the Apucaraninha Indigenous Land, southern Brazil. *Environmental Monitoring and Assessment*, *188*(4), 217.

Dietz, T., Ostrom, E., & Stern, P.C. (2003). The struggle to govern the commons. *Science*, *302*(5652), 1907–1912.

Dohong, A., Aziz, A.A., & Dargusch, P. (2017). A review of the drivers of tropical peatland degradation in South-East Asia. *Land Use Policy*, *69*, 349–360.

Doss, C., Meinzen-Dick, R., & Bomuhangi, A. (2014). Who owns the land? Perspectives from rural Ugandans and implications for large-scale land acquisitions. *Feminist Economics*, *20*(1), 76–100.

Etzioni-Halevy, E. (Ed.). (1997). *Classes and elites in democracy and democratization: A collection of readings* (Vol. 1083). Taylor & Francis.

Fernandez, P., Delgado, E., Lopez-Alonso, M., & Poyatos, J.M. (2018). GIS environmental information analysis of the Darro River basin as the key for the management and hydrological forest restoration. *Science of the Total Environment*, *613–614*, 1154–1164.

Gibson, C.C., Williams, J.T., & Ostrom, E. (2005). Local enforcement and better forests. *World Development*, *33*, 273–284.

Jegho, L. (2017). Indonesia to legalize land ownership for small farmers in palm oil industry. Retrieved from http://www.globalindonesianvoices.com/29608/indonesia-to-legalize-land-ownership-for-small-farmers-in-palm-oil-industry/

Jelsma, I., Schoneveld, G.C., Zoomers, A., & Van Westen, A.C.M. (2017). Unpacking Indonesia's independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges. *Land Use Policy*, *69*, 281–297. doi:10.1016/j.landusepol.2017.08.012

Krishna, V.V., Kubitza, C., Pascual, U., & Qaim, M. (2017). Land markets, property rights, and deforestation: Insights from Indonesia. *World Development*, *99*, 335–349.

Li, T.M. (2017). Intergenerational displacement in Indonesia's oil palm plantation zone. *The Journal of Peasant Studies, 44*(6), 1158–1176.
Li, T.M. (2018). After the land grab: Infrastructural violence and the "Mafia System" in Indonesia's oil palm plantation zones. *Geoforum, 96*, 328–337.
Marlier, M.E., DeFries, R.S., Kim, P.S., Koplitz, S.N., Jacob, D.J., Mickley, L.J., & Myers, S.S. (2015). Fire emissions and regional air quality impacts from fires in oil palm, timber, and logging concessions in Indonesia. *Environmental Research Letters, 10*(8), 085005.
McCarthy, J.F. (2010). Processes of inclusion and adverse incorporation: Oil palm and agrarian change in Sumatra, Indonesia. *The Journal of Peasant Studies, 37*(4), 821–850.
McKean, M.A. (2000). Common property: What is it, what is it good for, and what makes it work? In C.C. Gibson, M.A. McKean, and E. Ostrom (Eds.), *People and forests: Communities, institutions and governance* (pp. 27–55). Cambridge, MA: MIT Press.
Miettinen, J., Shi, C., & Liew, S.C. (2012). Two decades of destruction in Southeast Asia's peat swamp forests. *Frontiers in Ecology and the Environment, 10*(3), 124–128.
Munton, R. (2009). Rural land ownership in the United Kingdom: Changing patterns and future possibilities for land use. *Land Use Policy, 26*, S54–S61.
Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action.* Cambridge: Cambridge University Press.
Potter, L. (2015). *Who is 'land grabbing'? Who is deforesting? Will certification help prevent bad practice?* Paper presented at the international conference on Land Grabbing: Perspectives from East and Southeast Asia, Chiang Mai, Thailand.
Pramudya, E.P., Hospes, O., & Termeer, C.J.A.M. (2018). The disciplining of illegal palm oil plantations in Sumatra. *Third World Quarterly, 39*(5), 920–940. doi:10.1080/01436597.2017.1401462.
Purnomo, E.P., Anand, P.B., & Choi, J.-W. (2018). The complexity and consequences of the policy implementation dealing with sustainable ideas. *Journal of Sustainable Forestry, 37*(3), 270–285.
Purnomo, E.P., Nurmandi, A., Sulaksono, T., Hidayati, M., Ramdani, R., & Agustiyara. (2016). *Ekologi Pemerintahan: Tata Kelola dan Kelembaman Birokrasi dalam Menangani Kebakaran Hutan, Pengelolaan Sawit serta Peran Elit Loka*. Yogyakarta: LP3M UMY.
Rianto, E. (2015). Dynamics of small-scale deforestation in Indonesia: Examining the effects of poverty and socio-economic development. *FAO-Unasylva, 61*(1–2), 14–20.
Sahide, M.A.K., & Giessen, L. (2015). The fragmented land use administration in Indonesia – Analysing bureaucratic responsibilities influencing tropical rainforest transformation systems. *Land Use Policy, 43*, 96–110.
Sargeson, S. (2018). Grounds for self-government? Changes in land ownership and democratic participation in Chinese communities. *The Journal of Peasant Studies, 45*(2), 321–346.

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