Impacts of oil palm plantation on the livelihood of the local communities and the conservation area

Sudarsono Soedomo
Department of Forest Management, Bogor Agricultural University, Darmaga, Bogor, Indonesia

*E-mail: ssoedomo@gmail.com

Abstract. Oil palm plantations have created so many controversies, particularly their impacts on the environment and the livelihood of the local communities. The controversies are usually raised by non-governmental organizations working on environmental and social-related issues. This paper focuses on the socio-economic impacts of plantation development. To observe what is going on, case studies were conducted in two villages strongly influenced by the development of oil palm plantation. The research finds out that those controversies are generally exaggerated. In general, economically the local communities benefit from the development of oil palm plantations. It does not mean that the negative socio-economic impacts are absent, but those impacts are manageable and have been addressed seriously, particularly when the plantation involves a member of Roundtable on Sustainable Palm Oil (RSPO). The real issue is not yes or no towards oil palm plantation, but rather how to develop oil palm plantation justly.

1. Introduction
Many negative issues have been associated with the development of oil palm plantation, particularly environmental and social-economic issues. The main environmental issues are deforestation and CO2 emission [1], while the main social-economic issues are land-related conflict and the loss of traditional livelihoods. According to [2], oil palm has not been a major driver of deforestation. Much of the forest in Jambi was cleared more than 20 years ago, and rubber was an established cash crop long before the oil palm boom started. However, oil palm growth occurs in locations with ongoing logging activities, so indirect effects on deforestation are possible. The average opposite position was taken by [3]. This paper focuses on socio-economic issues.

If the ownership ratio between corporations and smallholders is used to measure inequality and just level, then forestry businesses on the state lands are the most unequal and unjust since corporations own nearly 100% of those businesses. Meanwhile, nearly 40% of 11-12 million ha of the oil plantations in Indonesia is owned by smallholders. In addition, the communities living within or near forests are generally the most deprived communities. The question is why people all over the world are more concerned with inequality and unjust in the oil palm industry rather than in the forestry industry? Is there any sort of hypocrisy here?

In general, the productivity of smallholder oil palm plantation is lower than that of the corporate oil palm plantation. However, with a strong institutional arrangement, [4] found that by collective action smallholder oil palm production system outperformed its nucleus estate plantation, which is the corporate plantation. Its institutional setup allowed farmers to combine the advantages of small-holder and plantation agriculture by capitalizing on collective action.
Institutionally, social issues and impacts related to oil palm plantations have been better addressed. RSPO requires all of its members to conduct social impact assessment (SIA) and free prior informed consent (FPIC). RSPO has principles and criteria that must be fulfilled by each member. There are eight principles in the RSPO, in which RSPO members are required to undertake a social impact assessment as outlined in principle six on “Responsibility to workers, individuals and communities affected by plantation and palm oil mills.” That way the company must carry out SIA activities as one of the requirements to obtain or retain RSPO certification.

As suggested by [5], many smallholders have benefited substantially from the higher returns to land and labour afforded by oil palm, but district authorities and smallholder cooperatives play critical roles in the realization of benefits. Conflicts between communities and companies have resulted almost entirely from the lack of transparency, absence of FPIC and unequal benefit sharing, and have been exacerbated by the absence of clear land rights.

2. Objective

The objective of this paper is to know direct and indirect socio-economic impacts of oil palm plantation through case studies. Although this paper was built by case studies in two villages, which are Teluk Pulai Village in Kalimantan Tengah and Sungai Melayu in Kalimantan Barat, the two companies involved are also operating in many other places with more or less similar standard operating procedures, especially in dealing with social issues. Indeed, adjustments to meet local specific needs have been made whenever necessary.

3. Methods

Studies were conducted in two villages by interviewing several farmers and the leaders of the villages. The two villages are Teluk Pulai and Sungai Melayu. The Teluk Pulai Village is located in the District of Kota Waringin Barat - Province of Central Kalimantan and the Sungai Melayu Village is in the District of Ketapang - Province of West Kalimantan. In-depth interview were conducted to gain deep insights into the respondent’s experience prior to and during the partnership with the companies. Respondents included village leaders (village heads and village secretaries), cooperative managers, community leaders, and oil palm farmers. Confirmation, especially for the case of Teluk Pulai Village, interviews with TNTP managers were also carried out. Questions were raised mainly to motivate the respondents to respond in-depth.

The two villages have established a partnership with the oil palm companies, which are PT. Andalan Sukses Makmur (PT. ASMR) with the Teluk Pulai Village and PT. Inti Sawit Lestari (PT. ISL) with the Sungai Melayu Village. The fundamental key of the partnership is nucleus-plasma relation, where the company is the nucleus, and the community of the villages is the plasma.

Before visiting the villages, we collected information regarding land conflict and any negative view associated with the oil palm plantation nearby. Helped by two assistants, this research was done by holding focus group discussions and reviewing the reports and documents.

Having arrived in Teluk Pulai village, we met the village leader to express our intention for visiting the village. In essence, this was the first person interviewed in the village. This subject was then asked for the names of other people who could provide more information regarding the research topic. Certainly, it was not a probabilistic sampling. I stopped asking for a new respondent when the previous stories provided had reached a strong convergence or consistency. The same process was repeated in Sungai Melayu Village. There were 11 respondents in Teluk Pulai Village and 16 respondents in Sungai Melayu Village. The main issues explored are (1) what are the roles that the companies have done that affect their lives, (2) what is the impact of oil palm development on their livelihoods, and (3) how do they view the issues of land conflicts.

The data gathered from the respondents were examined to see their consistencies and coherence. The data were then arranged to construct more meaningful insights and on the basis of those insights the conclusions are derived.
4. Results
4.1 Teluk Pulai Village
4.1.1 The main issues
The Teluk Pulai Village is an isolated village because there is no road connecting this village and other villages. The only way to reach this village is through water transportation. The village had existed away before the designation of the Tanjung Puting National Park (TNTP), even before the independence of Indonesia. For a living, they practice shifting cultivation and collect forest products from the forests surrounding their village. The community was isolated and lived in very poor condition. In the first step of state forest land establishment, the village was included as a part of state forest land. The people of Teluk Pulai Village felt that there was no economic prospect to live in the village. To express how poor the condition it was, any credit application made by anyone from the village always ended up with a rejection. The community as a whole was marked by having an extremely high credit risk. Some households migrated to neighbouring cities, such as Pangkalan Bun. The population of Teluk Pulai Village dropped. The local community calls this period as a darkness age to illustrate that there was no future to live in the village.

In an amazing moment, the Head of the TNTP visited the field, in which Teluk Pulai Village was still included, and he realized the situation; the land is not suitable to be included as a part of a national park. The head agreed to exclude Teluk Pulai Village from the TNTP. Legal processes of separation were immediately initiated. Finally, the existence of Teluk Pulai Village has been acknowledged legally by the government. After the acknowledgement, the leaders of the village searched for an investor of oil palm plantation. Even though the land available in the village is less than the smallest economical size for a unit of oil palm plantation, in fact, there is an enterprise that is willing to develop oil palm plantation in the village, PT. ASMR. It is quite reasonable when the community also supports the presence of the company in its village as suggested by [4].

Three parties, which are the community, the TNTP, and the company, who have different objectives can work together. The TNPT awarded the community a planting tool to help the community to utilize the land with less labour.

4.1.2 Role of the corporation
The company developed oil palm plantation for its own and the community. The available land has been split into two parts, for the community and the company. In return to the land handed over to the company, the company agreed to develop oil palm plantation for the community for free. Moreover, the management of all oil palm plantations is orchestrated by the company. The company purchases the FFBs produced by the community's plantations at a reasonable price. Well-designed contracts are very critical here [6]. The net profit, however, is given to the community and the community itself conducts the distribution of the profit among the community members.

The company offers employment to the community members who are within the product range of age, which is 18 to 55 years. Usually, they are employed in the community’s plantations because of the distance from the settlement. Although in essence, those people work in their own plantation, they ought to follow the direction given by the company and receive a regular wage.

In addition, the company also developed a communal farm field to grow annual plants, such as rice, corn, and vegetables. The farm field is controlled and managed fully by the community. The household who is interested in using the land can send a request to the community leader. Usually, the household will be given one to two ha. So far, very few households have been interested in using the land due to available labour force in the households.

\[1\] There are four steps to fully establish a state forest land: designation, boundary arrangement, mapping, determination
4.1.3 The social-economic impacts
The livelihoods of the local community have been improved and diversified. Although the main activities are still related to the land, they employ better technologies leading to higher productivity. More importantly, these activities can be conducted near their settlement: working on their own land, community land, or working for PT. ASMR as an employee. In effect, the average income becomes higher and more stable. These improved livelihoods have interesting implication for the utilization of the TNTP and the education of a young generation.

In relation to the TNTP, the villagers have better and broader choices in their home rather than go to the TNTP for forest products. Although Teluk Pulai Village is the nearest village to the TNTP, the population of the village is not a threat to the TNTP; it used to be, but it is no longer today. Oil palm plantations, in this case, play a vital role in reducing pressure on the conservation areas, which is the TNTP. In addition, the people of Teluk Pulai Village have a strong concern with the sustainability of the TNTP, because they benefit from it; they provide places for swift birds to nest and the birds hunt the food mostly in the TNTP. The nest of the swift birds provides amazing income ranging from IDR 8 million to 167 million a month.

With more stable and higher income, the people of the Teluk Pulai Village have no hesitation to send their kids to big cities for education. The parents realize that the resources in the Teluk Pulai Villages are very limited to accommodate its growing population in the long run. The plausible way to respond to this situation is to equip their kids with better knowledge and technology. For this reason, the people of the Teluk Pulai Village are very enthusiastic in encouraging their younger generation to acquire better education.

Emotionally, self-esteem and self-confidence of the Teluk Pulai villagers have blossomed again. They are no longer seen as people who are at high risk in financial matters. Much credit is offered to them.

4.2 Sungai Melayu Village
4.2.1 The main issues
The population of this village, especially the ones who rely on oil palm for a living has experienced up and down with oil palm plantation. There was a period when the oil palm plantation provided a prosperous livelihood, followed by a catastrophic period, and today the community is enjoying a flourishing period. The rolling livelihood is determined by the price of the fresh fruit bunch (FFB) of oil palm.

The oil palm plantations consist of smallholders’ plantations and corporate plantations. The smallholders’ plantations include the Transmigration Nucleus Estate (PIR-TRANS) sponsored by the government, and independent plantations developed privately by indigenous people. The participants of the program are indigenous people and the ones coming from Java Island; each household received two ha of oil palm plantation. Moreover, the corporate plantations were owned by PT. Benua Indah. The areas of the nucleus, the plasma, and the independent plantation were 3,810 ha, 17,902 ha, and 3,660 ha respectively.

Besides possessing oil palm plantation, PT. Benua Indah runs a Crude Palm Oil (CPO) mill. The plant processed the FFB supplied by its own plantation and the small holder’s plantation. As a matter of fact, the community and PT. Benua Indah were involved in a partnership. In the beginning, PT. Benua Indah was running well and able to purchase the FFBs from the farmers at a profitable price. The livelihood of the community was promising since some of them were self-employed in their own plantation and some others were employed by PT. Benua Indah.

Mismanagement drove the company to the bankruptcy. The plantation and the processing plant were abandoned in 2008. The impact on the livelihood of the people relying on the oil palm plantation was quite devastating because the price of the FFB was very low. Some indigenous people occupied some of the company’s plantations for the FFB. This occupation was the seed of the land conflict when the plantation was taken over by another company, which is PT. ISL, in 2015. Some plantations under
occupation were well maintained, some plantations were half-maintained, and the rests were merely harvested. Indeed, the quality of the plantations was not uniform when the plantations were taken over.

Although the land conflict was actually pseudo conflict, PT. ISL decided to choose non-litigation processes by showing its willingness to pay compensation. The compensation depended on the quality of the plantation that was categorized into three levels. The compensation was IDR 1,500,000, IDR 1,000,000, and IDR 500,000 for the high, middle, low quality respectively. New plantations replaced the low-quality plantation. When the study was done, some plantations were being assessed for the compensation. Being driven by its own agenda, there was an NGO that calls this kind of situation as a conflict of land between the local community and the company. Instead of helping clarify the real situation, the NGO exaggeratedly capitalized the phenomenon for its own interest.

4.2.2 Role of the corporation

Basically, the role of PT. ISL is to continue what PT. Benua Indah usually did, which to purchase the FFB produced by smallholders’ plantations at a reasonable price. PT. ISL is not involved in the management of the smallholders’ plantations.

Another role of PT. ISL is to provide employment. The plantations of 6400 Ha in size can accommodate 700 labours, while the CPO mill with a capacity of 45 ton FFB an hour needs 120 to support. However, until 2018 the number of workers absorbed has only reached 250 because most of the plantations are still under construction.

The estate roads built to support the management of the plantation in fact can be used by local communities to access various services, such as health, education, and market. Indirectly, the oil palm plantation contributes to the improvement of the welfare of the community who has no relation to the plantation. The estate roads also facilitate the delivery of electricity service to the villages that used to be isolated. In addition, PT. ISL has also contributed regularly to the maintenance of the main road, which is actually under the responsibility of the local government.

4.2.3 The social-economic impacts

Economic activities increase significantly. The purchase of the FFBs by PT. ISL’s CPO mill at reasonable prices has encouraged the local people to grow oil palm independently. There is a land use change toward oil palm in this case. In effect, the demand for land, especially for growing oil palm, increase that in turn jacks the price of land up. This finding is consistent with the one suggested by [7]. Moreover, the activities of growing oil palm have forward and backward linkages, such as provision of fertilizers, oil palm seedling, pesticides, transportation services, and even food. It is well known as the multiplier effect. In Siak of Riau Province, it was found that the multiplier effect of oil palm plantation is 3.01 [8]. In addition, the independent oil palm plantation can be used as collateral for borrowing money from a bank for starting new businesses. Since the oil palm plantations are more reliable collateral compared other types of plantations, the appraisal value of the oil palm plantations is usually also higher. In other words, the oil palm plantations open broader opportunities for investment. In addition, [6] show that oil palm has lower labour requirements than alternative crops (especially rubber), so that adopting farmers are able to manage larger land areas. Labor saved through switching from rubber to oil palm is also used to increase off-farm incomes. Furthermore, [6] also show that oil palm adoption improves household living standards and nutrition.

Higher and more stable income is enjoyed by the member of the community who joins the company. It is quite consistent with [9] who suggest that further expansion of the oil palm area will likely benefit non-farm households through gains in employment income. Employment in oil palm is more rewarding than employment in rubber, so involved in the oil palm sector as a labourer is positively associated with total household income. This positive effects on farmers’ livelihoods are also suggested by [10]. Furthermore, the economic gains allow farm households to increase their consumption.

More and better roads make the village have better accessibility leading to lower transportation costs. Some agricultural products that used to be uneconomical to be brought to the market become
economical. As a result, the people of the village become more market-oriented. This process also generates additional income for the community.

5. Discussion
The expansion of oil palm plantation seems to be unstoppable until it stops itself due to profitability. So long the oil palm plantation is still the most profitable plant species, then it is difficult to stop its expansion. As suggested by [11], oil palm is one of most profitable land use in the humid tropics attracting local people, corporations, and nations to promote it. In addition, oil palm is widely considered by communities as the best option for meeting their financial needs [5]. Why should we stop it anyway? Like any other plantation, certainly oil palm plantations have negative and positive sides. The fact that oil palm plantation has expanded sharply in recent years, more or less 40% of which is owned by smallholders, it indicates that the growers quite prefer oil palm. The real issue is not how to stop its expansion, but how to make the expansion more beneficial to more people. Oil palm plantation has contributed to the alleviation of rural poverty [11].

While the impact on the welfare improvement of the local communities is so obvious, the development of oil palm plantation is consistently hampered, for example, by introducing a requirement of conducting SIA and FPIC. SIA and FPIC should be applied to forest resource also. So far, the requirement of SIA and FPIC be applied to oil palm plantation but not to forest resource. We might see a community whose income is mostly derived from collecting forest products. Does it mean that the community wants to maintain its lifestyle forever? It does what it could be because it has no other choice or some other reasons. However, certainly, it is misleading to conclude that the community definitely wants to stay in the current lifestyle. As [12] suggest, isolated communities in Indonesia such as Baduy, Kajang, Mentawai, some Dayak groups, Bajau, and others who live in remote parts of the archipelago are all seeking improvements in their material well-being. Therefore, we need to ask such a community to express its aspiration regarding its futures. It is quite possible that the community has been a victim of the tyranny of experts [13]. Since the price of CPO on international market is variable, farm households depending on the oil palm plantation become more vulnerable to external shocks [9]. What happens in the global market will be transmitted rapidly and directly to the households. However, the phenomena have happened with rattan, rubber, cacao, and many other commodities. In other words, fluctuating income and livelihood of farm households are not new phenomena. Nevertheless, any attempt to reduce the vulnerability of the farm households to external shocks is helpful.

Conflict over land is a sensitive issue frequently raised by NGOs. In case of Teluk Pulai Village, there is no issue of land conflict. The community voluntarily hand over the community's land to the company to obtain developed oil palm plantations in return. Meanwhile, different situation was found in Sungai Raya. At glance, it seems that conflicts over land were real. In fact, this issue was raised by NGOs. There were land compensations given by the company to the parties occupying the land. Certainly, those compensations make the conflicts more real. However, when we take a look more closely, we have a different conclusion. Historically, the oil palm plantations were owned legally by a company but then abandoned due to bankruptcy. Some individuals from local community took advantage by occupying the abandoned plantations and harvesting the FFBs. Those occupied plantations could be classified into three categories of management intensity, which were high, medium, and low. A couple of years later, PT. ISL took over the plantations legally and found that some parts of the plantation had been occupied. Instead of choosing hostile approaches, PT. ISL preferred a peaceful approach by offering a compensation according to the management intensity level.

The corporate culture and the local culture do not always match. This is the main reason why employment offered by the company often cannot be capitalized by most of the local people. For example, the company employs a rigid time schedule and a certain level of performance that can rarely be met by most of the local people. Of course, blaming each other will not lead to a settlement. What both sides need to do is to learn together to narrow the gap. The problem is that narrowing such a gap takes a while that puts an additional burden on the company.
An interesting phenomenon was found in Teluk Pulai where oil palm plantations meet a conservation area named TNPT. The TNPT is not being threatened by the plantations, but rather be protected. The people of Teluk Pulai who used to collect forest products from the TNPT choose to stop those kinds of activities because they have the better opportunity by working in the oil palm plantations situated around their settlement. The key success here is the responsible engagement of all relevant stakeholders in addressing the need of the community to have better lives. Perhaps we need to learn more from this little success rather than searching for more complicated strategies [14].

6. Conclusion
In general, the socio-economic impacts of oil palm plantation based on this research, were not as negative as what often were claimed/declared by many NGOs. Conflicts over land claimed by NGOs are not always real conflicts. Many of them are generated by speculative claim over lands that are capitalized exaggeratedly by NGOs. Moreover, an astonishing phenomenon is found in Teluk Pulai Village, where the improvement of livelihood can play a vital role in protecting a conservation area. The oil palm plantations improve the livelihood of the local community as a whole directly as well as indirectly. The direct improvements are materialized mainly through the FFB trade and employment. The indirect improvements are generated by better accessibility and increased economic activities in their community.

In the case of Teluk Pulai Village, the improvement of the livelihood generates positive impacts on the TNTP. The villagers consider the opportunity costs of entering the TNTP for collecting forest products become too high. They prefer to use the TNTP services indirectly by providing a place for swift birds, which hunt food in the national park area, to nest. Meanwhile, their own time is used for farming around their settlements. In short, the improvement of livelihood can play a vital role in protecting a conservation area.

Acknowledgments
We would like to thank Pandhega Paramagama for precious help in preparing the manuscript, Hangga Prihatmaja and Anggiana Ginanjar Adinugraha for collecting field data, and the participants of the conference for useful suggestions. My sincere appreciation goes to reviewers.

References
[1] Bueno, M. A. F. and M. E. M. Helene (1991). Global deforestation and CO2 emission: Past and present. A comprehensive review. Energy & Environment 2 (3), 235–282
[2] Gatto, M., M. Wollni, and M. Qaim (2015). Oil palm boom and land-use dynamics in Indonesia: The role of policies and socioeconomic factors. Land Use Policy 46, 292 – 303
[3] Susanti, A. and A. Maryudi (2016). Development narratives, notions of forest crisis, and boom of oil palm plantations in Indonesia. Forest Policy and Economics 73, 130 – 139
[4] Jelsma, I., M. Slingerland, K. E. Giller, and J. Bijman (2017). Collective action in a smallholder oil palm production system in Indonesia: The key to sustainable and inclusive smallholder palm oil? Journal of Rural Studies 54, 198 – 210
[5] Rist, L., L. Feintrenie, and P. Levang (2010). The livelihood impacts of oil palm: smallholders in Indonesia. Biodiversity and Conservation 19 (4), 1009–1024
[6] Euler, M., V. Krishna, S. Schwarze, H. Siregar, and M. Qaim (2017). Oil palm adoption, household welfare, and nutrition among smallholder farmers in Indonesia. World Development 93, 219 – 235
[7] Obidzinski, K., R. Andrianti, H. Komarudin, and A. Andrianto (2012). Environmental and social impacts of oil palm plantations and their implications for biofuel production in indones. Ecology and Society 17
[8] Agustira, M. A., R. F. Raola Jr., A. J. U. Sajise, and L. M. Florece (2015). Economic impacts of smallholder oil palm (Elaeis guineensis jacq.) plantations on peatlands in Indonesia. Journal of Economics, Management & Agricultural Development 1 (2), 105–123
[9] Cahyadi, E. R and Laurence, W. (2009). Is contract farming in the Indonesian oil palm industry pro-poor? Journal of Southeast Asian Economics 30(1), 62-76

[10] Kubitza, C., V. V. Krishna, Z. Alamsyah, and M. Qaim (2018). The economics behind an ecological crisis: Livelihood effects of oil palm expansion in Sumatra, Indonesia. Human Ecology

[11] Sayer, J., Ghazoul, J., Nelson, P., and Boedhihartono, A. K. (2012). Oil palm expansion transforms tropical landscapes and livelihoods. Global Food Security 1, 114-119

[12] Boedhihartono, A. (2017, 03). Can community forests be compatible with biodiversity conservation in Indonesia? Land 6

[13] Easterly, W. (2014). The Tyranny of Experts: Economists, Dictators, and the Forgotten Rights of the Poor. Basic Books

[14] Wilcove, D. S. and L. P. Koh (2010, 04). Addressing the threats to biodiversity from oil-palm agriculture. Biodiversity and Conservation 19, 999–1007