



Article

Expansion of Oil Palm Plantations in Indonesia's Frontier: Problems of Externalities and the Future of Local and Indigenous Communities

Agus Andrianto ^{1,*} , Heru Komarudin ¹ and Pablo Pacheco ^{1,2} 

¹ Center for International Forestry Research (CIFOR), Bogor 16115, Indonesia; H.Komarudin@cgiar.org (H.K.); Pablo.Pacheco@wwf.org (P.P.)

² World Wildlife Fund (WWF), Washington, DC 20037, USA

* Correspondence: A.Andrianto@cgiar.org

Received: 11 February 2019; Accepted: 25 March 2019; Published: 29 March 2019



Abstract: The expansion of oil palm plantations in Papua province, Indonesia, involves the conversion of forests, among other land types in the landscapes, which are a source of clan members' livelihoods. The way in which this expansion occurs makes it necessary to understand the factors associated with why companies look for frontier lands and what externalities are generated during both the land acquisition and plantation development periods. Using a spatial analysis of the concession areas, along with data from household surveys of each clan from the Auyu, Mandobo, and Marind tribes who release land to companies, we find that investors are motivated to profit from timber harvested from the clearing of lands for plantations, activity that is facilitated by the local government. Land acquisition and plantation development have resulted in externalities to indigenous landowners in the form of time and money lost in a series of meetings and consultations involving clan members and traditional elders. Other externalities include the reduced welfare of people due to loss of livelihoods, and impacts on food security.

Keywords: oil palm; externalities; local communities; indigenous people; Papua; Indonesia; land acquisition; land tenure; investment

1. Introduction

New Guinea is a large island off the continent of Australia, covering an area of 786,000 km² inhabited by indigenous Melanesians [1]. The eastern half of the island is Papua New Guinea while the west is part of the Republic of Indonesia. The island is covered by extensive primary dryland and swamp forests [2,3]. Lands where these forests are found are held under customary title and law, and are controlled by clans and families of indigenous peoples, whose status is recognized by the two countries' constitutions [4,5]. These groups are diverse and are not well known or understood by outsiders. On both sides of the island, these lands have been the target of large-scale foreign investment plantations for many years [6,7]. However, empirical information collected through detailed field surveys on the resultant externalities from land-based investments has not been comprehensively available [8].

In this paper, an externality is viewed as a social cost [9–11], and not simply as an unexpected impact. The ongoing expansion of land-based investments in the frontier areas tends to lead to significant externalities. The expansion of oil palm plantations in Papua (Papua province, Indonesia and Papua New Guinea) illustrates this situation well. In Papua, tens of millions of hectares of land under various ecological types belonging to indigenous peoples are facing the risk of being converted into oil palm plantations. Investors often conduct their business solely for profit, where they acquire large tracts of lands [6–8] at minimal cost and aim to secure incomes in advance of the palm

harvest, which may also finance the plantations' establishment [12,13]. A central question, therefore, is whether these investments also pay attention to the social and ecological aspects associated with the development of plantations. Some cases have demonstrated successful attempts to internalize the environmental externalities arising from environmental degradation [14]. However, social externalities experienced by the indigenous peoples should not be ignored.

The extent to which the expectation of profits by companies engaged in developing oil palm plantations leads to environmental and social externalities, and the way in which they are internalized (or not) constitutes a critical question in the debates associated with land use and environmental governance. Palm oil producing countries, including Indonesia, which constitutes the world's largest palm oil producer, have stimulated plantation development to meet global demand. Yet, doubts persist as to whether prudently designed policies have been put in place to ensure the initial stages of investment do not lead to reduced welfare (e.g., food insecurity and unstable livelihood sources) for the indigenous peoples. Given this context, it is necessary to identify what needs to be done to cope with externalities, in that the production or consumption of goods and services imposes costs or benefits on other parties, which are not reflected in the prices charged for the goods and services being provided [15]. Finding ways to address externalities in the palm oil sector is critical since palm oil supply is at the center of debates on sustainable commodity supply.

This paper was developed to discuss the findings of research surveys conducted from 2013–2014, which investigated new investments undertaken by five large-scale oil palm plantations, as well as the implications for local landowners and the environment in the Boven Digoel and Merauke districts located in the south of Indonesia's Papua province. Specifically, this paper places its main emphasis on looking at land tenure involving the transfer of lands from landowners (local and indigenous communities) to investors, and the livelihood conditions of landowners in terms of income, food security, and expenditures, before and after the investment [6,8].

This paper is organized in five sections including this introduction. The second part discusses the materials and methods. The third part provides the main results regarding land development and forest conversion, and shifts in local livelihoods and expenditures. The fourth part discusses the main social and environmental externalities observed and their implications for the wider debate on palm oil governance and local rights. The fifth part pulls together this paper's main conclusions.

2. Materials and Methods

In this research, we identified externalities as consequences arising from large-scale plantation operations based on two aspects, namely, deforestation and livelihoods. Deforestation was analyzed based on changes in land cover over a period from 2008 to 2013 through a visual interpretation of Landsat satellite imagery from Landsat TM 8 [16]. The analysis was intended to determine changes in land cover that occurred during the period of land acquisition and plantation development. We sought to understand how much of the forest had been logged, how extensively, and to identify the locations where oil palm crops had been successfully planted. This last information was obtained using household surveys, as explained below. The interpretation was carried out by CIFOR (Center for International Forestry Research) and Tropenbos Indonesia, while the Ministry of Forestry's implementing unit for state forestland gazettement in Papua was responsible for ground truthing. Externalities linked to the livelihood of the landowners were analyzed based on data collected through household surveys and focus group discussions (FGDs) [6]. The household surveys were completed by a joint team from CIFOR, the University of Merauke, and the Merauke District Forestry and Agriculture Service.

The landowners under study were distributed across 20 villages located in six sub-districts in three districts. Using household questionnaires, we interviewed 160 respondents from 37 clans, including both Papuan landowners and residents who owned lands granted by the government through a transmigration program (Table 1). To represent various types of community members, at least 3–4 respondents were selected from each clan: one head and two members of the clan, whose earnings were either the lowest or average. Similarly, three respondents from the transmigrant residents

were selected from each village. To obtain a collective stakeholder view on the above issues and to triangulate the data obtained from the surveys, we conducted a series of FGDs involving people representing the Papuan landowners, transmigrants, oil palm companies, and sub-district officials.

Table 1. Tenure and owners of lands occupied by five different oil palm companies.

Oil Palm Company and Size of Land Controlled ⁽¹⁾	Land Tenure		Land Owner	
	Formal ^(1,2)	Traditional ⁽³⁾	Ethnic ⁽³⁾	Resident ⁽³⁾
Agriprima Cipta Persada (ACP) 37,058 ha	Land under the control of the National Land Agency	Individual	Java Nusa Tenggara	Merauke
	1. Private: LU 1 transmigration		Migrants: Java, Nusa Tenggara	10 villages
	2. State land: • LU 2 transmigration • HGU	Customary right: • Individual • Communal	Native: • 6 Marind clans • Other clans have yet to agree to transfer lands to investors (still under negotiation)	Sigabel Jaya Andaito Seed Agung
	Land under the control of the Ministry of Forestry (State land) • HPK • KSA			Kolam
Agrinusa Persada Mulia (APM) 44,729 ha	Land under the control of the National Land Agency	Individual	Java Nusa Tenggara	Enggol Jaya
	1. Private: LU 1 transmigration		Migrants: Java, Nusa Tenggara	Pahas
	2. State land: • LU 2 transmigration • HGU	Customary right: • Individual • Communal	Native: • 4 Marind clans • Other clans have yet to agree to transfer lands to investors (still under negotiation)	Tanas
	Land under the control of the Ministry of Forestry (State land) • HPK • KSA			Bupul Kampung Muting Bupul Empat
Berkat Cipta Abadi (BCA) 26,994 ha	Land under the control of the National Land Agency			Boven Digoel
	1. State land: • HGU	Customary right: • Individual • Communal	Native: • 10 Mandobo clans • Other clans have yet to agree to transfer lands to investors (still under negotiation)	6 villages: Aiwa Muting Subur Selil Asiki
	Land under the control of the Ministry of Forestry (state land) • HPK			Camp BCA
Bio Inti Agrindo (BIA) 41,354 ha	Land under the control of the National Land Agency			Merauke
	1. State land: • HGU	Customary right: • Individual • Communal	Native: • 3 Marind clans • 5 Mandobo clans • Other clans have yet to agree to transfer lands to investors (still under negotiation)	5 villages: Selil Muting Kindiki, Nakias
	Land under the control of the Ministry of Forestry (State land) • HPK • KSA			Camp BIA
Dongin Prabhawa (DP) 33,909 ha	Land under the control of the National Land Agency			Merauke
	1. State land: • HGU	Customary right: • Individual • Communal	Native: • 7 Marind clans • 2 Auyu clans • Other clans have yet to agree to transfer lands to investors (still under negotiation)	6 villages: Mam Nakias Banamepe Tagaepe Ngguti Camp DP
	Land under the control of the Ministry of Forestry (State land) • HPK • KSA			Mappi
				2 Villages: Edera Bade

Sources:

1. Official data obtained from the Merauke Forestry and Estate Crops Service
2. Official data obtained from BPKH X, Papua
3. CIFOR survey 2014

Note:

- Business use rights (HGU)
- Convertible production forest (HPK)
- Nature reserve area (KSA)
- The ethnicities and residency of land owners are not exclusive of each other. There was some overlapping.
- ACP and APM are companies belonging to the Ganda Group, related to the giant palm oil group, WILMAR.
- DP and BCA are palm oil companies owned by the Korindo Group.
- BIA is a Korean-owned palm oil company funded by Daewoo.

3. Results

3.1. Forests as a Target for Conversion

It is generally assumed that investors are inclined to obtain economic profits by benefiting from economies of scale, thus managing large areas of land. The allocation of large size areas to investors is made possible by the district's need to attract as many investments as possible to earn income and fill the financial gaps between what can be met by its own income as *Pendapatan Asli Daerah* (PAD) and expenditure by government for development, as well as local government salaries and others. The ruling district head uses the mandates provided by agricultural sector regulation to grant concessions to private companies [17]. The local government also enables investors to acquire large areas for plantations by providing land information (*informasi lahan*), indicating the potential areas for development into plantations. Such areas are designated and comply with district spatial planning. Government has touted the benefits it could generate from large-scale agricultural development, including job creation, infrastructure provision, and local population wellbeing [8]. The current law also stipulates that investors can propose areas for investment in Papua, which has doubled the size of concessions that can be granted to investors in other provinces of the country [17].

However, investors have made a decision to focus on more limited areas, considering the suitability of lands for growing oil palm crops, as well as the benefits generated from the initial investment phase [12] through land conversion [13], low transaction costs, and the extent to which investments are accepted by the local communities [8]. In addition, investors factored into their calculations that the proposed locations with more strategic value are those closer to big rivers, such as the Digoel and Bian rivers. Developing these lands would enable them to transport fresh fruit bunches easily to the mills, as well as to transport crude palm oil to the refinery mills.

Out of the 40 companies granted location permits covering 1.7 million ha [17,18], only the five foreign companies under study covering a total area of 184,046 ha had executed their plans for palm oil plantation investments by the time this study was conducted. It is not clear why the other companies have not executed their investment plans, given the extensive lands officially granted to them. There are some claims of large-scale land acquisitions or land grabs where investors hold off from using the lands until opportunities to obtain higher profits become available [19].

The five companies under study obtained permits from the district governments to use the potential areas, which are still well forested. The results of the land cover analysis based on Landsat images taken in 2013, corroborated by ground truthing, showed that more than 80% of the target concession areas were forests, while the rest were water bodies and savannas (Figure 1). Some well-known references show that forests, savannas, swamps, and waters in Papua are habitats for many species of birds, reptiles, mammals, and endemic flora [20–23]. Considering the biological wealth contained within them, this also makes the areas an important source of livelihoods for communities [6,8,21].

The companies were granted dry lands originating from primary forests and savanna where they grow oil palm [2,24]. Growing palm oil crops on such dry land is easier and less costly than farming on wet lands, giving the companies an advantage in the planting of the crop and the ability to produce relatively high yielding products. These companies secure water from nearby sources and swamps (Table 2). The conversion of the forests into palm oil plantations has made the hydrological system unstable [25,26], causing disturbances to small rivers that previously functioned to flow water naturally to places that needed irrigation.

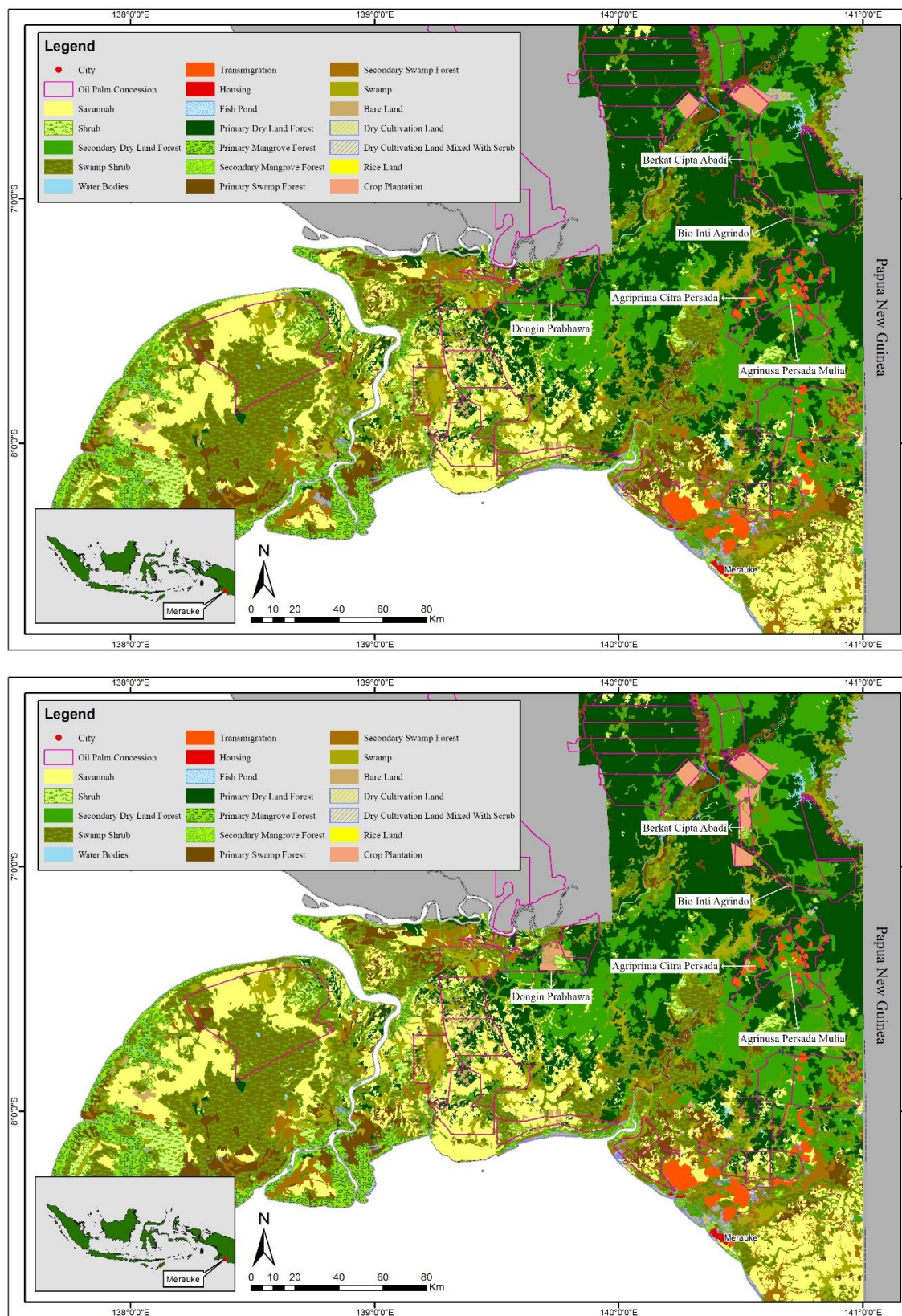


Figure 1. Southern Papua land cover series map year 2008 (above) and year 2013 (below).

Table 2. Land cover changes for the five companies and the progress of plantation development.

Land Cover	Palm Oil Companies (ha)				
	DP	ACP	APM	BIA	BCA
1. Location permit	33,909	37,058	44,729	41,354	26,994
2. Land cover 2008					
o cultivation land/transmigration	0	4142	6020	0	0
o dry forest	17,618	28,224	34,842	31,859	17,426
o swamp forest	3191	2318	0	222	1303
o swamp	79	441	2015	2174	144
o savanna + shrub	10,145	1932	1850	969	3960
3. Changes in 2013					
o deforestation	12,137	1123	95	6444	7172
o palm oil crops planted in 2013	6253 (18 %)	0 (0%)	0 (0%)	5048 (12 %)	4339 (16 %)

Note: There are differences in concession size (ha) between what are written on the location permits granted to individual companies (1) and our measurements of concessions based on the companies' maps (2). Source: Tropenbos Indonesia + BPKH X assessment on OP in Papua.

3.2. Transfer of Customary Lands: Processes and Tenurial Consequences

The trajectory of customary land tenure in southern Papua, which is inhabited by the Marind, Auyu, Jakai, Mandobo, and Asmat tribes is dynamic [4] and has experienced some changes. The customary tenure is strongly influenced not only by internal factors, but also interactions with outsiders, and the recognition of formal and stronger actors representing the state [27,28]. In the colonial era, land tenure was not formally recognized, and it was only valid among the indigenous peoples who are still scattered and nomadic, moving regularly to and from the same areas [29]. They are bound by a structure called “boan”, namely a sub-clan consisting of around four families [30]. During the New Order era (1966–1998), even though the law recognized the existence of customary lands [31], the rights specified in legislation could not be realized in practice. The New Order government was authoritarian and made decisions centrally in Jakarta. Then, during the Reform Order era starting in 1998, special autonomy was granted to the provincial government of Papua by the central government in 2001 [32], which led to the recognition of the indigenous Papuan communities. More authority to decide on various aspects, including budgets, was given to the provincial government in accordance with the special autonomy law [33]. The indigenous communities and practices became more formally recognized and formal structures were created, namely, the LMA (Lembaga Masyarakat Adat—organization of indigenous peoples) at the village, sub-district, district, and provincial levels. Furthermore, with the enactment of Papua's special autonomy, district heads became more powerful as the representatives of the state or government and of the customary communities. District heads serve as advisers to the customary community organization or LMA at the district level, issuing memo letters and/or verbal instructions, often considered compulsory, to which members of the community must comply. Sometimes, the memos or instructions are not in line with existing laws and regulations.

There are some references to the indigenous peoples' culture and land tenures in Papua Indonesia [4,28,34]. However, these references are more focused on land-tenure arrangements and dispute resolution within the tribes, and pay less attention to how the lands were released by the clans to outsiders, and how clans interacted with outsiders during negotiation processes. Thus, there is a limited understanding of how land transfers took place in practice and how the associated issues emerging in the processes were resolved. While outsiders tend to think that acquiring indigenous customary lands only requires the consent of tribal chiefs, it is a fact that lands owned by the Marind, Mandobo, and Auyu tribes are held under clan communal ownership.

However, in practice, it is still difficult to understand how customary land tenure works and how decisions are made among the clan members. This since the arrangement of land tenure in each clan from each tribe is a concept that cannot be precisely expressed. Tenure can be very loose, but at the same time it can be very tight, where the operation is conditional and dependent on the wisdom of the traditional leader. The same applies to determining the restrictions that can separate individual rights and communal rights at various levels. However, what is certain is that any land acquisition from the

Marind tribal community must be a collective decision, and no individual decision is recognized as legitimate. This also applies to the Mandobo and Auyu peoples, although the ownership rights of land by individuals or families were stronger in these two tribes.

In the special autonomy era, there was a change in the authorization structure and who was authorized to ratify and make decisions concerning land tenure, especially the rights to release. With the enactment of Papua Provincial Regulation No. 23/2008, concerning customary community and individual rights over customary lands, the LMAs at various levels in the districts were given a role to strengthen and protect customary communities and to foster the wellbeing of indigenous peoples. However, in practice, they take a more prominent role in the process of land acquisition and the release of land by landowners to investors/companies or individuals. The chairman of the LMA signs an agreement specifying what portion of the lands can be released.

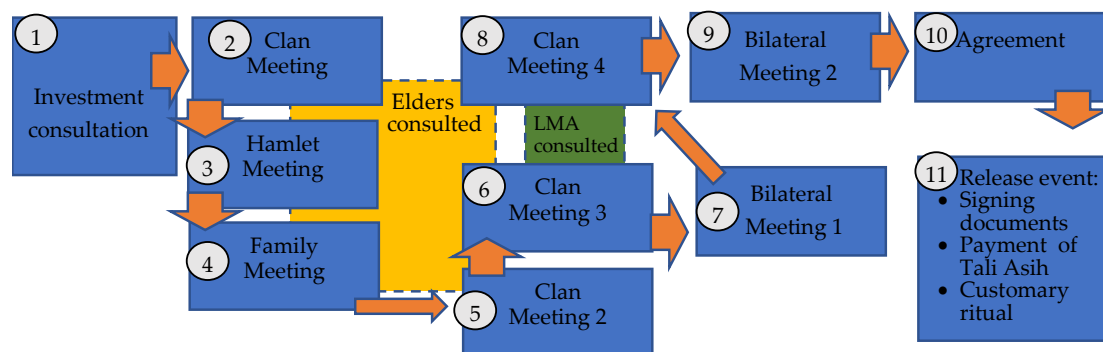
Based on the survey and interviews, we learnt that there were at least 11 stages which investors were supposed to follow before any final decision on land transfer could be made. The stages include a series of internal meetings and two meetings intended to facilitate negotiations between the indigenous communities and the investors (Figure 2). The internal meetings require that all members of the clans attend and agree on the decision to be taken. It is possible that some members of the clans are co-opted by the investors or related government officials, with vested interests, to speed up the transfer process. However, based on our observations since 2002, and during the field surveys conducted between 2008 and 2009 and 2013 to 2014, most of the companies operating in southern Papua, including the five companies under study, were inclined towards neglecting the full consultation process with the landowners. They used a variety of approaches to ensure that the landowner hastily made decisions on the land transfer [8,35,36]. Investors often made use of formal decrees, as well as district head verbal instructions, including related local government officials or the leaders of indigenous community organizations (whom they would have co-opted) to intervene in the land acquisition process in the interests of the company. It has been documented elsewhere that such practices are pursued not only by investors in the palm oil sector, but also by investors in other agricultural commodities, such as sugar cane and timber [37].

3.3. Implications of Large-Scale Investment for the Livelihood of Landowners

The bulk of the area covering 184,046 ha, which was targeted by the five foreign palm oil investors, includes occupied lands claimed by customary or indigenous peoples of Papua—mainly the three largest tribes, the Marind, Auyu, and Mandobo. Approximately 10,162 ha of the lands, particularly lands located in the LU1 and LU2 transmigration areas (i.e., lands allocated to transmigrants for farms and home gardens, respectively) belong to non-Papuan transmigrants. In contrast to the nomadic Papuans of the past, the indigenous peoples in southern Papua have now settled and reside in houses in villages. However, although they may own a house in the village, they often stay in the bevak (shelters) they have constructed inside the forests while they are collecting food or hunting game, catching fish in swamps and rivers, or extracting timber and non-timber forest products (e.g., agarwood, rattan, gambier tree bark) for obtaining cash income. On Saturdays, they normally return to the village so that they can attend regular services in church each Sunday. Having observed the daily habits of villagers, we could feel the increased awareness and spirit among children of the importance of education. This interest in education, however, was limited only to junior high school. Of the 135 households surveyed, we found that only 29 heads of landowner households (21%) had an education above junior high school level.

It is often assumed that Papuans have large numbers of household members and only the elderly live in villages. However, our findings indicated that only 44 families (32%) had more than six family members, and that 80% of family heads were under 55 years old. We found that indigenous people were not homogeneous entities in economic terms. Different economic levels/layers of the community were observed when we were in the villages. Those people were better off comparatively not solely because they were customary leaders, but because they were educated and had relations with the

government and companies in the area. In such cases, even though these people were not prominent customary figures, they were highly influential at clan meetings.



- (2) Clan meeting 1:**
- The leader of the clan shares his views and wisdom
 - Directs the meeting and urges to make decisions at the hamlet as well as family level
 - Recommends that a clan meeting be held to make decisions
- (3) Hamlet/sub clan meeting:**
- Discusses consequences of land transfer in order to avoid conflict either internally within the hamlet or between neighboring sub-clans, including external parties using the lands within the hamlet.
 - Elders consulted about the existence of sacred places. Asks if their ancestors will not reprove and will not be harmed if they release the land seeking advice before decisions are made
- (4) Family meeting:**
- Internal discussion within the family on what they should agree on, consequences arising from the land transfer decisions (e.g. losing rights which they would pass down to their children).
- (5) Clan meeting 2**
- Results from hamlet as well as family meetings are shared
 - Discusses, makes and agrees decisions at the clan level: representatives of the clan, areas they agree to release, and the proposal asking for compensation for the land they release
- (6) Clan Meeting 3**
- Elders consulted to seek advice on how to respond to the investor's request
 - Sub-district LMA consulted to seek advice and say the clan is ready to make decisions
 - District LMA consulted clan ready to make a decision on the land asked for by the company, and the compensation for the land the clan will release
- With the support and blessing of elders and LMAs, clan representative formulates the agreement for negotiation with the company.
- (7) Bilateral meeting 1**
- Representatives of the clan channel the results of agreements made by the clan for individual and communal land they approve for release and the compensation they ask for.
 - The company representative will then consider and respond to every point in the clan's proposal. The company and community will settle points agreed upon. Other points not agreed upon will taken to management for consultation.
- (8) Clan meeting 4:**
- First agreement between clan and company shared during the clan meeting to get recognition and determine steps for unapproved options.
 - The district LMA is also consulted on the agreement, especially on proposed compensation items not approved by the company. Clans believe the district LMA has access to speak directly with company management.
- (9) Bilateral meeting 2**
- Each representative conveys a decision and formulates the final agreement and various requirements set by each party.
- (10) Agreements**
- Development of draft agreement along with the requirements. This involves the district-level LMA and district government officials.
- Note: the 11 steps are not purely sequential

Figure 2. Stages of land transfer from customary land rights to cultivation business rights (HGU-Hak Guna Usaha) from customary communities to investors.

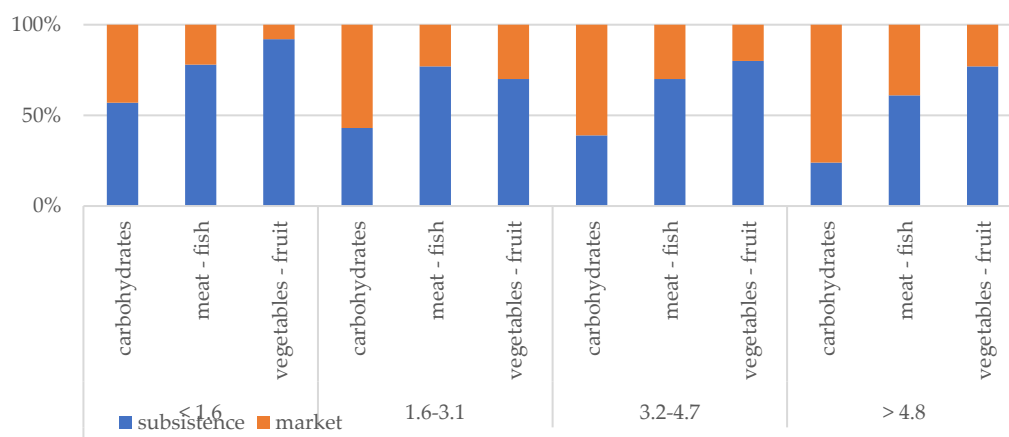
Since some of the land and water that sustains people's livelihoods portfolios has been released to palm oil companies, local livelihoods have been affected. On average, total income was reduced by 37–57% due to land being released to companies (Table 3). Households with income levels below USD 3100/year were the ones experiencing the largest impacts on their daily needs.

Table 3. Socio-demographics and livelihoods of landowners of various income levels.

Landowner Household-Income Group (USD × 000/yr.)	Head of Household				Average Income USD/Person/yr.	Source of Income by Proportion (%)		
	Total	Over 55 Years Old (%)	Education Secondary or Above (%)	Household Family Members of More Than 6 Persons (%)		Land Released to Companies	Remaining Land	Wages and Assistance
<1.6	27	22	22	44	173	37	43	20
1.6–3.1	41	20	27	29	548	41	25	34
3.2–4.7	25	16	28	32	899	49	16	35
4.8–6.4	25	16	16	24	1215	50	17	33
>6.4	17	12	6	35	3693	57	22	21

3.4. Nature is a Food Barn

The land and water controlled by clans provide not only sources of cash income, but also products that are key ingredients of local diets. Living in villages surrounded by forests and nature, landowners meet daily food needs for their families by collecting food—especially carbohydrates, protein (meat and fish), and vitamins, and fiber from vegetables and fruit—directly from nearby sources rather than buying them at the market/kiosk (Figure 3). Our survey indicated that there was a change in the consumption of carbohydrates, with the source changing from sago, cassava, and sweet potato to rice. Rice consumption increased, with increased purchases of carbohydrates reaching 40–70% of the families' total carbohydrate consumption. We also observed that indigenous Papuans consumed more food than the migrants. On average, each of their families consumed about 3 kg of carbohydrates per day, 1.6 kg of protein, and a small amount of vegetables and fruit. Migrants only consumed 1.5 kg of carbohydrates, 0.6 kg of protein, and adequate vegetables and fruit. This situation tends to vary across families in various income groups. In addition, the location where clan members hunt and gather for food has shrunk due to land releases. This may foster a trend by which families will obtain the products to meet their dietary needs from the market.

**Figure 3.** Types and sources of food for landowners at various income levels.

3.5. Expenditure

Changes that occurred due to land transfers to palm oil companies were not only reflected in more polarized income levels (Table 3) and shifts in ways to meet dietary needs (Figure 3), but also impacted upon clan households' expenditure, which increasingly resembles the expenditure observed in households in urban areas. There were significant differences in expenditure patterns among families across different income groups (Figure 4). Expenditure on food, traditional culture, and clothing was relatively similar among the various families. The higher the level of income of a family, the lower the proportions of expenditures on food, cloth, and traditional culture appeared to be. However,

there was a significant increase in the expenditure of households with higher incomes. Expenditures were increasingly high on homes, motorbikes, and boats, as well as the purchasing of gasoline for transportation or for electricity generators at home. Income was also allocated to education and health, and the ability to save and remit in sufficiently high amounts.

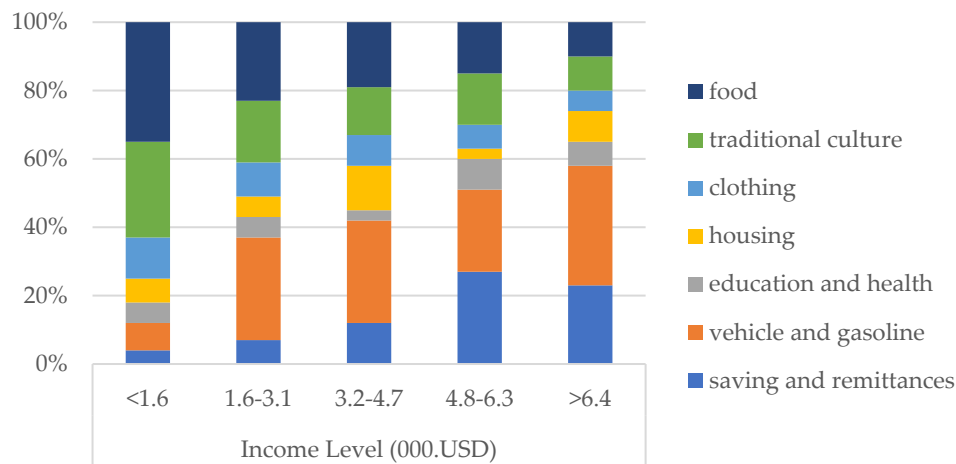


Figure 4. Types and proportions of expenditure at various income levels of landowners.

4. Discussion

Our main findings suggest that a high percentage of the concessions allocated to companies for palm oil development were located on forestland, which also contained the resources that provided a livelihood source for clan members. Companies had to negotiate with the clans in order to acquire the land, a process that consisted of at least 11 stages, which was rarely followed by investors aiming to clear the forest to plant oil palm due to the high transaction costs involved in negotiations, which puts into question the legitimacy of the land transfer process. The local families have undergone changes in their livelihood portfolios, in part resulting from the expansion of oil palm plantations, which has also influenced their diets. Family expenditures also show some variations over time, and across households, with significant differences among income groups. Yet, there is no clear connection between those shifts and oil palm development. Below we discuss some of the implications of these shifts, focusing primarily on externalities.

4.1. Causes of Environmental Externalities

The relatively long process of land acquisition and transfer from indigenous landowners to investors, as observed from the five companies under study, comes with some environmental externalities. When these companies commenced operations, clearing the lands to make ways for plantations, establishing nurseries, building roads, and constructing office buildings, they were not able to resolve all the issues related to land transfer until the last stage. Companies were encouraged by regional governments to demonstrate that they were serious about making investments, as such they focused on making physical progress in the field. In the first year after investment permits were issued, companies were required to open branch offices in the districts, establish office buildings, and create nurseries. Although investors had yet to meet all the requirements before permits could be issued, including their obligation to settle all land transfer issues with the local and customary communities around the concessions, in many cases, they were often given more leeway to commence operating. Such actions on the part of the investors and government are inappropriate and contribute to explaining why land transfers from customary communities often remain unfinished.

However, this simplified and illicit procedure in licensing is favored by most of the actors involved. The companies were quite pleased with the district head's policy, giving them more freedom to speed up their plantation development, although they recognized that they were concerned their

actions would be discovered by authorities from the provincial and central government offices, and by non-governmental organization (NGO) activists watching and investigating their operations and reporting irregularities. Our field evidence indicated that the five companies under study had more or less followed such a *modus operandi*. In a very short period, all the actors benefited from their actions. The companies generated profits from timber sales arising from the logging and land clearing activities. Indigenous clan groups received compensation in proportion to the volume of timber successfully exploited by the company, where the compensation was estimated at IDR 10,000/m³ [38]. Local governments were happy to receive revenue-sharing proceeds from the central government arising from the reforestation fund or Dana Reboisasi (DR), and the forest resource provision or Provisi Sumber Daya Hutan (PSDH), based on a calculation at a rate USD 16 per m³ of timber exploited from the converted forests [39]. Allegedly, there were also some revenues collected by officials from the relevant offices during the stages of permit issuance and supervision. Large wood processing industries, as well as small-scale sawmills, also benefited from the available timber, reducing the deficit in the supply of wood raw materials [40].

Getting involved in the process and becoming part of the game resulted in landowners losing their strong opposition vis-à-vis investors or companies. They became weak as they no longer had control over the land and natural resources during the negotiation process. From the companies' side, land acquisition became easier to resolve, and having received support from local government officials and customary figures, they were able to tackle any associated issues on claims and compensation.

The end result of such inappropriate procedures, particularly land acquisition and transfer of forested lands intended for palm oil plantations, was often massive deforestation and forest degradation at a rate faster than the companies' ability to plant the palm oil crop. Other externalities in the form of erosion, floods, and declining biodiversity have also occurred, which various actors—including the ruling district heads—have often neglected.

4.2. Tenure Insecurity: What Happened to the Transferred Lands?

As mentioned earlier, it took years before the rights of tenure over customary community lands could be transferred to lands that were to be controlled by companies under the business use right (HGU) status. The process of land release is not simple [41,42]. All five operating companies under study are still in the process of negotiation with the nearby clans. One company acknowledged having spent more than six years negotiating with the customary communities and it has yet to succeed in reaching any full agreement on the land transfer. This negotiation process has become prolonged because it is not only caused by lengthy community consultations, but also by the way in which the companies operate and focus their workplans. The companies normally work on one block within the plantation concession and then move to another block. This way, the companies will deal with land transfer issues and negotiate with the concerned clan groups in particular blocks, where they are about to clear the lands and establish plantations. It often occurs that issues related to land transfer and clans' demands for compensation in particular areas cannot be resolved because the companies have yet to start their work plan in the particular area owned by the clan group. The investors often end up acquiring lands using current government regulations, where landowners are forced to relinquish their rights over lands for the sake of advancing "regional development" as termed by the government. The landowners are simply left hoping to obtain a positive return from the investment.

The aforementioned 11 steps which customary community groups and investors must follow seem to represent a normal route. It is indeed unavoidable that transactional costs and additional expenditures arising from the entire process must be borne by landowners. When a clan leader calls for a meeting requiring all clan members to participate, it becomes compulsory for each clan member to attend or organize. The head of the clan needs to provide meals and the clan members need to pay for the transport costs. Since the company has an interest in the internal meetings of the clan, it normally helps with covering some portions of the meeting costs channeled through the clan leader who will later become the clan's representative in negotiating with the company. For the company,

providing help and sharing in the cost of the meeting is a means to demonstrate that the company has a sense of responsibility and caring. On the other hand, for the landowners, it would also mean that they would lose a few weeks of their time and work to attend meetings, especially if there were very large differences of opinion among clan members.

This long process is often ended by a traditional ceremony signing the release of the lands and giving money as compensation for the lost lands, called “compassion-rope” (*tali asih*), where the amounts depend on the area of land released, ranging between IDR 150,000/ha and IDR 350,000/ha (USD 12–28/—currency 2014; 1 USD = IDR 12,500). Uncontrolled expansion of palm oil plantations results in social externalities that occur from the initial stage of the investment. To be fair, for the landowners whose land was relinquished to investors, the costs that arise should be borne by the company.

On a longer time horizon, it was not clear whether the transferred customary lands would later be returned to the original owner once the permit to that land expired. Clan members have become increasingly aware of the issues concerning how the lands that they gave to the investors would be handled. It is largely in communities’ minds that investors only borrow the lands to be developed into plantations and managed during the management period, and that they will eventually be returned to them after the permit expires. An investor receives a business use right (HGU)—a formal permit from the government which is valid for 35 years—to manage and use the lands. It is required that the investors first obtain the consent of the relevant clans of the transferred land, before a formal HGU can be issued. However, it is not clear to the clan who hands over the lands, or whether they will later get the land back. In the case of PTPN II Prafi—a state-owned plantation company in Manokwari, Papua—the company’s HGU right expired, then the management rights were transferred to investors, while only part of the lands covering only limited areas were returned to the original owner.

Additionally, indigenous landowners are not only transferring the rights to their lands to investors, they are also losing their customary rights over the land. Once lands are transferred and converted into palm oil plantations, the traditional connection between the community and these lands is cut off (see stipulations regarding customary lands and communities, as specified in the Agrarian Law and Forestry Laws). There is no longer a strong traditional relationship between the clan and the land, and therefore, based on the formal legal provisions, it is no longer feasible to call the land “customary land”.

The time period during which this land is managed and controlled by investors is long. Normally, a company will maintain control over the transferred land for 60 years, comprised of the original, 35 years plus another 25 years as an extension after the first period has expired. Such a long period across generations causes difficulty in maintaining and tracing the documentation relating to the transfers (e.g., boundaries, size, etc.), and usually witnesses of the transfer event would no longer be alive when the company ends its management period. Relevant documents have never been held and stored by the clans, making it difficult for the next generation to know where the boundaries of the land belonging to their parents were set, and how they were released to the company. Although the younger generation may still know where the boundaries are, owing to changes in landscapes and natural boundaries, it would be hard to find an accurate location.

The transfer of lands from the transmigrants to investors is relatively less conflicted. Usually these lands have the title of certificate issued by the National Land Agency. When concerned companies end their operations and have their permits expire, the lands will be returned to the original owner. The owner only transfers management rights to the investors during the company’s licensing period.

The above practices indicate that the implementation of FPIC (Free Prior and Informed Consent) by investors is only done normatively to fulfill administrative requirements. Consultation and procedures in obtaining the landowner’s approval have been carried out, but the investors and the government have little information on what will happen to the land, how long the investment will be, and whether the land will later return to the clans. To avoid negative consequences of the transferred lands, particularly from the indigenous landowners, it is important that the land agreements are legalized and publicly promulgated.

4.3. Decline in Income and Food Sources

As is the case with customary communities living in rural areas, landowners rely on nearby natural resources for their income, collecting food, and other products. They cannot extract products from other clans' lands, which explains why they only take products from nature and only what is needed and based on their abilities to harvest. In other words, they maintain the level of resource extraction below the actual potential of the resource assets, so that the sustainability of the natural products is maintained in the long term. They are quite satisfied when subsistence needs are met, and they obtain additional cash from selling the excess over what they need.

Differences in income levels between families in one clan group are caused by two factors which are equally strong: the ability to produce/collect and the ability to market. The limiting element that hampers the ability to produce is the limited number of family members involved, the level of expertise, and the tools used. The marketing ability is a determining factor when undertaking collecting activities. Nonetheless, most indigenous people have weaknesses in marketing the products they collect. Since in most cases they are unable to do it by themselves, thus must depend on intermediary buyers who sell the produce to the local market or big traders in the capital. Members of the high-income group are clan members who are better connected with traders.

As mentioned earlier, the release of land and water to companies, tends to affect the livelihood portfolios of clan members, mainly by reducing their cash income. This externality has a serious impact because it will reduce the current level of welfare by at least half in the following years if there is no alternative substitute for income sources. This fact has led clan members who have released their customary land rights to become shocked and start to worry. This highlights the importance of making clear to the communities any information, during the early stages, on the changes in livelihoods and it is essential for the government to put an effective mechanism in place to ensure the recovery of livelihoods of the clan members, before the investors proceed with their activities. This can be part of efforts to fulfill the FPIC principles. The wise step that can be taken is to provide training and assistance, so that people can do more intensive agriculture or work for the companies. As mandated by either the Ministry of Environment and Forestry or the Ministry of Agriculture, companies are required to allocate a maximum of 20% of the concession areas given to the company to assist local communities in building farms through the "plasma scheme" and the remaining 80% as nucleus plantations owned by the company. Yet, no plasma schemes were developed due to a lack of demand by clan members to establish their own oil palm plantations.

4.4. Increase in Type and Amount of Expenditure

The findings of the survey showed that expenditures for food consumption and clothing were similar across families. They bought between one to two sets of clothes every year. Another big expense was on traditional practices, as well as betel nuts and cigarettes. It is not surprising if the components of expenditure on production and investment are not visible, other than savings. In this case, clans (especially those with high incomes) need to be taught to plan expenditures, which involves setting aside a portion of income in productive businesses to generate higher income based on their experience, such as raising fish or making fish ponds, cultivating agarwood and rubber, and fruit.

Large and routine expenditures include the purchase of fuel for energy and transportation by water and motorcycles. It would be good if the government or companies expanded the coverage of the school bus and school boat transportation network routes, so that they could collect the children of land owners from villages, who attend junior high schools located in sub-district capitals. Moreover, the provision of electricity for lighting at night is also important. If these two routine needs can be implemented, family expenses will decrease significantly and their ability to invest as mentioned above could be achieved.

5. Conclusions

Large-scale palm oil plantation development has arrived in Papua, which is considered the last frontier. This is a territory where indigenous customary tenure rights tend to dominate, thus plantation development demands a complicated process for negotiating land transfers. The government's desire to boost investment to generate revenues and improve the local economy has contributed to land acquisition by investors, often leading to unfair land transfers from the indigenous landowners. The lack of oversight by formal authorities to enforce the law and to monitor unfair practices has exacerbated the situation. In addition to negative environmental externalities, this process has generated social externalities for indigenous communities holding the land rights.

Under the current rules, the consultation by companies to customary landowners requires the involvement of the indigenous peoples' organizations at each level before any decisions on land release can be approved. By following the formal procedure, the company achieves recognition and legitimacy from all the owners. This legitimacy becomes a social cost/transaction cost borne by the community in the form of higher additional expenses, loss of work time, and social burden to the next generation. Giving this legitimacy still leaves the same question: Will the land that has been handed over to the companies by the indigenous clan groups later be returned? This concern arises because it is not explicitly stated in the release agreement documents whether companies have an obligation to return the land back to the owners' communities. Indigenous landowners have already lost their resources from the land that has been handed over to the companies. While the compensation for the money given has been used up to replace the lost livelihood resources, it is not certain whether these resources are enough to compensate the negative social externalities.

The government's efforts focus more on how to develop procedures for indigenous peoples to release their lands to companies for investment purposes, and thereby have not put in place the mechanisms to anticipate the negative externalities of large-scale plantation investments on the indigenous peoples who release land, and the proper compensation procedures, as well as guidance on how the land will be returned to the communities once the company rights expire. In addition, given that companies are more inclined to reduce their environmental footprints, particularly in the palm oil sector, additional efforts are required to adopt investment principles that safeguard local communities from paying additional social costs and externalities when releasing their lands. This study highlights issues that must be considered in complex local social contexts such as in Papua.

Author Contributions: Conceptualization and Methodology, A.A., H.K. and P.P.; Field Data Collection and Analysis, A.A. and H.K.; Writing-Original Draft Preparation, A.A. and H.K.; Writing-Review and Editing, P.P.; Supervision and Project Administration, P.P.

Funding: This research was funded by CORDAID through "Large-scale Land Acquisition for Plantation Estates in Indonesia" project, USAID-RDMA through "The Economic Choices and Trade-Offs of REDD+ in the Asia Region" project and USAID through "Governing Oil Palm Landscapes for Sustainability" project, as implemented by Center for International Forestry Research (CIFOR).

Conflicts of Interest: The authors declare that the research was conducted and the paper was prepared in the absence of any conflict of interest.

References

1. Wirantaprawira, W. "Republik Indonesia". Dr Willy Wirantaprawira. 2003. Available online: <https://web.archive.org/web/20070217004508/http://www.wirantaprawira.net/indon/people.html> (accessed on 18 October 2006).
2. Tropenbos Indonesia. *Analisis Tutupan Lahan Hutan dan Faktor-faktor Penyebab Deforestasi dan Degradasi Hutan di Papua*; Center for International Forestry Research: Bogor, Indonesia, 2010.
3. University of Papua New Guinea. *The State of the Forests of Papua New Guinea 2014*. Port Moresby. 2015. Available online: <https://png-data.sprep.org/system/files/The%20State%20of%20Forest%20in%20PNG%202014.pdf> (accessed on 4 January 2019).

4. Mansoben, J.R. *Sistem Politik Tradisional di Irian Jaya, Indonesia: Studi Perbandingan [Traditional Political Systems in Irian Jaya, Indonesia: A Comparative Study]*; Leiden University: Leiden, The Netherlands; The Indonesian Institute of Sciences: Jakarta, Jakarta, 1995.
5. Anderson, T.; Lee, G. Introduction: Understanding Melanesian Customary Land. In *In Defence of Melanesian Customary Land*; Anderson, T., Lee, G., Eds.; Aid/Watch: Sydney, Australia, 2010.
6. Obidzinski, K.; Andriani, R.; Komarudin, H.; Andrianto, A. Environmental and Social Impacts of Oil Palm Plantations and their Implications for Biofuel Production in Indonesia. *Ecol. Soc.* **2012**, *17*. [CrossRef]
7. Gabriel, J.; Nelson, P.N.; Filer, C.; Wood, M. *Kastom, Property and Ideology: Land Transformations in Melanesia*; ANU Press, The Australian National University: Canberra, Australia, 2010.
8. Andrianto, A.; Sedik, B.F.; Waridjo, H.; Komarudin, H.; Obidzinski, K. *The Impacts of Oil Palm Plantations on Forests and People in Papua: A Case Study from Boven Digoel District*; Working Paper 278; CIFOR: Bogor, Indonesia, 2014.
9. Kapp, K.W. *Social Costs, Economic Development and Environmental Disruption*; University Press of America: Lanham, MD, USA, 1983.
10. Peluso, N.L.; Lund, C. New Frontiers of Land Control: Introduction. *J. Peasant Stud.* **2011**, *38*, 667–681. [CrossRef]
11. Bunkus, R.; Theesfeld, I. Land Grabbing in Europe? Socio-Cultural Externalities of Large-Scale Land Acquisitions in East Germany. *Land* **2018**, *7*, 98. [CrossRef]
12. Manurung, E.G.T. *Analisis valuasi ekonomi investasi perkebunan kelapa sawit di Indonesia*; Natural Resources Management Program, USAID: Jakarta, Indonesia, 2001.
13. Kartodihardjo, H.; Supriono, A. *Dampak Pembangunan Sektoral terhadap Konversi dan Degradasi Hutan Alam: Kasus Pembangunan HTI dan Perkebunan di Indonesia*; Occasional Paper No. 26(i); CIFOR: Bogor, Indonesia, 2000.
14. Larkin, S.L.; Huffaker, R.G.; Clouser, R.L. Negative Externalities and Oil Spills: A Case for Reduced Brand Value to the State of Florida. *J. Agric. Appl. Econ.* **2013**, *45*, 389. [CrossRef]
15. Organisation for Economic Co-operation and Development (OECD). *Glossary of Statistical Terms 2007*; OECD: Paris, France, 2007.
16. Badan sertifikasi Nasional. *Metode Penghitungan Perubahan Tutupan Hutan Berdasarkan Hasil Penafsiran Citra Penginderaan Jarak Jauh Optic Secara Visual*; BSN: Jakarta, Indonesia, 2014.
17. Pemerintah Republik Indonesia. *Undang-Undang No 39 Tahun 2014, tentang Perkebunan*; Pemerintah Republik Indonesia: Jakarta, Indonesia, 2014.
18. Bappeda Kabupaten Merauke. *Arahan dan Perencanaan pembangunan dan MP3EI di Kabupaten Merauke*. In Proceedings of the Menyelaraskan Upaya Penurunan Emisi dan Investasi MP3EI Berbasis Lahan Menuju Strategi Pembangunan Rendah Emisi, Kabupaten Merauke, Provinsi Papua, Indonesia, 6–7 May 2013.
19. Ginting, L.; Pye, O. Resisting Agribusiness Development: The Merauke Integrated Food and Energy Estate in West Papua, Indonesia. *Austrian J. South-East Asian Stud.* **2013**, *6*, 160–182.
20. Marshall, A.J.; Beehler, B.M. *The Ecology of Papua, Part One & Part Two*; Periplus Editions (HK) Ltd. and Conservation International: Singapore, 2007.
21. Petocz, R.G. *Konservasi Alam dan Pembangunan di Irian Jaya: Strategi Pemanfaatan Sumber Daya Alam secara Rasional*; Pustaka Grafitipers: Jakarta, Indonesia, 1987.
22. Filer, C.; Napitupulu. *Driver of Biodiversity Loss: A New Guinea Initiative: Preliminary Analytical Studies*; Draft Report for WWF; WWF: Papua, Indonesia, 2007.
23. Frazier, S. Threats to Biodiversity. In *The Ecology of Papua Part One: The Ecology of Indonesia Series Volume VI*; Marshall, A., Beehler, B., Eds.; Periplus: Singapore, 2007.
24. Tropenbos Indonesia and BPKH. *Palm Oil Concession in Papua: Internal Report to CIFOR*; CIFOR: Bogor, Indonesia, 2014.
25. Mudiyarso, D.; Kurnianto, S. *Ecohydrology of the Mamberamo Basin. An Initial Assessment of Biophysical Processes*; CIFOR: Bogor, Indonesia, 2008.
26. Pemerintah Propinsi Kalimantan Tengah. *Naskah Akademis Pengelolaan Perkebunan Sawit Berkelanjutan di Kalimantan Tengah*. 2008. Available online: http://awsassets.wwf.or.id/downloads/draft_naskah_akademik_sawit_kalteng.pdf (accessed on 12 October 2018).
27. Tjondronegoro, S.M.P. *Land Policies in Indonesia. Working Paper, Rural Development and Natural Resources East Asia and Pacific Region*; World Bank: Washington, DC, USA, 2003.

28. Indonesia—Land Tenure and Property Rights Profile. USAID, 2016. Available online: https://www.land-links.org/wp-content/uploads/2016/09/USAID_Land_Tenure_Indonesia_Profile_0.pdf (accessed on 4 February 2019).
29. Singer, B. *Indonesian Forest-related Policies a Multisectoral Overview of Public Policies in Indonesia's Forests Since 1965*; Report is Part of a PhD on Tropical Forest Policies at the Institut d'Études Politiques and CIRAD, France; 2009.
30. Verschurere, J.; Tenure, M.A.L. (Eds.) Papua Web. Available online: <http://papuaweb.org/dlib/s123/index.html> (accessed on 12 December 2019).
31. Pemerintah Republik Indonesia. *Undang-Undang No 5 tahun 1960 tentang Peraturan dasar pokok pokok Agraria*; Pemerintah Indonesia: Jakarta, Indonesia, 1966.
32. Pemerintah Republik Indonesia. *Undang-Undang No 21 Tahun 2001 tentang Otonomi Khusus bagi Provinsi Papua*; Pemerintah Republik Indonesia: Jakarta, Indonesia, 2001.
33. International Crisis Group. *Indonesia Human Right Report: Communal Tensions in Papua*; Asia Report No. 154; International Crisis Group: Brussels, Belgium, 2008.
34. Papua Web. Arsip Dokumen Penelitian Papua. Available online: <http://papuaweb.org/dlib/index.html> (accessed on 12 December 2018).
35. Colchester, M.; Chao, S.; Dallinger, J.; Sokhannaro, H.E.P.; Dan, V.T.; Villanueva, J. *Oil Palm Expansion in South East Asia: Trends and Implications for Local Communities and Indigenous Peoples*; Forest Peoples Programme and Sawit Watch: Bogor, Indonesia, 2011.
36. Zakaria, R.Y.; Kleden, E.O.; Franky, Y.L. *MIFEE Tak Terjangkau Tangan Malind* ['MIFEE is an unattainable dream for the Malind people']; Yayasan Pusaka: Jakarta, Indonesia, 2011.
37. Forest Peoples Programme, Pusaka and Sawit Watch. *Manis dan Pahitnya Tebu: Suara Masyarakat Adat Malind dari Merauke, Papua*; Forest Peoples Programme, Pusaka and Sawit Watch: Jakarta, Indonesia, 2013.
38. Gubernur Provinsi Papua. *Keputusan Gubernur Provinsi Papua Nomor: 64 tahun 2012: Standar kompensasi atas hasil hutan kayu dan hasil hutan bukan kayu yang dipungut pada areal hak ulayat masyarakat hukum adat*; Gubernur Provinsi Papua: Jayapura, Papua, 2012.
39. Pemerintah Republik Indonesia. *Peraturan Pemerintah Republik Indonesia Nomor 12 Tahun 2014: Jenis dan tarif atas jenis penerimaan negara bukan pajak yang berlaku pada kementerian kehutanan*; Pemerintah Republik Indonesia: Jakarta, Indonesia, 2014.
40. Obidzinski, K.; Dermawan, A.; Andrianto, A.; Komarudin, H.; Hernawan, D.; Fripp, E. *Timber Legality Verification System and the Voluntary Partnership Agreement in Indonesia: The Challenges of the Small-Scale Forestry Sector*; Working Paper 164; Cifor: Bogor, Indonesia, 2014.
41. Takeshi, I.; Rachman, N.F.; Savitri, L.A. Power to Make Land Dispossession Acceptable: A Policy Discourse Analysis of the Merauke Integrated Food and Energy Estate (MIFEE), Papua, Indonesia. *J. Peasant Stud.* **2014**, *41*, 29–50.
42. Nepcon. *Palm oil Risk Assessment Indonesia—West Papua. Country Risk Assessments. Version 1.1.* Available online: www.nepcon.org/sourcinghub (accessed on 1 August 2017).



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).