Livelihood Framework in Analyzing Decision-Making Process of Oil Palm Smallholders for Intensification and/or Expansion

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Abstract

To meet the high global demand of oil palm and decrease the negative environmental impact of oil palm at the same time, there is a support for oil palm producers, including smallholders, to improve their productivity in the existing land (intensification), instead of creating new plantings (expansion). In this research, I focus on Petaling area, especially Sido Mukti village, in Jambi to analyze which factors and how these factors affect smallholders' decision in intensification and expansion. In this case study, by using the livelihood framework and the concept of terms of incorporation, I analyzed how historical background of smallholders, the relationship between smallholders and local organizations, and access to capitals affect smallholders' decisions and practices in intensification and expansion. Certification is addressed as a factor in the analysis of the relationship between smallholders and local organizations. This study found that the main factors for smallholders to decide for intensification are access to inputs, access to knowledge about better management practices, labour issues, and certification. Regarding the expansion, it is found that smallholders' decision for expansion depends on the type of the land and access to financial capital. Transmigration and Nucleus Estate Scheme (*Perkebunan Inti Rakyat*/PIR) programs from the government compared to spontaneous oil palm planting are the basic reasons of the different decisions and practices of smallholders for intensification and expansion. Moreover, the dynamic relationship among smallholders and companies, the role of NGOs, and the involvement of certification in the oil palm management are the indirect factors that affect smallholders' decision and practices in intensification and expansion.

Keywords: Oil palm, intensification, expansion, livelihood, terms of incorporation

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List of Abbreviations

BGR	: Bahari Gembira Ria
BMP	: Better Management Practices
BPDP	: *Badan Pengelola Dana Perkebunan* / The plantation fund management agency
BPN	: *Badan Pertanahan Nasional*/The National Land Agency
CPO	: Crude Palm Oil
Disbun	: *Dinas Perkebunan* / The Estate Department
EFB	: Empty Fruit Bunch
FFB	: Fresh Fruit Bunches
HCV	: High Conservation Value
IOPRI	: Indonesian Oil Palm Research Institute (*Pusat Penelitian Kelapa Sawit*/PPKS)
ISCC	: International Sustainability and Carbon Certification
ISPO	: Indonesian Sustainable Palm Oil
KKPA	: *Kredit Koperasi Primer untuk Anggota* / Primary Cooperative Credit for Members
KUD	: *Koperasi Unit Desa* / Cooperatives
NGO	: Non-Governmental Organizations
OER	: Oil Extraction Rate
PAL	: Prosympac Agro Lestari
Permentan	: *Peraturan Menteri Pertanian* / The regulation from the Ministry of Agriculture
PIR	: *Perkebunan Inti Rakyat* (Nucleus Estate Schemes/NES)
PPE	: Personal Protective Equipments
REDD+	: Reducing Emissions from Deforestation and Forest Degradation
RSPO	: Roundtable on Sustainable Palm Oil
SNV	: Netherlands development organization
TPH	: Tempat Pengumpulan Hasil / The collection point
TUS	: *Tim Unit Semprot* / Spraying team unit

INTRODUCTION

1.1. Oil Palm in Indonesia

Indonesia is the main producer of oil palm products, followed by Malaysia and Thailand (FAO, 2014). Not only for internal demand, oil palm products in Indonesia are also exported mainly to China, India, and the Netherlands (Susanti & Burgers, 2011; Hamilton-Hart, 2015). Oil palm is one of the crops that have a significant contribution to the national income in Indonesia. The expansion of oil palm production increased remarkably. Based on the data from Directorate General of Estate Crops (2016), the production of oil palm increased from 48 thousand ton to 6.7 million ton over the last 46 years. This production escalation is in line with the increase of areas for palm oil cultivation. Oil palm area in Indonesia increased from more than 133,000 hectares in 1970 to 11.3 million hectares in 2015 (Directorate General of Estate Crops, 2016). Moreover, the Indonesian government plans to widen the oil palm area to 18 million hectares in 2020 (Tarigan, Sunarti, & Widyaliza, 2015). Nowadays, Sumatra and Kalimantan are the main islands for oil palm development in Indonesia (Tarigan et al., 2015; Susanti & Burgers, 2011).

This research focuses on Jambi Province in Sumatra, one of the main areas for oil palm development in Indonesia. This research was held in Petaling area, especially Sido Mukti Village, Sungai Gelam Sub-district, Muaro Jambi District, Jambi Province, Indonesia. This research area is chosen because it is part of the main area in oil palm development with high yield gap (Euler et al, 2016a; Woittiez et al, 2018) that can be resolved through intensification. In this area there is also a possibility of implementation of certification. Furthermore, in the Petalng area suitable land that is free to cultivate becomes scarce and expansion spills over to other areas. In 2015, Jambi province has 736,514 hectares area of oil palm with 1,947,048 tons of production. In this area, 63% is under smallholders' management, and the rest is owned by the state and private companies (Directorate General of Estate Crops, 2016). Compared to other plantation crops like rubber, coconut, and cassiavera, oil palm is the number one crop in productivity. While based on the areas, oil palm is the second widest area after rubber (Central Bureau of Statistics Jambi Province, 2017). In Muaro Jambi District, the area for oil palm development reached 97,552 hectares with 187,643 tons of production (Directorate General of Estate Crops, 2016). Per 2016, Jambi Province is inhabited by 3.5 million people, with more than 861,000 households. In Muaro Jambi District, per 2016 there are more than 410,000 inhabitants with more than 102,000 households (Central Bureau of Statistics Jambi Province, 2017). It shows that averagely, one household in Jambi has four family members.

Some research shows the positive impacts of oil palm development. Based on research by Susila (2004) in Indonesia, oil palm has positive contributions to economic growth, poverty alleviation, and income equity improvement. Oil palm activities contributed to around IDR 5-11 million (EUR 317-696) for more than 63% of the household income of smallholders in Kampar and Musi Banyuasin in Indonesia (Susila, 2004). Based on research result in Jambi, there are some reasons why farmers chose to move from rice and rubber cultivation to oil palm, especially for scheme smallholders. Dependent (scheme) smallholders had access to good quality seedlings and

technical assistance (Feintrenie, Chong, & Levang, 2010). Smallholders had a higher return to labour in oil palm than in rubber plantations because of the low labour requirements in Fresh Fruit Bunches (FFB) harvesting during the productive stage. This return to labour is measured through net added value from one hectare of land divided by the number of working hours for one hectare of land (Feintrenie et al., 2010). This calculation comes from researchers, so different results might be found if smallholders' calculation is used. The high return on investment and contract with company and bank for dependent smallholders also are advantages that farmers got from oil palm plantation (Feintrenie et al., 2010). Farmers mentioned that instead of giving their land to the company, they prefer to produce the oil palm by themselves and let the company focus on processing and marketing FFB and technical supervision for smallholders' plots. Farmers said that they do not care about deforestation and loss of biodiversity as long as deforestation could develop their economic situation and improve their livelihood (Feintrenie et al., 2010). The research by Rist, Feintrenie, and Levang (2010) in Sumatra and Kalimantan shows the same result. Smallholders mentioned that oil palm development is the best option for them to fulfill their financial needs. This research concludes the positive impact of oil palm development on farmers' income in the short term. However, the long-term economic impact of oil palm development remains uncertain. Aside from that, this research did not analyze how oil palm development has non-monetary effect on farmers (Rist, Feintrenie & Levang, 2010), like the effects on the environment, biodiversity, and human rights.

Not all smallholders in oil palm development could get positive economic impacts. In some cases, local people tend to resist expansion because of their negative perception of palm oil development on their livelihood and environment (Abram et al., 2017). The different impacts from oil palm development depend on the terms under which smallholders are involved in oil palm development (McCarthy, 2010). Negative effects of oil palm development not only have emerged in economic aspects, but also in social and environmental aspects. Sirait (2009) explained how oil palm development in West Kalimantan led to social conflicts. As can be seen from the results of oil palm-community conflict mapping in Indonesia (Abram et al., 2017), conflicts between companies and communities were strongly correlated with the probability of deforestation. The other causes of the conflict are broken promises and lack of consultation and compensation (Abram et al., 2017). Oil palm development also has negative effects on the environment, like deforestation, biodiversity loss, and carbon emission (Koh & Wilcove, 2008; Fitzherbert et al., 2008; Carlson et al., 2012).

These contrasting impacts of involvement in the oil palm sector on smallholders livelihoods show that the conditions and arrangement that smallholders have in incorporating in oil palm sector need to be taken into account (McCarthy, 2010). McCarthy (2010) uses terminology 'terms of incorporation' in explaining this. In this research, by using livelihood as a framework, I study the different terms under which smallholders are involved in oil palm sector and how it relates to their decision-making process for intensification and/or expansion.

1.2. Problem Statement

Led by the increasing global demand of oil palm, producers in oil palm development try to maximize the production, while at the same time the quality of life of local people have to be increased and negative effects to the environment have to be reduced. In order to improve the productivity, producers of oil palm have two options, which are intensification and/or expansion. Intensification is defined as the process to increase productivity on existing land (Cramb, 2011). In this research, besides the increase of the amount of yields, I also define intensification as a process to improve the quality of FFB. Meanwhile, expansion is the establishment of agricultural practices towards new land (Cramb, 2011). Sayer et al. (2012) claim that expansion of oil palm area is unavoidable because the population in the world keeps increasing and leads to the increasing demand of palm oil, even though intensification is implemented. Expansion is not only done by smallholders to increase their yield, but is also done by companies. In the long term, companies attempt to intensify their productivity, but because of the future land scarcity, in the short term they need to expand as much as possible to invest and anticipate the future rising demands (Sayer et al., 2012). However, the research by Afriyanti, Kroeze, and Saad (2016) forecast that Indonesia could still meet 39-60% of the global demand in 2050 without deforestation and peatlands conversion. To meet the future global demand, intensification with better management practices is needed, including the use of fertile land, better planting materials, providing sufficient nutrients and water, and preventing the risk of pests and diseases (Afriyanti, Kroeze, & Saad, 2016).

In relation to intensification, smallholders' yield productivity in Indonesia has the possibility to be improved by 50% while government's and private's plantation productivity could still be improved by 10-15% (Soliman, Lim, Lee, & Carrasco, 2016). Specifically in Jambi, oil palm cultivation still has a big potential to be improved. The research result from Euler et al. (2016a) in Jambi shows that cumulatively during 25 years of plantation life cycle, oil palm smallholding systems only obtain 50% of exploitable yield averagely. This shows that there is big chance for smallholders to increase their productivity. This research quantifies the yield gap, which is defined as the difference between exploitable yield and the realized yield. The graphic below shows the comparison between potential yield (average annual production in a situation with no limitations in terms of water, nutrients, pests and diseases (Woittiez et al, 2017)), exploitable yield, and smallholders actual yield in Jambi.

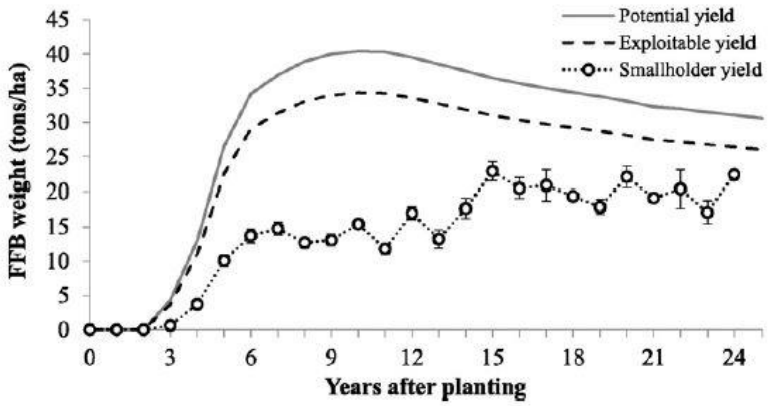


Figure 1 Potential, exploitable and smallholder fresh fruit bunch (FFB) yields over a 25 year plantation life cycle (Euler et al., 2016a)

Accumulatively over 25 years, Jambi Province could have an exploitable yield of 508 tons of FFB per hectare. However, smallholders currently only attain 268 tons of FFB per hectare, which is only 53% of exploitable yield. Comparison between dependent (scheme) and independent smallholders shows that dependent smallholders could gain higher yields than independent smallholders. Dependent smallholders are smallholders who are engaged with a company, while independent smallholders are not. Dependent smallholders reached 64% of the exploitable yield while independent smallholders only reached 49% of the exploitable yield (Euler et al., 2016a). This result is in line with the research result from Soliman et al. (2016) who mentioned that scheme (dependent) smallholders are more efficient than independent smallholders because they have received support from the company, like better technology and farming infrastructure, which leads to better yield. Research findings from Lee, Ghazoul, Obidzinski, and Koh (2014) also support this statement by showing that types of smallholder (dependent/independent) and harvesting frequency are essential factors in oil palm yields and income of smallholders. This research shows that in the early stage of oil palm development (5-8 years), the mean annual yield of independent smallholders is 25% lower compared with dependent smallholders'. Moreover, in the later stage of oil palm development, yield from independent smallholders become 38% lower than the yield from dependent smallholders (Lee et al., 2014).

The research result from Euler et al. (2016a) and Soliman et al. (2016) show what factors influence this yield gap. The first one is plantation age. The researchers found that the yield gaps keeps growing until year 14, when the palm tree reaches the maximum gap (Euler et al., 2016a). The yield gap at certain age of oil palm is related to the management practice. The largest yield gap in oil palm happens during the productive phase when the trees demand the largest amount of resources, like nutrients (Euler et al., 2016a). Smallholders need to adjust their management practices of pruning and weeding frequencies, number of harvest rotations per month, fertilizer and herbicide application, and have to start with high-quality seeds (Soliman et al., 2016). In relation to harvesting frequency, Euler et al. (2016a) suggested that a harvesting cycle for 10 days could reduce the yield gap compared with harvest cycle for 30 days. The last determinant of

the yield gap is the number of productive palms per hectare. Normally, an optimal oil palm plantation density is about 140-148 palms per hectares (Hoffmann et al., 2014 in Euler et al., 2016a; Sheil et al., 2009). However, a large density could lead to plant mortality because of the potential inadequate treatment. Euler et al. (2016a) proposed to plant averagely 119 productive palms per hectares to reduce the yield gap. The research result from Euler et al. (2016a) and Soliman et al. (2016) show that the most important cause of large yield gaps is the management practice. This gap of management practice could happen because of lack of knowledge from smallholders or lack of access to input. Hence, the difference in productivity between dependent and independent smallholders could happen because of different access to input and supports. In my research, I elaborate how the two different types of smallholders (independent and dependent) could affect decisions for intensification and/or expansion. I analyze it in terms of their relationship with local organizations and their knowledge about better management practices.

In relation to expansion, Tarigan, Sunarti, and Widyaliza (2015) shows that only 8% of oil palm development (18,704 ha) caused the clearing of intact forest (undisturbed primary forest) between 1988-2013 (25 years) in Bungo and Merangin Districts, Jambi Province. Most of the clearing for oil palm is done in logged forest, shrub land, and rubber agroforest (Tarigan et al., 2015). Another research finding shows that in Indonesia from 1990 to 2005 (15 years), 56% of oil palm expansion (1,704,000 ha) can be attributed to the conversion of primary, secondary, and plantation forest (Koh & Wilcove, 2008). Research by Susanti and Burgers (2011) in Riau province showed that farmers not only convert forest area, but also rice fields to oil palm. Farmers prefer to use profit from oil palm development to buy rice, rather than cultivate it. Local government has tried to anticipate this conversion since they need to maintain an affordable price of rice as the main staple food in Indonesia. However, the incentives from the local government only had little effect for farmers to maintain their rice fields since they still have more benefit from cultivating oil palm (Susanti & Burgers, 2011). Expansion is also related to the types of smallholders. The research result from Euler et al. (2016b) shows that farmers who were involved in contract farming (used to be dependent farmers) are found to expand significantly faster by purchasing land from land market. This is related to the transmigration program from Indonesian government. Migrants that came to Jambi were provided with contracts and there was a limited amount of land allocated to them. Hence, if they want to expand their area, they need to purchase land. This is different with local people who could expand their land from communal lands (Euler et al., 2016b). However, both dependent and independent smallholders expand their land, only in this case, expansion is defined as purchase a new land. Moreover, besides purchasing land, smallholders could also get access to land through other options, like profit-sharing. The different actions from different types of smallholders for expansion aforementioned show that smallholders' decision are also related to their history and their ability to access to land. In my research, I elaborate how smallholders' history involved in oil palm industry and their access to land could lead to decisions for intensification and/or expansion.

Some regulations are available to stimulate oil palm producers to prioritize intensification, rather than expansion as part of economic and environmentally sustainable management practices, like certification institutions and government programs and regulations. The regulations from certification attach to certified companies, and influence smallholders that are or were related to such companies. How certification could influence smallholders' decision-making for intensification and/or expansion is also part of my research. One of the certification institutions that is related closely to oil palm is the Roundtable on Sustainable Palm Oil (RSPO). RSPO has the objective to 'promote the growth and use of sustainable palm oil through cooperation within the supply chain and open dialogue with its stakeholders through these following tasks: first, research and development of definitions and criteria for the sustainable production and use of palm oil; second, undertake practical projects designed to facilitate implementation of sustainable best practices; third, development of solutions to practical problems related to the adoption and verification of best practices for plantation establishment and management, procurement, trade and logistics; fourth, acquisition of financial resources from private and public funds to finance projects under the auspices of the RSPO; and fifth, communication of the RSPO's work to all stakeholders and to a broader public' (RSPO Statutes, 2015). Through its environmental and social criteria, RSPO tries to minimize the negative impact of oil palm cultivation on the environment and communities in palm oil-producing regions (RSPO, n.d). Through its rules, RSPO tries to produce palm oil effectively while also maintaining biodiversity and enhancing the quality of life of farmers. The RSPO as a certification institution has a clear position in this. In one of the documents from RSPO named Principles and Criteria for the Production of Sustainable Palm Oil (RSPO, 2013), it is written that certified companies/smallholders should ensure that the yield of oil palm cultivation should be optimized. This is one of RSPO's main principles that certified growers and millers should use their appropriate best practices (RSPO, 2013). It shows that RSPO supports intensification. With intensification, it is hoped that farmers could optimize their yield in one area instead of expanding, so that additional oil palm development will not further destroy forest and High Conservation Value (HCV) areas. This is also in line with one of the main principles in RSPO that certified institutions should subscribe to principles of environmental responsibility and conservation of natural resources and biodiversity (RSPO, 2013).

Next to RSPO, ISCC (International Sustainability and Carbon Certification) is also a certification institution that supports the reduction of expansion in oil palm development. ISCC has an objective to contribute in the implementation of environmentally, socially and economically sustainable production and use of all kinds of biomass in global supply chains (ISCC, n.d.). To achieve this objective, ISCC implements social and ecological sustainability criteria, monitors deforestation-free supply chains, avoids conversion of bio-diverse grassland, calculates and reduces GHG emissions, and establishes traceability in global supply chains (ISCC, n.d.). Through its sustainability requirements for plantations, it mentions that biomass shall not be produced on land with high biodiversity value or high carbon stock, and biomass shall be produced in an environmentally responsible way to protect soil, water, and air (ISCC, 2016).

From the above we conclude that ISCC favours intensification on existing land over expansion in areas with HCV or high carbon stock.

Another forest governance instrument that supports intensification, rather than expansion, is Reducing Emissions from Deforestation and Forest Degradation (REDD+). REDD+ was initiated by United Nations Framework Convention on Climate Change (UNFCCC) that aims to give incentives to developing countries based on the result of their action to maintain the forested land. (UNREDD, 2016; Hein & Faust, 2014).

The aforementioned discussion of the literature shows that different conditions and arrangements under which smallholders become involved in the oil palm sector influence the outcomes for their livelihoods and influence their decision-making. In this research, by using livelihood theory as a framework of analysis, I study these terms of incorporation of smallholders to understand how these may affect their decisions for intensification and/or expansion. McCarthy (2010) defined terms of incorporation of smallholders in oil palm sector as 'how oil palm is introduced, how it is taken up, and how local institutions and social relations shape the way subsequent changes play out'. For this research, I elaborate 'terms of incorporation' into three focuses. First, how oil palm is introduced and accepted, contested, transformed, or rejected. This is related to the history of oil palm in Jambi and how transmigrants, spontaneous migrants, and local people could have different access and opportunities in oil palm industry. Second, how the roles of and the relationships with local organizations may influence smallholders' decisions. The local organizations that have influence are cooperatives (*Koperasi Unit Desa*/KUD), companies, and Non-Governmental Organizations (NGOs). The relationship with companies and NGOs is also connected to how certifications affect smallholders' decisions and how different types of smallholder may lead to different access of supports. I am aware of the broader meaning of social capital, but in this research, through this second focus only, I analyze some parts of social capital. The third focus is how the access to capitals (land, labour, financial capital, input, and knowledge) affect the decision-making process of smallholders. Land issues are related to the availability of land, access to land, types of land, land governance, possible competing claims of land, history of land control/access, and preferences on how land is used (e.g. for what crops, subsistence and market etc.). Labour and inputs (planting materials) issues are related to the availability, affordability, and accessibility of the capitals. Financial capital is related to the accessibility. Knowledge is related to the experience of smallholders and their accessibility to training programs.

1.3. Research Questions

Based on the research background and problem statement aforementioned, the main research question in this research is **"Which factors do affect smallholders' decision for intensification and/or expansion, and how?"**. The sub-research questions are:

- How does the way in which oil palm was or is introduced affect smallholders' decision-making process?
- To what extent do the roles of and relationships with local organizations (especially companies and KUD) affect smallholders' decisions?
- How do access to capitals (land, labour, financial capital, inputs, and knowledge) affect the decision-making process of smallholders?

THEORETICAL FRAMEWORK AND METHODOLOGY

In my research about the decision-making process for intensification and/or expansion, the concept of livelihood is used as a framework of analysis. Through the livelihood framework, I am able to analyze the complexity of different activities and interactions in people's living (Scoones, 2009), and how their situation will lead to various strategies, decisions, and actions. This way, I am able to analyze how smallholders' daily living acts as a context for their decision-making process, so I am be able not only to elaborate which factors are related to their decision but also how these factors lead to their decisions.

2.1. Livelihood Framework

The concept of livelihood is defined as means used by people to gain a living or combination of resources that are used and activities that are undertaken to live (Scoones, 2009). This implies that people can have more than one source of living. Not only a concept, livelihood is also about people's everyday activities. Livelihood also becomes part of development programs, either from government or aid agencies. According to Scoones (2009), research about livelihood overlooked the social process and was more used in an instrumental way. This happened because livelihood is mainly about maintaining and improving the material conditions of life (Carr, 2013). For example, if people want to optimize the livelihood outcome, it is more likely for them to maximize the resources, instead of improving their inefficient behavior or strategy (Carr, 2013). This is related to how some smallholders in the scoping study (Rietberg, 2017) showed to choose to maximize their land to improve the productivity, instead of evaluating and changing their current management practices to be better. Another insight from the livelihood approach is to put attention to the local effort where everyone participates in shaping and changing roles, strategies, and outcomes that are related to livelihood to meet their basic needs (Carr, 2013). In his case study in Ghana, Carr (2013) explained how 'livelihood as intimate government' was related to the local governance, like the divisions of labour in a village, different roles between women and men, and land tenure arrangement that was in favour for men.

Kaag (2004) criticized the livelihood approach in that it sees the human only as homo-economicus (the behavior of human are narrowed to use assets for economic goals), while humans should be seen as a whole, which means their ideas, perception, belief, hopes, norms, and values need to be taken into account. People need to be seen as active agents in their life, while at the same time the analysis of livelihood should also pay attention to the circumstances in which people make a living (Kaag, 2004). The importance of an individual's capacity in analyzing livelihood is explained by Bebbington (1999). Livelihood should not only analyze assets, but also individual's access to assets, their capability and strategy in using assets to meet their needs, and how individuals use assets to build a more meaningful living (Bebbington, 1999). In analyzing livelihood, Kaag (2004) also emphasizes the importance of the influence of globalization and structured roles and identity, which are usually related to class, gender, culture,

and religion. Scoones (2009) supported this argument by mentioning the essential point to pay attention to structure and social relations and global processes that influence livelihood.

In my research, to analyze the decision-making process of smallholders, I used the livelihood framework that is adapted from the concept of livelihood aforementioned (Scoones, 2009; Kaag, 2004; Carr, 2013; and Bebbington, 1999) and adjusted it to the context of oil palm development, either by intensification or expansion. I elaborate the livelihood framework into six main focuses to be analyzed. They are global economy, local context, governance, access to capital assets, changes in environmental condition, and individual's capacity to see how each individual using his/her networks and knowledge to survive.

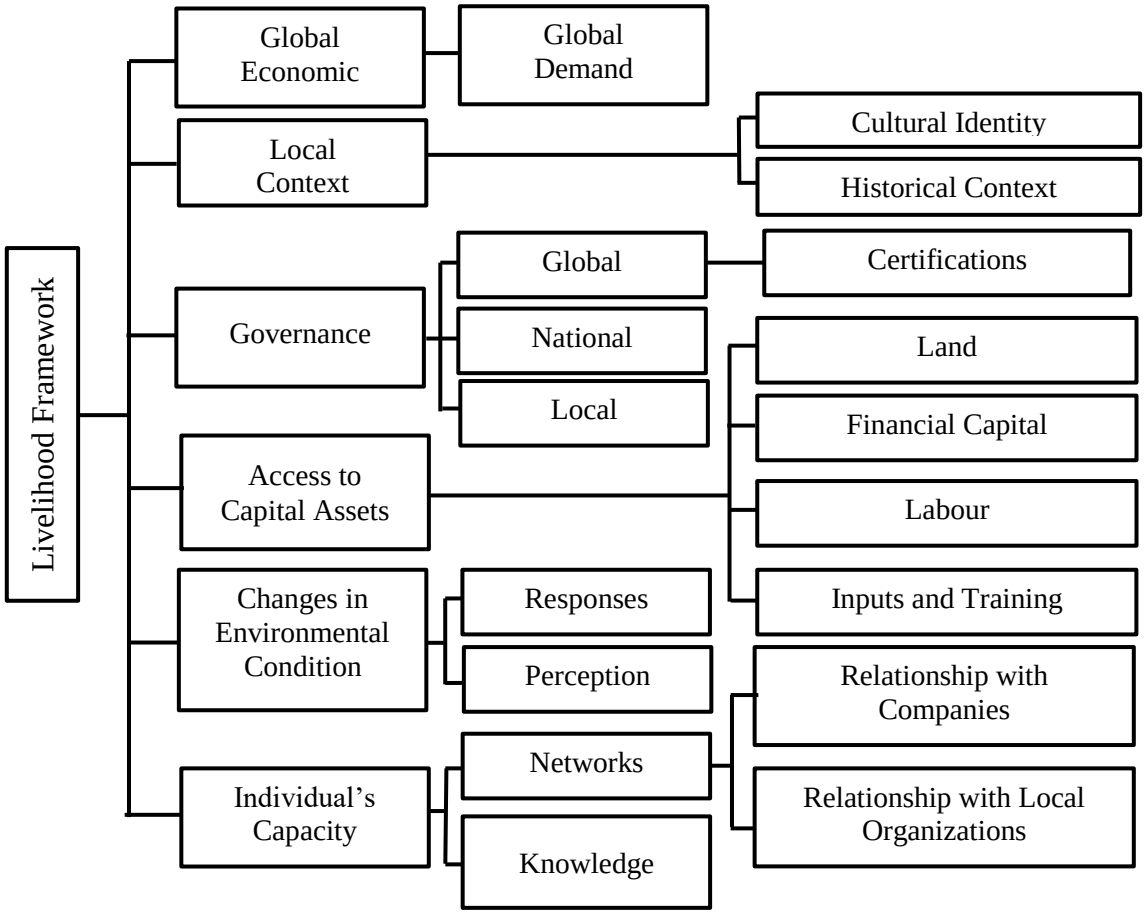


Figure 2 Livelihood Framework (Adapted from Scoones (2009), Kaag (2004), Carr (2013), and Bebbington (1999), and adjusted in oil palm development context)

a. Global Demand

The global demand of oil palm is the context of this research. Oil palm is not only needed for the food industry, but also for biofuels (Susanti & Burgers, 2011). Compared to other crops, oil palm is considered the most efficient crop to be used as basic material for biofuels because of the low

production cost (Sayer et al., 2012; Sheil et al., 2009) and the highest oil production per land area (Sheil et al., 2009). The usage of products from oil palm in daily activities, like in cooking oil, soap, cosmetics, and processed food (Sayer et al., 2012), lead to the increase of demand for oil palm along with the population growth. By analyzing past trends of oil palm development, considering the growth of population and consumption level, it is predicted that global demand of Crude Palm Oil (CPO) for cooking oil and biodiesel in 2050 could reach 264-447 Mt/year (Afriyanti et al., 2016). The increase in global demand leads to the need to either intensify and/or expand to increase production.

b. Local Context: Cultural Identity and Historical Context

Local context is related to cultural identity and historical context. However, in my research, I put more focus on the historical context of smallholders involved in oil palm industry. I analyze how the history of introduction and acceptance of oil palm potentially affects the decision-making processes of smallholders. Oil palm was introduced in Indonesia in the colonial period. In Jambi, oil palm was first introduced as part of a transmigration program in the beginning of 1980s (Feintrenie, Chong & Levang, 2010). In this program, people were transferred from Java and Bali that had high-density population to other islands that had lower density population (Feintrenie et al., 2010). The transmigration program from the government has an important role in the development of oil palm plantations in Indonesia (Hamilton-Hart, 2015). In this program, oil palm development was a means by the government to alleviate poverty and give new land and chances to migrants (Zen, Barlow & Gondowarsito, 2005; Hamilton-Hart, 2015; Gatto, Wollni & Qaim, 2015; Cahyadi & Waibel, 2016). In the program named the Nucleus Estate Scheme (NES) or PIR (*Perkebunan Inti Rakyat*), transmigrants are placed in the satellite (plasma) areas that surround a core (nucleus) plantation which is owned by a company. They have to sell their FFB to the company because the company supports the initial phase of the plantation, like land clearance, planting materials, and inputs (McCarthy and Cramb, 2009). In this program, the government of Indonesia provided land for transmigrants. The state facilitated access to village lands for the transmigrants and supported the infrastructure development. Through transmigration, this scheme provided a disciplined labour force (McCarthy, 2010). Because of the transmigration program, migrants had specific benefits over local people because they got formally authorized access to land, while indigenous people formally did not have land titles. This difference in access leads to the risk of unequal development between migrants and indigenous people (Gatto, Wollni & Qaim, 2015; McCarthy, Gillespie & Zen, 2012). Considering this history of oil palm development, it shows that cultural identity and history of smallholders in Jambi are related to each other. By more in-depth analysis of their history, I gain ideas about how their cultural identities could influence them in getting access to supports or how they valued the land. Furthermore, I analyze how these relations influence their decisions for intensification and/or expansion.

In analyzing their history, I focus on the history of how oil palm was introduced and accepted by smallholders, including how they start their oil palm plantation, why they became involved in this industry, the terms of engagement they had in the past, and how they have access to land and financial capital for the first plantation. I analyze how their experiences influence their current situation, including the access to land or other assets and their decision-making process. I also analyze how they evaluate their experiences in making current decisions.

Bebbington (1999) considers culture as one of the capitals that need to be taken into account. Cultural capital is defined as how identity is maintained and a pattern of interactions is fostered, so people will be empowered and inspired (Bebbington, 1999). In relation to cultural identity, in my research, I relate it with their history and how it relates to land issues and practices of land governance. One of the relations between cultural identity and land issues is about inheritance. In the interview of the scoping study (Rietberg, 2017), one of the smallholders admitted that it is part of a tradition as Javanese to inherit land from parents to their offspring, hence he will expand lands for his children. Other manifestation of culture in land issues would be about how they value the land, the different claims on the land, how they use the land, and the arrangements of the land.

c. Governance: Certification

In my research, analysis of the role of certification is closely related to the relationship between smallholders and the companies. I used two types of smallholders based on their relationship with company, which are independent smallholders, who have never engaged with the company, and dependent (scheme) smallholders, who are still engaged with the company. This is related to the transmigration program that I explained in the historical background. In this case, the company that is or is not engaged with smallholders is BGR, which is also part of the transmigration program. By analyzing smallholders' relationship with companies, I am able to elaborate the terms under which smallholders engage with oil palm.

Certification is one of the manifestations of global governance that has penetrated into and is interacted with national, regional and local levels. Oil palm development is affected by multi-level and multi-actor governance. Stephenson (2003, as cited in Hamilton-Hart, 2015) defined multi-level governance as the participation of different actors from various political levels in 'pluralistic and highly dispersed policy-making activity'. Various levels of actors are involved in governing oil palm development. One of the most prominent organizations in governing oil palm is certification institution RSPO. Other certification institutions that have roles in oil palm are ISCC and REDD+. In this research, I focus on RSPO and ISCC that exist in the research area and are active to recruit smallholders for their certification schemes. RSPO was initiated with the emergence of negative impacts of oil palm plantations to the environment, so it provides standards and regulations in oil palm plantation to be run sustainably through the market as incentive (market-based approach) (Hamilton-Hart, 2015; McCarthy & Zen, 2010). From the

same concern with the environment, ISCC also has regulation to protect the environment through the market as incentive.

Certification institutions at the global level penetrate to the national level. State government integrates regulations about sustainable management practices of oil palm plantations. For example, implementation of REDD+ in Indonesia is integrated into Indonesian law, like Presidential Decree Number 62 of 2013 about the executor of REDD and Regulation of the Minister of Forestry Number 30 of 2009 about the procedures in implementing REDD+. Indonesia also has its own oil palm certification, named ISPO (Indonesian Sustainable Palm Oil), that adopt the concept of RSPO in the Indonesian context. The certification is also a manifestation how the national government translate the international regulation into the Indonesian context. How the government integrates the international regulation into national regulation is also related to the government strategy to bring Indonesian products to the global market.

In relation to local governance, since 1999, Indonesian government has had a decentralization program that changes the role of the state in governing. After the decentralization, local government has full responsibility in managing their area, while state government has roles in setting the policy, guidelines and standards (McCarthy & Zen, 2010). According to the Law No.23 of 2014 about Local Government, the national government has roles in developing (*membina*) and supervising (*mengawasi*) the management of local government. Agriculture is one of the issues that is under the authority of local government (Law No.23 of 2014). According to this regulation, the local government has control over the agricultural development in its area. However, there are some overlapping regulations because national government also has authority on forest areas and their protection. The multilevel governance is explained by Hamilton-Hart (2015) as 'regionalization without regionalism', which means that multi-level actors have developed regionalized industry of oil palm, while at the same time the transnational regulation is very prominent in governing the palm oil production.

Certification is also closely related to how access of smallholders into land is regulated. RSPO and ISCC both require a legal land title in plantation areas. It is important that oil palm producers can provide the documents to prove their rights to use the land (RSPO, 2013; ISCC, 2016). Smallholders/companies that do not have a land title are not eligible for certification. In relation to the expansion to HCV areas, RSPO has more assertive regulation in protecting HCV areas than ISCC. This comparison is based on four criteria of HCV areas, which are the areas that have biodiversity values; landscape level natural areas; rare, threatened, and endangered ecosystems; and ecosystem services (Yaap & Paoli, 2014). Rules in RSPO mentioned that HCV habitats need to be identified and ensured that they are maintained and/or enhanced. RSPO also have criteria that 'new plantings since November 2005 have not replaced primary forest or any area required to maintain or enhance one or more High Conservation Values' (RSPO, 2013). In ISCC, the rule mentions that 'biomass shall not be produced on land with high biodiversity value or high carbon stock' (Yaap & Paoli, 2014). In relation to expansion outside of HCV areas, ISCC is as strong as

RSPO about their position in regulating biodiversity conservation (Yaap & Paoli, 2014). About planting on peatlands, ISCC have rules that are more assertive than RSPO. RSPO does not prohibit members to plant on peatlands, but it encourages them to avoid the planting on peatlands. ISCC strictly prohibits planting on peatlands with more than 30 cm peat depth except for areas where no drainage system is required or where drainage canals were already fully established before January 2008 (Yaap & Paoli, 2014). In relation to forest clearance, RSPO has a moderate level of requirements to avoid forest clearance, while ISCC has more strict requirements to avoid forest clearance. In RSPO, forest clearance is allowed by fulfilling legal requirements and HCV areas are maintained. However, ISCC has strict rules to protect lands with high biodiversity value and high carbon stock (Yaap & Paoli, 2014).

Certification has influences on smallholders that are involved in certified companies and for smallholders that are certified through KUD. In this research, I analyze how scheme smallholders got involved with the companies for the first time, why they chose to be part of companies' oil palm plantation, and what arrangement they have with companies. For independent smallholders, I focus on their reasons to not be involved with companies, whether they would like to be engaged with company in the future, what advantages and disadvantages they think they will get with the engagement, and what terms of agreements they would like to have. For both types of smallholders, I analyze their challenges, strengths and weakness as independent/dependent smallholders, including how they perceive the terms of engagement with the company and how they compare their productivity and access to inputs and training. I also see their perception of the plantation productivity, what they can do to improve the productivity, why they choose a specific strategy, and how they execute that strategy. In relation to certifications, I analyze how certifications could lead to different decisions of smallholders in intensification and expansion.

d. Access to Capitals or Assets

To analyze access to capitals or assets, I focus on land, labour, financial capital, inputs, and knowledge. I analyze to what extent access to these capitals influence smallholders' decision-making process to do intensification and/or expansion.

- **Land**

Property is defined as the relations between people with the valuable objects (von Benda-Beckmann, von Benda-Beckmann, & Wiber, 2006). Those relations have three major elements: first, the actors/institutions that hold property rights and obligations; second, 'the construction of valuables as property objects'; third, bundles of rights and obligations that actors/institutions can have relating to the objects (Von Benda-Beckman et al., 2006). Theoretically, there are four types of property regimes: first, open access, where there is a lack of property rights and there is no regulation for access; second, common property, in which access to property and control for externalities are regulated by a well-defined community with well-defined rights; third, state

property, where access and level of exploitation is regulated by the government; fourth, private property, in which individuals or a group of individuals are clearly identified as owners that have a full set of rights (Von Benda-Beckman, 2001, as cited in Von Benda-Beckman et al., 2006; Roth, 2017). Besides these four types of property regimes, in my research, I look at other types of property regimes that might be used in Indonesia, especially in Jambi. Hence, I am able to understand the relations and regulations of property in local context. The types of property regimes will influence the process that smallholders need for expansion. In this research, I found 'sporadic land' as the new type of property regime in Jambi.

Ribot and Peluso (2003) mentioned that people does not necessarily have property rights to get access. Access is defined as 'the ability to derive benefits from things' (Ribot & Peluso, 2003). While property is related to the bundles of rights, access is related to the bundles of power (Ribot & Peluso, 2003). In analyzing access, it is important to involve three processes: identifying and mapping the flow of benefit; identifying the mechanism where actors could gain, control, and maintain the benefit; and analyzing the power relations that underlie the mechanism of access (Ribot & Peluso, 2003). In my research, I elaborate on the process that smallholders need to do to get access and control to land for their plantation, including how they got the access and control in the past, and what they could do to get access and control in the current situation and in the future.

How access and property are related to the power and authority is explained by Sikor and Lund (2009). Legitimation from authority is one of the issues in access, which it becomes a challenge when an area has many authorities that can legitimize the claim on property because it will lead to the contested authority and power relations in legitimizing property. Moreover, the relation between property and authority are more prominent when authority relations are overlapping and change over time (Sikor & Lund, 2009). Not only claimants that compete in looking for socio-political institution to authorize their claim, the institutions also actively look for claimants to solidify their legitimacy and show their legitimacy to competitors (Sikor & Lund, 2009). The case of 'sporadic land' also shows how different level of authority has different ideas in legitimize a land for smallholders.

Land issues are important to be analyzed in oil palm development because the complex situation and the dynamic of smallholders' access to land will affect their strategic decisions. In the colonial period, customary rights of land were recognized through Dutch rule since 1870s (von Benda-Beckmann & von Benda-Beckmann, 2011), which means every ethnic-community has rights to get benefit from the land around them (Steinebach & Kunz, 2017) in a restrictive way. The rule was changing after the independence of Indonesia from colonialism. Indonesian government ruled that land that did not have formal land title was national asset. In this period, there was also a transmigration program where people from Java and Bali were transferred to less-populated islands (Feintrenie et al., 2010). This program gave a benefit for migrants over local people (Gatto, Wollni & Qaim, 2015; McCarthy, Gillespie & Zen, 2012) since formally migrants could get access to a formal land title. The situation was getting more complicated

when ILO (International Labour Organization) had a decree for governments to acknowledge customary rights of land. However, defining 'indigenous people' is difficult because previously national government changed the social-political structure of particular ethnics by separating citizens and non-citizens through administrative categories (Steinebach & Kunz, 2017). This dynamic issue about land governance is related to the 'double edge of exclusion', where it is not possible for the national government to recognize customary rights while at the same time treating land as national asset that can be distributed to the landless (Hall et al., 2011). It is important to analyze land issues by elaborating the power trajectories of land and how it is related to the contested authority (Beckert, Dittrich & Adiwibowo, 2014; Sikor & Lund, 2009).

Hall, Hirsch & Li (2011) defined exclusion as a means where 'people are prevented from benefiting from things'. Exclusion from land is linked with the interaction of regulations (1), force (2), the market (3), and legitimation (4). Regulation (1) is a set of rules in accessing land and determining 'the kinds of ownership and usufruct claims' to land. Regulations could have different sources of authority. Regulation is not only about the issues in prohibition and requirements, but also about the incentive structures that can lead to particular behavior (Hall et al., 2011). The second power in exclusion is force. Force (2) is defined as the usage of violence or threat of violence in excluding (Hall et al., 2011). Market (3) is also one of the powers that can be used in exclusion through price of land and incentives (Hall et al., 2011). The fourth power in exclusion is legitimation (4). Hall et al. (2011) defined legitimation as 'justification of what is or of what should be and appeals to moral values'.

In analyzing the access to land, I analyze the process of land acquisition that smallholders need to do for getting access and control to land, what they did to get access and control to land in the past, what kind of land status they want to gain, how their relations with companies and certification schemes influence the process in getting the land, challenges in accessing the land, why they need to get more land, and the availability of the land. I also link how the history of smallholders relates to the process they need to do to get access and control to land.

- **Labour**

In Indonesia, there are 1.7-2 million people working in the oil palm sector (Wakker, 2006 & Zen et al., 2006 as cited in Sheil et al., 2009). Labourers usually work for harvesting, weeding, and other maintenance work. In relation to access to labour, I analyze the role of labour in smallholders' livelihood. I analyze the needs of human resources in daily agricultural practices, how smallholders get access to labour, how is the division of labour, what arrangements they have with labourers, and challenges in the availability of labour. Not only look at the hired-labourers, I also look at the family labour. From this narrative, I am able to see how the needs and availability of labour influence smallholders in their decision-making process regarding intensification/expansion.

- **Financial Capital**

Access to financial capital is about how smallholders get access to capital they need in daily agricultural practices for planting materials and capital for opening new lands. In this research, I connect it with the local organizations that have capacity to support the smallholders financially, like the relationship with banks and KUD. By elaborating the agreement smallholders have with the local organizations, I am be able to understand the process that smallholders need to go through to get access to financial capital (loans). I analyze how smallholders get the financial capital, the difficulty of the process from their perception, what arrangements they have with the sources of capital, and how they perceive the arrangements.

- **Inputs**

In relation to inputs for plantation, I analyze the access that smallholders have to good quality of seeds, fertilizers, and herbicides. This analysis is related to the access to financial capital and the relationship between smallholders and local organizations that can provide supports for these inputs. As I explained before, the different types of smallholders could lead to different productivity that is caused by lack of access to good and sufficient inputs. Hence, smallholders' capacity for intensification is related to the engagement they have with supports provider, like KUD and the companies. In this research, I analyze how their engagement leads to different access to inputs and how this may affect their decisions for intensification and/or expansion.

e. Responses and Perception in Environmental Changes

According to Scoones (2009), one of the challenges in analyzing livelihood is the long-term environmental change, like climate change. In oil palm development, an issue that is closely and directly related to smallholders is the deforestation issue, which in long term will also influence climate change. Research from Feinternie et al. (2010) found that farmers do not care about deforestation and loss of biodiversity as long as deforestation could develop their economic situation and improve their livelihood. In relation to environmental change, I do not focus on this issue in my research. However, if smallholders mentioned about this issue in relation to their decisions for expansion and intensification, I would analyze the issue.

f. Individual's Capacity: The Use of Networks and Knowledge

In analyzing individual's capacity, I focus on how each individual use his/her networks and knowledge to survive. The importance of individual's capacity in livelihood is explained by Bebbington (1999) that mentioned that it is important to analyze how individuals use assets to meet their needs, how individuals engage with other actors to expand assets, how they use assets and capabilities to improve quality of life, and how engagement with other actors in society is used in distributing and transforming assets (Bebbington, 1999). The importance to see the capacity of an individual to act is also supported by Kaag (2004) about how to see an individual

as a whole human that has ideas, hopes, norms, and values that lead to the way they set their livelihood strategy to meet basic needs.

In my research, I focus more on individual's knowledge and their relationship with local organizations, like KUD and the company. In individual's knowledge, I focus on current management practices of smallholders and analyze whether they know better management practices that they could do, including what should they do to provide the needs in implementing better management practices. I also look at how smallholders use their experiences of management practices in improving their productivity. Smallholders' knowledge about rules and regulations in relation to intensification and expansion is also be studied to see how these act as guidelines of management practices.

About the relationship with local organizations, I focus on the relationship between smallholders and local organizations that can support them in their plantation. KUD is one of them since KUD has a role in providing and facilitating smallholders' needs. Besides KUD, smallholders' relationship with companies is also important to be analyzed. This is linked to the two types of smallholders I mentioned before, which are independent and dependent smallholders. The analysis of relationship with company is also related to the analysis of the role of certification that I explained in the previous section. By analyzing the role of and the relationship with local organizations, I am able to elaborate how smallholders have access to required supports and how it would lead to decisions for intensification and/or expansion.

2.2.Methodology

This research is a qualitative research that is supported by narrative analysis in the analyzing process. Narratives or stories are useful tools to identify how individuals make sense of the world, create understanding about events in their lives, and interpret the meanings in the world around them (Fisher, 1985; Acosta et al., 2016; Feldman, Skoldberg, Brown, & Horner, 2004). Through the analysis of narrative-generating, it will elaborate how smallholders come to particular decisions (Roe, 1991). Story-analysis is important to understand not only *what does happen*, but also to understand *how and why it happens* (Feldman et al., 2004). This way of analysis helps me to analyze how smallholders frame and perceive intensification and/or expansion and how they decide to do intensification and/or expansion through their perspectives.

The theoretical framework that I use in this research is livelihood, as I explained in the previous section. With the concept of livelihood as a framework, I analyze how smallholders make decisions for intensification and/or expansion. In the livelihood framework (adapted from Scoones (2009), Kaag (2004), Carr (2013), and Bebbington (1999)), I have 6 main focuses, which are global economy, local context, governance, access to capitals, changes in environmental condition, and individual's capacity. I focus on the aspects that are related to my research questions. To gain full understanding about my research focus, I use case study as the research design. Case study research design helps researchers to obtain full pictures about the

complexity in a research site, including all elements that are embedded in it (De Vaus, 2001). I use explanatory case study to elaborate *why is it going on* (De Vaus, 2001), "it" being intensification and expansion in the research site.

2.3. Data Collection Methods

I did fieldwork for 2 months in Petaling area, especially in Sido Mukti village. For this research, semi-structured interviews and participant observation were used as data collection methods. Before and after fieldwork, literature study was used to gain deeper understanding about the historical context in Jambi about oil palm development and existing governance system in Indonesia. Through the triangulation of data collection methods, internal validity in this research is improved (De Vaus, 2001). For the semi-structured interview, I used an interview guideline in which I listed topics and main questions that I covered in the interview. Through semi-structured interview, I am able to have flexible but directive conversations (De Vaus, 2001; Bernard, 2011). About the participant observation, I took a role as participating observer in which I had a role as outsider that participate in some of the aspects in daily activities and record what I can get (Bernard, 2011). Through participant observation, I was able to make people feel comfortable with my presence so that I can get accurate information about their lives (Bernard, 2011). From the fieldwork, I found that smallholders are more open when we discussed about oil palm in their plantation and when I did not hold a pen or a voice-recorder. Hence, I came to the harvesting process or other management practices to get the chance to meet smallholders in their plantation and interviewed them there.

I also joined formal and informal meetings in the village that are related to my focus of research, like discussion between company and smallholders, meeting of the management of groups of farmers, training sessions, and other informal meetings. For the literature study, I focus on the analysis of regulations and history of oil palm development in Indonesia. I also checked the annual report from KUD and village government to gain the general ideas about the profile of their organizations. This research is also supported by the results from the scoping study that Petra Rietberg conducted for the SenSor (Socially and Environmentally Sustainable Oil palm Research) programme in Petaling area in 2017.

The main subject in this research is smallholders, including the smallholders that did and will do intensification and/or expansion, smallholders from different historical background, and smallholders that have different relationship with companies. I use individuals as unit of analysis. Besides smallholders, I also involved other related-actors in this research, like the representative of village government, the management of KUD, the management of groups of farmers, the representatives of NGOs, the representative of companies, middlemen, and labourers. In the field visit, I found new stakeholders that I did not expect to find. They are the declarators which initiated the establishment of one of the mils in Petaling area. Triangulation of data sources help to increase the internal validity in this research (De Vaus, 2001). I use

purposive sampling in choosing informants. I reached high diversity of informants through purposive sampling. Then it was combined with snowball sampling.

THE HISTORY OF OIL PALM IN PETALING, JAMBI

In this chapter, I explain how people from the transmigration program, people that came after the transmigration program, and people around the transmigration villages have different history of how they have started oil palm development. These differences of historical background create difference in their living situation and lead to different actions for intensification and/or expansion. Migrants from the transmigration program are more able to do both intensification and expansion. They are in an advantageous position since they have legal ownership of lands from the transmigration program, supports from the company to access good planting material (seeds) and good and sufficient inputs, their FFB is managed well through KUD, and the high selling price of FFB based on the regulation from the Estate Department (*Dinas Perkebunan/Disbun*) and on the high quality seed. In this chapter, I also explain how the success stories of smallholders could attract more migrants then would lead to more expansion.

3.1. The Differences of History Among Smallholders in Starting the Oil Palm Development

Petaling area in Jambi has expanded into four villages, which are Sido Mukti, Mingkung Jaya, Tri Mulya Jaya, and Petaling Jaya. Each village now has its own authority in managing the area. I use the term 'Petaling area' in this report to refer to these four villages. Expansion of an area usually is related to the increasing number of people. The expansion is also related to the extent to which an area already has the ability to develop and increase the welfare of its community (Law No. 23 of 2004 about Local Government).

Most of the smallholders came into the Petaling area because of the transmigration program under the government of President Soeharto. In the transmigration program, people were transferred from Java and Bali that had a high-density population to other islands that had lower density population (Feintrenie et al., 2010). Most of the migrants in Petaling area were from East and Central Java. They migrated into this area in 1987. One of the benefits for migrants in the transmigration program is that they were allocated 3.25 hectares of land for every household. A quarter hectare of this land was allocated for a housing site. The government built a house for every household in this area. One hectare of land was allocated for agricultural activities. When migrants arrived in 1987, this area was shrubs. Then migrants cleaned it to plant food crops (*palawija*), like corn and cassava[1]. The other two hectares of land used to be forest. People did logging in this area. Now this area is used for oil palm cultivation.

Based on the interviews of migrants from the transmigration program, before the transmigration program, the Petaling area used to be unpopulated. There was only forest around their houses. However, there were people that lived close but outside of Petaling area, like in South Sumatra. In 1995-1996, as part of PIR (*Perkebunan Inti Rakyat*) scheme program from the government, a private company named BGR (Bahari Gembira Ria) came to this area to support smallholders for their first plantation of oil palm. In PIR-Trans (the estate transmigration program), the

[1] According to the interviews with: SH01 on 21st Nov 2017, SH02 on 22nd Nov 2017, and SH03 on 6th Dec 2017

government supported companies to access village land for plantation development (McCarthy, 2010). Two hectares of land from each household was allocated for this program. This land is called 'plasma land'. This land is bound by contract between smallholders and BGR. These smallholders are called scheme/plasma smallholders. In the first plantation, the company supported smallholders for cleaning the area, providing the seeds, planting, and managing the land until the palm could first be harvested. While waiting for the harvesting period, smallholders worked under the company as labourers to manage their land. They were paid by the company and worked in the area that was assigned to them, which was not necessarily their own land. Based on the interview with one of the migrants[2], each group of farmers was assigned a block of land, and they had to manage the land together.

Smallholders' living expenses were supported by the salary from BGR in this period. Four to five years after planting[3], when the palms could produce yield, smallholders and the company started sharing the profit. Every month, smallholders need to pay 30% of the profit of their yield to the company to pay back the investment from the company for the planting. The debt that smallholders need to pay back to BGR is around IDR 17 million (± EUR 995) per smallholder (per 2 ha). From the interviews I had with smallholders[4], they were able to pay off their debt in 3-5 years. This result is in line with the research result from Feintrenie et al. (2010) which explained that scheme smallholders in Bungo district in Jambi province had about IDR 15 million (± EUR 878) of loan per 2 ha and smallholders could pay off their debt in less than 6 years. Their research explained that smallholders started the repayments in the fifth year after planting. Even some smallholders in Bungo district pay the credit by 60% of their net added value thus they could paid off their debt in less than 3 years (8 years after planting) (Feintrenie et al., 2010).

The management of plasma land is different from the management of another hectare of smallholders' land (non-plasma land). Non-plasma land is managed by smallholders themselves and they have freedom to plant any crop they want. Before smallholders knew about oil palm, they usually planted food crops and rubber on this land. After they knew the benefit of oil palm, most of the smallholders decided to plant oil palm in this area too. Smallholders' first plantation of oil palm in non-plasma land was supported financially by themselves. It creates some issues because they could not afford good planting materials. All the seeds in plasma land are tenera, but the seeds in non-plasma land are usually mixed seeds from tenera and dura. Dura has poorer quality than tenera, but they are more affordable and accessible.

Beside of the smallholders that change their crops in non-plasma land into oil palm, a few smallholders still cultivate rubber in their non-plasma land. One of the rubber farmers[5] mentioned that it is a pity to change it to oil palm as he remembered how difficult it was to start

[2] According to an interview with SH03 on 6th Dec 2017
[3] According to the interviews with SH04 on 22nd Nov 2017 and SH05 on 22nd Nov 2017
[4] According to the interviews with SH04 on 22nd Nov 2017, SH02 on 22nd Nov 2017, SH06 on 06th Dec 2017, SH07 on 3rd Jan 2018, and SH08 on 10th Jan 2018
[5] According to an interview with SH09 on 4th Jan 2018

cultivating rubber. He also mentioned that he will need more financial capital to change the crop into oil palm. Another rubber farmer[6] mentioned that changing the crop could not be done carelessly just because the price of one crop is better than the others. He mentioned that there was a moment when rubber was more expensive than oil palm, but it was not possible to change the oil palm right away into rubber just because of that price. It also applies when the price of oil palm is higher than rubber. There is still a possibility that the price of rubber could be increasing. These rubber farmers cultivate both oil palm and rubber. Even though they are still cultivating rubber in some part of their land, according to them, oil palm is still more profitable than rubber.

After the transmigration program, people from other areas also have come to Petaling area. They usually know the opportunities in this area from their relatives or friends that live in this area. Migrants that came after the transmigration program generally do not have the initial capital that migrants from the transmigration program had received. Hence, people that came after the transmigration program usually worked as labourers for other smallholders. One of the smallholders mentioned that it is visible based on their houses, which farmers are from the transmigration program (they own the land) and which farmers came after transmigration program and work as labourers. They have different types of houses that show the different financial situation. Figure 3 shows the result of my closest observation about the comparison between a scheme smallholder's house and a labourer's house.

Figure 3 Comparison between a scheme smallholder's house (left) and a labourer's house (right)

The Petaling area and many other villages in Jambi are part of the transmigration program. It is different with the area in South Sumatra which is in the borderline with the Petaling Area. Before and after the transmigration program, fishing is still the main livelihood strategy in this part of South Sumatra. However, after the transmigration program, some people developed an additional livelihood strategy which is cultivating oil palm or being a labourer in oil palm area.

People in South Sumatra have accepted the right to manage a piece of land (*Hak Pengelolaan Lahan*/HPL) from the government. Smallholders are given a right to use a land, but the

[6] According to an interview with SH10 on 10th Jan 2018

ownership of the land remains with the state. According to Government Regulations (*Peraturan Pemerintah*) No. 40 of 1996, the right to manage (*Hak Pengelolaan*) is 'the right to control that is given from the state in which the authority for the execution is partly delegated to the holder'. This is confirmed by a woman[7] in this area that said every household was allocated 2 ha of land by the village government that is supposed to be used to cultivate rubber. However, she has decided to plant oil palm. She has taken the risk to plant oil palm even though she is supposed to cultivate rubber. One of the smallholders[8] mentioned that the land was clean when it was given to her, and there were only shrubs and bushes. People in this area see that oil palm is more promising in the future. Having a land planted with oil palm is seen as a security for the future. If they have oil palm, they could hire labourers to manage the land when they would not be able to manage the land by themselves anymore due to old age. It is different if they keep fishing. From two interviews[9] I had with people in this area, both of them already have the right to manage land from the government but they have not started to cultivate oil palm yet because of the affordability of labourers and transportation cost to bring the seeds to their area.

3.2. How History Affects Different Decisions of Smallholders

The transmigration program created a different situation for plasma and non-plasma land and the management of Fresh Fruit Bunch (FFB) they produce. Here are some comparisons of situation and management between plasma and non-plasma land: (1) In plasma land, because it was first planted by the company (BGR), the tenera seed is used, which is known as good quality of seed. While in non-plasma land, the seeds are usually mixed from tenera and dura, in which dura has a poorer quality than tenera. Hence, the quality of seeds in non-plasma land is poorer than seeds in plasma land. Non-plasma land is usually planted by smallholders themselves so they chose the seeds that are more affordable and accessible; (2) For the selling price of FFB from plasma land, the mill will buy the fruit from smallholders with the highest price that is governed by *Disbun*. While for FFB from non-plasma land, because there is no binding contract between the mills and smallholders for the management of this FFB, and the lower quality of seeds hence FFB are containing less oil, the selling price of FFB from non-plasma land is lower than FFB from plasma land. The price that is used for FFB from non-plasma land is called 'business price'. When the price of FFB from plasma land is IDR 1,700-1,800 per kg, the business price of FFB from non-plasma land is IDR 1,500-1,600 per kg; (3) While FFB from plasma land is sent to a company that smallholders has contract with, FFB from non-plasma land is sent to middlemen or companies that have business price to be offered; (4) FFB from plasma land, is managed by KUD in every village. Hence, every ten days, the groups of farmers will do the harvesting process together. Then every first week of every month, the smallholders will be paid by KUD according to their yield. Meanwhile, for FFB from non-plasma land, the plantation is managed

[7] According to an interview with SH11 on 14th Jan 2018
[8] According to an interview with SH12 on 14th Jan 2018
[9] According to the interviews with SH11 on 14th Jan 2018 and SH12 on 14th Jan 2018

by the landuser individually. While plasma smallholders have payday every month, non-plasma smallholders are paid directly by the middlemen or companies in every harvesting process.

The differences in situation and management between plasma and non-plasma smallholders make plasma land more suitable to be intensified. Since intensification is about improving the productivity of oil palm, better quality of seeds from plasma land would produce better quality and quantity of yields under the good management practices. Since it has better seeds that could produce better OER (Oil Extraction Rate), FFB from plasma land has a higher selling price than FFB from non-plasma land. Then this would lead to better revenue for plasma smallholders which thus could lead to the ability to afford good planting materials. Plasma land also has better management since it is supervised by the company (BGR) and KUD. The relationship between smallholders and company led to the accessibility of good and sufficient inputs (fertilizer and pesticides) and training about good agricultural practices. The different situation between plasma and non-plasma land regarding their productivity is also shown in other research results. Soliman et al. (2016) mentioned that scheme smallholders are more efficient in the oil palm production since they have access to better technology and farming infrastructure which could improve the yield. Euler et al. (2016a) also mentioned that smallholders that are engaged with the company could produce better yield than independent smallholders.

In relation to the training about better management practices (BMP) that could lead to intensification, migrants from the transmigration program are also in more favorable conditions. Since they are the owners of the land, they are usually chosen by the training organization or KUD to be trained about BMP. For the training from the company, smallholders that are tied to the company are the main target. Even the training from NGOs usually prioritizes the owner of the land to be trained, instead of the labourers or the potential owner of the land. Therefore, smallholders from transmigration program have better access to the training that could lead to intensification.

The historical background also creates different behaviours in expansion. Farmers are aware about the different situation between plasma and non-plasma land. Hence, it creates different preference between farmers to expand to plasma or non-plasma cultivated land. On the one hand, some farmers would only want to expand to plasma land because of the management of FFB and better seeds, even though the good quality of plasma land leads to a higher price of land. Smallholders that want to expand to plasma land would buy the plasma land from other smallholders. Therefore, in this case of expansion, there is no new plantation, so it is only the change of ownership of the plasma land. On the other hand, some farmers prefer to expand to non-plasma land because it is more affordable, even though the yield from non-plasma land would not be as good as plasma land. There are two ways how farmers do expansion to non-plasma land. The first one, they could buy the planted non-plasma land from others. Like the expansion to plasma land, in this case, there is no new plantation and only the change of ownership of the land. The second one, farmers could buy a new non-plasma land, so in this case, there will be a new plantation because of the expansion.

The historical background also creates different initial capitals between migrants from the transmigration program and the ones who came after the transmigration program. Migrants from the transmigration program have 3.25 ha of land and they have the certificate of the lands. Hence, they have better access to financial sources, like the bank, because the certificate of the land could be used as collateral for a loan in the bank. Therefore, in relation to the financial capital, it is easier for migrants from the transmigration program to do expansion. This result contradicts research result from Euler et al. (2016b) that mentioned that independent smallholders expand faster than smallholders that are tied to the company. According to their research (2016b), this happened because smallholders that are not from the transmigration program (non-plasma/independent smallholders) tend to expand to communal land or accept inherited land, while smallholders that are from transmigration program (scheme smallholders) do not have access to communal land so the expansion depends on the land market. This case is not found in Petaling area. In this area, the independent smallholders are not local people. Like I explained before, smallholders from the transmigration program mentioned that this area was unpopulated when they arrived here. Because the independent smallholders do not have the communal land here, they do not have the access to the land. Hence, in this area, smallholders from the transmigration program even are more able to do expansion because of the good price of FFB, the good productivity, and access to loans from the banks.

The Petaling area is a good example to see how oil palm development could increase the welfare of people. Facilitated by the government program and support from a company for the commercial interest, cultivation of oil palm is seen by the smallholders as a positive means to increase the economic welfare. According to Euler et al. (2016a), a village where the smallholders have a binding contract with a company tends to be wealthier than a village without the support from a company because the former village has better access to the processing mills and technical knowledge. Then this situation triggers more migrants to come in to this area and make a profit. One of the labourers[10] I met in the field only stays and works in this area for 6-7 months to save money to buy a plastic machine in East Java. He has a business plan to do this in East Java and only comes to this area to make money. The success stories of farmers in this area attract more migrants. Then they who do not own land and work as labourer will aim to own land. The villages around this area and forest land that is not owned by anyone would be potential areas to be turned into oil palm. Therefore, the success stories from the smallholders could lead to more expansion.

Not only for migrants, local people that live around Petaling also make an effort to own and cultivate oil palm. In South Sumatra, since the main livelihood strategy of the people was fishing, they did not mind to live landless. However, since oil palm has been developed, more

[10] According to an interview with SH13 on 16th Dec 2017

people want to have land and cultivate oil palm. For people in this area, oil palm is seen as 'life insurance' and means to success.[11] These views also lead to more expansion of oil palm.

3.3.Conclusion

In this chapter, I have explained how historical background affects the way smallholders do intensification and/or expansion. Transmigration programme from the New Order government created a different starting point among smallholders. In this area, migrants from the PIR programme have been in more advantageous position. The initial capitals and access that these migrants have had could support them to expand the oil palm plantation more easily. The intensification is also easier to do for the smallholders from transmigration programme.

The success stories from the migrants in developing oil palm encourage people in this area to see oil palm plantation as a target achievement. In addition, the smallholders from transmigration programme live harmoniously together with the local people around the Petaling area (in South Sumatra). I realize that in different areas, the situation might be different. The oil palm development program through transmigration is not always successful. In some cases, the transmigration programme leads to conflict between local people and migrants. It could also lead to conflict between the company and smallholders. This success story from Jambi gives an alternative story that the oil palm development from the transmigration programme can be successful and run peacefully, at least until now.

The importance of the impact of historical background to the way people live is also explained in the livelihood framework. This third chapter shows how the historical background gives significant impacts for the livelihoods of smallholders. The analysis of historical background shows how macro-level structure creates different opportunities and constraints of livelihoods of smallholders.

[11] According to the interviews with SH11 on 14th Jan 2018 and SH12 on 14th Jan 2018

THE ROLES OF LOCAL ORGANIZATIONS AND THEIR RELATIONSHIP WITH SMALLHOLDERS

In this part, I explain the roles of local organizations around smallholders that have affected their livelihood strategies and analyze how the roles of these organizations and the relationship between the local organizations and smallholders could lead to different decisions of smallholders for intensification and/or expansion. The local organizations that I analyze in this chapter are KUDs, PAL (Prosympac Agro Lestari) and BGR (Bahari Gembira Ria) as companies, and Setara and SNV (Stichting Nederlandse Vrijwilligers) as NGOs. I also relate how these organizations link to RSPO and ISCC certification that would lead to different decisions for expansion and intensification. At the end of this chapter, I also explain about replanting issues that come up in discussion with local organizations. The relationship between local organizations and smallholders is also part of analysis social capital of smallholders.

4.1. The Roles of KUDs and its Relationship with Smallholders

As I explained before, KUD has a role in the management of plasma land. It is a mediator between smallholders and the companies. According to *Instruksi Presiden* (Presidential Instruction) number 4 of 1984, KUD aims to be the center of village-economic activities and services. KUD is a means for the local people so they can manage themselves and have a role in the national and rural development. Based on the law, the activities in KUD include credit, savings and loan-services, providing means of production, managing and marketing productions, and other activities that are needed by the members of KUD (Presidential Instruction No.4 of 1984). In this section, I explain the roles of KUD in Petaling area in general, the roles of RSPO-certified KUD, and the roles of ISCC-certified KUD. I analyze the differences of management among these KUDs and look at how the certifications affect smallholders. In relation to my research question, I explain how the relationship between smallholders and KUD could lead to different decisions for intensification and/or expansion.

4.1.1 KUD in general

As I explained in the previous chapter about historical background, smallholders that were part of the transmigration program have two types of land, which are plasma and non-plasma land. KUD has a role to manage the plasma land with smallholders who own it. KUD is a bridge in the relationship between BGR and smallholders that are tied to the company.

I use the case from KUD Makarti in Sido Mukti village to explain the roles of KUD in general. In this KUD, there are more than 280 smallholders as active members from 10 groups of smallholders. Every group has their own management team, which consist of a leader, a secretary, and a treasurer. Active members are the smallholders that have contract with BGR in managing their plasma lands. Hence, the owners of plasma land are active members of KUD by default. This KUD also has inactive members which are smallholders that have non-plasma land.

According to the interview with a representative from KUD Makarti[12], both active and inactive members, have the same access for credits and benefits (net income/*Sisa Hasil Usaha*) of KUD. However, for inactive members, their non-plasma land is not managed by KUD, especially in the harvesting process. For active members, harvesting process is managed by KUD. KUD has the responsibility to manage the payment of FFB for plasma smallholders every month, arrange the weighing process of FFB, and provide the transportation service of FFB from the estate to the mill.

Beside of the management of plantation, another difference between active and inactive members is that active members sell their yields through KUD to BGR's mill and their FFB is paid with *Disbun* price. Meanwhile, for inactive members, they could sell their FFB to middlemen or KUD. Even if they sell the FFB through KUD, FFB of non-plasma land still is paid with business price from KUD[13]. The FFB of non-plasma land from KUD and middlemen then will be sold to the mills that could accept fruits from non-plasma land with the business price that is implemented by the mills.

KUD is supposed to separate the yields from plasma and non-plasma land. However, from one of my observations[14], I saw the yields from non-plasma land were put together with the yields from plasma land. The head of the groups of farmers was aware of this process. He[15] mentioned that the yields from the non-plasma land were only a few quintals because the palms were still young. Since he felt pity to the owner of the non-plasma land if she brings the yields by herself to the mill, he helped her. From an interview with the head of the group of farmers[16], for comparison of the price of FFB, if FFB with *Disbun* price is IDR 1,500 per kg, the business price of FFB of non-plasma land will be IDR 1,200 per kg. According to him, the profit from FFB of non-plasma land is for the management of the group of farmers. It means that the more FFB of non-plasma land that he allows to be sold together with FFB of plasma land, the more profit that he will get from them. He realized that this is not allowed by the company. However, according to him, this practice helps the smallholders of non-plasma land and the fee could help the groups of farmers and KUD. This practice put only the company (BGR) in disadvantageous position. In fact, *Bina Tani* (Farmers Development) team of BGR knows about this practice but they let it happen because they are also smallholders that live in Petaling area and are friends with smallholders that do this practice. This becomes an issue when FFB of non-plasma land ruins the total OER. This practice could be one of the reasons why OER of FFB from plasma land is low. It would certainly also affect certification. Only FFB from plasma farmers can be certified. When an auditor finds out that non plasma FFB is mixed with certified FFB, all farmers and the mill can lose their certificate. In a meeting between PAL and representatives of smallholders, a

[12] According to an interview with SH14, a representative of KUD Makarti in Sido Mukti village, on 18th Dec 2017
[13] According to an interview with SH15 on 25th Nov 2017
[14] According to an observation of a harvesting process of one of groups of farmers in KUD Makarti in Sido Mukti village on 23rd Nov 2017
[15] According to the informal conversation with SH01 in the observation of harvesting process on 23rd Nov 2017
[16] According to an interview with SH01 on 4th Dec 2017

representative of PAL[17] mentioned that the harvesting process needs to be done properly because the raw FFB of plasma land could reduce the OER by 5%. From my observation, I assume that PAL does not know about this practice.

In relation to harvesting, plasma land has harvesting rotation in every 10 days or three times per month. KUD has a role to manage every harvesting process. In the first week of each month, KUD will accumulatively give the profit from the yields in a month to smallholders. This monthly payroll affects not only smallholders, but also other people that live in this area[18]. Labourers are paid every month after the landowners are paid by KUD. The shopkeepers and vegetable-peddlers also are paid monthly after the people have money to pay their groceries.

Figure 4 The treasurer of a group of farmers receive the salary from KUD for the farmers in his group on payday

Since the harvesting process is supported by KUD, smallholders need to pay some services to KUD. This payment is usually automatically cut-off from smallholders' salary. The amount of money they need to pay is based on the amount of yield they produce every month. Some services that they need to pay are fee for KUD and village administration (IDR 15 per kg of FFB), fee for the management of group of smallholders (IDR 7 per kg of FFB), transportation or truck and its driver (IDR 56 per kg of FFB), loading and unloading workers (IDR 22 per kg of FFB), workers for weighing (IDR 10 per kg of FFB), fee for infrastructures like road and mosque (IDR 4 per kg of FFB), and operational fee in the harvesting process. The amount of operational fee depends on the number of workers in the harvesting day. The operational fee is used to pay the food consumption, which are a lunch (IDR 15,000) and a pack of cigarette (IDR 25,000), for workers in the harvesting day. According to the head of one of groups of farmers[19], in his group that consists of about 30 smallholders and could harvest three trucks of FFB, there could be 14 workers that work in one harvesting day. They are 3 people from the management of the group

[17] According to LO01 in a meeting between PAL and representatives of smallholders on 5th Jan 2018
[18] According to an interview with SH16 on 4th Dec 2017
[19] According to an informal conversation with SH01 on the payday 8th Dec 2017

of farmers (a leader, a secretary, and a treasurer), 2 workers for weighing, 3 drivers for 3 trucks, and 6 loading workers for 3 trucks. In total, for three harvesting day a month, the operational fee is about IDR 1,680,000 per group of farmers per month (about IDR 56,000 per farmer per month). Hence, besides the operational fee, smallholders need to pay IDR 114 per kg of FFB they get for services from KUD. This also does not include the repayment of credit that smallholders need to pay, if they have debt to KUD.

Figure 5 A process of weighing the FFB in a collection point after the harvesting. From left to right: the weighing workers, the loading workers, the smallholders, and the treasurer of the group of farmer was taking notes of the amount of FFB

4.1.2 KUD with RSPO Certification

KUD Karya Mandiri in Tri Mulya Jaya village is in the process to be certified by RSPO. All smallholders in this KUD are plasma smallholders so they have the land ownership for 2 ha of plasma land. All of these active smallholders in KUD are part of the certification process, which are 547 smallholders from 21 groups of farmers. In the certification process, BGR has a role to support the process. BGR is the one who introduce this KUD to RSPO[20]. According to the interview with the representatives of KUD Karya Mandiri[21], this KUD decided to follow the certification process because the price of FFB will be more assured with the certification. They expect that BGR could assure the high price of FFB based on the regulation from *Disbun*. Beside of that, they hope that the certification process could help smallholders to have better management of plantation. A representative of KUD Karya Mandiri[22] mentioned that the advantages of certification is also about the 'education' for smallholders, like the additional knowledge about the proper way to harvest, knowledge about environment, etc. This knowledge then leads to the improvement of the quality of FFB. There is also an issue that smallholders could get a financial benefit or fee from this certification, but management of KUD still do not

[20] According to an interview with LO02, a representative of BGR, on 3rd Jan 2018
[21] According to an interview with SH17 and SH18 on 6th Jan 2018
[22] According to an interview with SH19 on 24th Nov 2017

know about the requirements of this fee yet[23]. KUD has started the process since July 2017 and expect to get the certification at the end of January 2018.

Responding to this certification process, smallholders need to change some habits in their oil palm management. For example, the harvesting process requires good attention so the FFB that is harvested is surely ripe. Smallholders also need to use Personal Protective Equipments (PPE) in the process of plantation management e.g. during spraying. According to the interview with the head of one of groups of farmers in this KUD[24], it is difficult to make the use of PPE as a habit, but smallholders are in the process to get used to it. He mentioned that smallholders are aware about the advantages of the change to better management practices. For example, in spraying herbicide, 10 liters of herbicide was needed for 2 ha of land, but now it is only needed 6 liters of herbicide. Beside of that, in fertilization, it used to need 10 bags of fertilizers for 2 ha of land, but now 8 bags of fertilizers are enough. This efficient use of herbicide and fertilizers is possible when smallholders know and do the spraying and fertilization properly. Management of KUD is optimist that smallholders could change their management practices gradually. The head of the group of farmers also mentioned that the advantage of certification that is already gained by smallholders is the small percentage of rejection of FFB. The rejection rate is usually 2-3% because of the dirt in the bunch or long stem of the bunch. However, after the certification, the rejection is only around 1%. This benefit is also related to the regulation from the Ministry of Agriculture (*Peraturan Menteri Pertanian/Permentan*) that is implemented by BGR about the types of FFB that can be accepted in the mill.

Because the certification is supported by BGR, KUD Karya Mandiri has to send all of its FFB to BGR. Hence, all smallholders in this KUD need to comply with *Permentan* No.14 of 2013 in selecting its FFB so their FFB can be accepted by BGR's mill. According to the interview with the representatives of KUD Karya Mandiri[25], they said that the farmers found difficulties at first to comply with the regulation about the quality of FFB, but now they could see that the productivity is better and more stable. KUD Karya Mandiri has started to follow the regulation since September 2017. While normally this KUD could produce 1.4-1.7 million tons of FFB per month, in the first month in implementing *Permentan*, this KUD could only send 900,000 tons of FFB to BGR and the rest of it were sent to PAL. The reasons will be elaborated in section 4.2.2. However, in the next following months (October and November 2017), the yields that were sent to BGR according to *Permentan* regulation has increased to 1.4 million and 1.6 million ton of FFB per month respectively[26].

A representative of BGR[27] mentioned that there will be no difference of price of FFB between certified and uncertified FFB from plasma land. FFB of plasma land already has the highest

[23] According to an interview with SH17 and SH18 on 6th Jan 2018
[24] According to an interview with SH20 on 6th Jan 2018
[25] According to an interview with SH17 and SH18 on 6th Jan 2018
[26] According to an interview with SH17 and SH18 on 6th Jan 2018 and information from the report of FFB production in KUD Karya Mandiri in 2017
[27] According to an interview with LO02 on 3rd Jan 2018

selling price which is decided by *Disbun*, so the certified FFB of plasma land is still going to use the price from the *Disbun*. Smallholders are aware of this issue. When they were asked about the advantages of certification, the higher price of FFB was not part of their answers. The representatives of KUD Karya Mandiri[28] mentioned that they expect the RSPO certification could be a guarantee that FFB from this KUD will always receive prices according to *Disbun*. Management of KUD also mentioned that certification will also be advantageous in the replanting period. According to them, the plantation fund management agency (*Badan Pengelola Dana Perkebunan*/BPDP) could support the funding for replanting for IDR 50 million (± EUR 2,944) per 2 ha if the smallholders are part of certification program like RSPO or ISPO. The representative of BGR also added that the advantage of certification will be more noticeable if BGR does not operate anymore. Then KUD with certification will be easier to find other companies to be its partner. The RSPO certification can be a proof that KUD produces good fruits. Moreover, management of KUD added that there will be an additional fee that they could gain from the certification. This fee could be related to the GreenPalm, which I explain in the section about how certifications affect expansion and intensification.

4.1.3 KUD with ISCC Certification

KUD Makarti in Sido Mukti village is in the process to be certified by ISCC. For this certification, the KUD puts focus only on independent (non-plasma) smallholders. They are certifying 50 ha of non-plasma land from 50 smallholders. According to a representative of KUD[29], independent smallholders are chosen to be part of this certification because they are the ones who need assistance. The independent smallholders who can be certified are the ones who hold their land ownership certificate and did not do land-clearing after January 2008. Before certification, independent smallholders sell their FFB to middlemen at a low price. Hopefully, with certification, independent smallholders can increase their bargaining position. Even though the price could not be similar with FFB from plasma land, at least the price would not be much different. With the certification, independent smallholders are expected to use better management practice on their land. According to an interview with a representative of KUD Makarti in ISCC certification[30], if all the production chain is certified by ISCC, including the smallholders and the mill, ISCC promised that there will be financial benefit for smallholders around 30 dollars per ton of CPO (Crude Palm Oil) per year.

According to the representative of KUD[31], ISCC was chosen because this certification was introduced by PAL. PAL is a company that just built a new mill in Sido Mukti village. According to a representative of PAL[32], PAL actually introduced the certifications by RSPO and

[28] According to an interview with SH17 and SH18 on 6th Jan 2018
[29] According to an informal conversation with SH14 on 20th Dec 2017
[30] According to an interview with SH21 on 20th Dec 2017
[31] According to an interview with SH21 on 20th Dec 2017
[32] According to an interview with LO03 on 2nd Jan 2018

ISCC to KUD. However, SNV had funding for ISCC and not RSPO at that time. This statement has not been confirmed yet by SNV since I did not have the chance to meet a representative of management of SNV. In his interview, a representative of PAL mentioned that:

> "…coincidentally SNV has the ISCC program. The funding for this program is already available and needs to be used for the implementation soon. For RSPO certification program, they (SNV) need to wait for the funding first. ...and in the world, this is the first one (that is certified by) ISCC. So maybe this is the project. Maybe from this result (of the project), they (SNV) can promote that this program is running. Maybe they (SNV) want to look for investors."

Responding to the ISCC certification process of KUD Makarti, the representative of PAL mentioned that there could be a difference in rejection rate of FFB from the certified-smallholders. The rejection of FFB might be lower than usual because the FFB that smallholders sell will be more acceptable for the mill. In relation to the price of ISCC-certified FFB, a representative of PAL could not say anything because the price needs to be decided by the higher management of PAL. Usually PAL will need to do laboratory tests for the fruits to check the OER. As required, the mill could only give the price of fruits from *Disbun* if the fruits could reach OER more than 21%. Therefore PAL could not buy the FFB from non-plasma land with the price from *Disbun* because the non-plasma land have poorer quality of seeds and produce OER less than 21%. However, he mentioned that PAL will immediately take action about this certification because there will be competitors that might soon make an agreement with KUD Makarti. Beside of PAL, there is a company that could be a potential partner with KUD Makarti in selling its ISCC-certified FFB from non-plasma land. According to the management of KUD[33], this company is a potential partner because it is also certified by ISCC. However, this partnership still needs to be discussed because thus far KUD Makarti only separate the harvesting process of ISCC-certified FFB from 9-10 smallholders and the yield is only about 6 tons of FFB (less than a truck). Meanwhile, the mill of this company is far from Petaling area. Therefore, the transportation cost to send the FFB is still need to be considered. There is a possibility that this company will claim the transportation cost to ISCC. However, there is no agreement yet and KUD Makarti still needs to discuss about the partnership with this company.

According to one of smallholders who is part of ISCC certification program[34], his income has increased since he joined the ISCC program because he gained a better price of FFB because he was no longer selling his yields to middlemen. However, since KUD supports the management of his plantation, the payment system is similar with the management of plasma land. He is paid by KUD once a month and there are a few deductions in his salary, like the fee for KUD, transportation cost, and operational cost (for the weighing workers, loading workers, and drivers of trucks). Even though there are deductions in his salary, his income is better than the income he

[33] According to an informal conversation between management team of KUD Makarti on 5th Jan 2018
[34] According to an interview with SH22 on 25th Nov 2017

received when he sold the FFB to middlemen. Beside the increase of income, another advantage from the certification is the training about oil palm plantation. In addition, now there is a Spraying Team Unit (*Tim Unit Semprot*/TUS) that could help the process of spraying herbicide of his land more properly. Another smallholder who is part of ISCC certification program[35] also mentioned that the higher price of FFB is one of advantages of this certification. Besides of that, he also mentioned that the rejection rate after he joined the ISCC is lower than before because the management practice has changed for the certification. From one of my observations[36], the rejection rate on the 2nd of January 2018 for ISCC-certified FFB is 3.5 percent with the price of FFB IDR 1,590 per kg. For comparison, in the same day, the price of FFB of plasma land is IDR 1,700 with rejection rate 2.3 percent.

Regarding the changes of management practices that smallholders need to do for the certification process, one of them is the spraying that needs to be done by TUS. The representative of KUD Makarti in ISCC certification[37] explained that TUS was established in relation to the issues of health and environment. The members of TUS are smallholders that were trained to do the following tasks: (1) using PPE in the spraying process; (2) saving the empty containers of herbicide in the storage room of KUD temporarily, which later will be brought to the mill; (3) saving the remaining of herbicide in the storage room of KUD; and (4) mixing the herbicide in the sterile location so there will be no contamination in the ground. When smallholders want to spray their land, they could invite TUS to their land through KUD. To hire the TUS, the fee will be cut-off from smallholders' salary. The fee to hire the TUS depends on the condition of the plantation. The representative of KUD Makarti in ISCC certification also mentioned that from the last time the TUS worked in one of smallholders' plantation, the smallholder needs to pay IDR 200,000 (± EUR 11.82) to hire the workers of TUS to spray in 1 ha of land. This cost of the herbicide is not included in this price. He is also aware that some smallholders still do the spraying by themselves. They do not hire the TUS because of the financial reason. The revenue of smallholders from the yields of 1 ha of non-plasma land is not much, so the revenue will be getting smaller if they still need to pay to hire the TUS to spray their land.

Besides of the change in spraying practice, smallholders that are involved in ISCC also change their practice in fertilization. One of smallholders[38] mentioned that now he applies the fertilizers in the outside of circle around the trunk, which is about 2.5 to 3 meters from the trunk, because this is the place where the tip of the root that absorb the minerals from the fertilizers. Another smallholder[39] mentioned that he has changed the way he arrange the fallen fronds since the training was conducted. The fallen fronds are considered as organic fertilizers. He said that the fallen fronds need to be arranged in U-shape, not in straight lines. Beside of that, the fallen fronds also need to be cut into three so they will be faster to be decomposed.

[35] According to an interview with SH03 on 6th Dec 2017
[36] According to an observation of transporting the FFB to PAL's mill on 2nd Jan 2018
[37] According to an interview with SH21 on 20th Dec 2017
[38] According to an interview with SH22 on 25th Nov 2017
[39] According to an interview with SH03 on 6th Dec 2017

The payment for the yields from the ISCC-certified smallholders is conducted every first or second day of each month. Regularly, the yields from the ISCC-certified non-plasma land is harvested on the 2nd and 17th of each month. Thus far, from 50 ISCC-certified smallholders, KUD only manages the yields from 8 smallholders collectively[40]. According to the representative of KUD Makarti in ISCC certification[41], the schedule for the harvesting process was made by KUD, but not all smallholders could follow the schedule because the yield from non-plasma land is not much. From one of my observations on harvesting process in ISCC-certified non-plasma land, 8 ha of non-plasma land could produce 4.5 tons of FFB in one harvesting process (about 500 kg of FFB per ha per harvesting process). However, a representative of KUD in ISCC certification[42] mentioned that this happened because it is in *trek* season. Smallholders believe that the yields always decrease in the *trek* season, which happens in the last months of the year. According to him, if it is not in the *trek* season, the yields from non-plasma land could reach a ton of FFB per ha. Because the yield from non-plasma land is not much, smallholders usually do the harvesting process of their non-plasma land together with the harvesting process of their plasma land. Mostly, smallholders that own the non-plasma land also own the plasma land. If the harvesting process is separated, then smallholders need to hire the labourer twice, for the harvesting process of non-plasma and plasma lands. According to the representative of KUD in ISCC certification[43], the separation of the harvesting process is not an issue as long as all of the ISCC-certified smallholders always report their yields to KUD so KUD could track their yields every month. Gradually, the harvesting process of all ISCC-certified smallholders will be managed by KUD collectively[44].

How smallholders harvest the yields from non-plasma land together with the yields from plasma land was also happening before smallholders are involved in ISCC certification process. One of smallholders[45] mentioned that he sold the yields from non-plasma land to middleman when he needed the money immediately. When he could wait for the payment from the yields, he would bring the FFB from non-plasma land together with the FFB from plasma land, and sold them all as FFB from plasma land. Another smallholder[46] also mentioned that he put the yields from non-plasma land together with the yields from plasma land before he joined ISCC program. However, now that he is part of ISCC certification program, the FFB from his non-plasma land is separated with the FFB from plasma land.

[40] According to an interview with SH01 on 1st Dec 2017
[41] According to an interview with SH21 on 20th Dec 2017
[42] According to an interview with SH01 on 2nd Dec 2017
[43] According to an interview with SH21 on 20th Dec 2017
[44] According to an informal conversation with SH01 on 1st Jan 2018
[45] According to an interview with SH03 on 6th Dec 2017
[46] According to an interview with SH06 on 6th Dec 2017

4.2.The Roles of Companies and Their Relationship with Smallholders

In Petaling area, there are two companies that have major roles for smallholders. The first company is Bahari Gembira Ria (BGR), which is a company that supported smallholders for their first plantation of oil palm in 1995/1996. The second company is Prosympac Agro Lestari (PAL) that has just started the operation of its mill in Sido Mukti village around July 2017. Both mills from these companies are the main mills for smallholders to sell their FFB. In this section, I explain the roles of PAL and BGR and how these companies affect smallholders' plantation management.

4.2.1. Prosympac Agro Lestari (PAL)

PAL has started the operational activity of its mill since July 2017. Before the mill was operating, since February 2016 there has been training for plasma and non-plasma smallholders. According to a representative of PAL[47], in-class training and field extension were done about Better Management Practices (BMP), Good Agricultural Practices (GAP), and other technical activities of plantation. The establishment of PAL was initiated by a declarator, which is a team that represents KUDs and village institutions from 6 villages around Petaling, Jambi. According to one of declarator members[48], this initiation was triggered by an incident in BGR that could not accept all FFB from smallholders because its mill was overloaded. According to a representative of PAL[49], this incident was disadvantageous for smallholders because the excess FFB was rotten and could not be processed by the mill. Because of this, the declarator team was formed to look for investors to establish a new mill around Petaling. Since PAL does not have its own plantation, all FFB that is processed in its mill depends on the FFB from smallholders. The representative of PAL mentioned:

> "So PAL did not come here all of a sudden because of its wants. They (the declarator) invited it. With the capacity of machine (in the mill) that could process 45 ton (of FFB) per hour, PAL could process 500-700 ton (of FFB) per day. They promised that they could reach the number. Based on this agreement, PAL did field survey and see the potentials here. Then the mill was established. So it is not sudden that PAL comes here, but because it was invited."

A MoU (Memorandum of Understanding) was created between PAL and 6 KUDs. This MoU includes the agreement of criteria of FFB that can be accepted in PAL, Corporate Social Responsibility (CSR), and the replanting issues for the future. Because the price of FFB in PAL is based on the price from *Disbun*, so the criteria of FFB are also based on the regulation from the Ministry of Agriculture (*Permentan*). Since the MoU was created, the challenge for both sides is to fulfill the agreement specified in the MoU. KUDs need to give the contribution of

[47] According to an interview with LO03 on 24th Nov 2017
[48] According to an interview with SH23 on 12th Jan 2018
[49] According to an interview with LO03 on 2nd Jan 2018

500-700 ton of FFB per day, but this target has not been reached. The average amount of FFB from KUDs in July-December 2017 was 300 ton per day[50]. Because of this issue, the company also will not be able to fulfill its promise to give the fee of IDR 10 per kg for the declarator. According to a representative of PAL[51], KUDs could not reach the target of FFB because they still have a contract with BGR. Beside of that, PAL also is selective in accepting the FFB, so the percentage of rejection of FFB could be high. Because of this, smallholders could choose to send their FFB to BGR instead.

Aside from FFB from plasma land, PAL also is able to accept FFB from non-plasma (independent) land. From July to November 2017, PAL gave one price to all FFB, based on the price from *Disbun*. However, since in the middle of December 2017, PAL has applied two prices, which are the price from *Disbun* and a business price. This is a decision from the management of PAL because the mill cannot reach the target of OER[52]. The price differences between *Disbun* and business is around IDR 100-150 per kg. The *Disbun* price is for FFB from plasma plantations, while business price is for FFB from non-plasma plantations. About the *Disbun* price for plasma plantation, PAL uses a higher price of FFB than BGR. It uses the price for trees that have been planted 10-20 years ago. Meanwhile, BGR uses the price for trees that have been planted 21 years ago, since the first plantation from BGR was in 1995/1996. According to a representative of KUD[53], PAL sets a higher price of FFB as a strategy to compete with BGR. Beside of that, he mentioned that the palm was actually less than 21 years old since there was a fire in 1996 and the palms need to be replanted. Another smallholder[54] mentioned that PAL needs to set a higher price for the FFB from plasma land since it does not have its own plantation and relies on FFB from smallholders for its mill.

The decision to apply two prices of FFB was made by PAL only. This one-sided decision has created an issue with smallholders and especially KUDs, because the management of KUDs thinks that they should be involved in the decision-making process. Declarators were also disappointed that they were not asked to be involved in this decision-making. Representatives of declarators[55] mentioned that PAL and declarators as representative of smallholders should be in functioning as a family (*sistem kekeluargaan*). Hence, there was supposed to be a discussion when they need to solve a problem. PAL held a meeting in January 2018 to evaluate the process in 2017 and to make plannings for 2018. However, the management of KUDs refused to come to the meeting. Only declarators and suppliers came to the meeting. In this meeting, representatives of PAL explained that two prices are used because the OER could not reach the target. *Disbun* price is applicable if the OER could reach 21.8%. If price from *Disbun* is still applied, it will incur losses for PAL. Moreover, smallholders could not reach the target to send 500-700 tons of

[50] According to a information that was presented by PAL in a meeting with representatives of smallholders on 5th Jan 2018
[51] According to an interview with LO03 on 2nd Jan 2018
[52] According to the discussion in a meeting between PAL and representatives of smallholders on 5th Jan 2018
[53] According to an interview with SH21 on 24th Nov 2017
[54] According to an interview with SH15 on 25th Nov 2017
[55] According to interviews with SH24 on 11th Jan 2018 and SH23 on 12th Jan 2018

FFB per day. The representative of smallholders mentioned that PAL should not make a sudden decision because the decrease of OER just had happened since October 2017. The OER could reach 21-22% in September, and reach 20-21% in October. One of declarators mentioned that there is a possibility that this happened because of the rainy season, because the productivity of oil palm fluctuates in a year.

At the beginning, PAL has 6 KUDs as partners. However, one of these KUDs decided to terminate the agreement. There was a disagreement about one of clauses in MoU between PAL and the new management of this KUD. It is mentioned that smallholders need to compensate for the loss of FFB that could not reach the target. A representative of the KUD[56] mentioned that he would want to continue the partnership if PAL changes this clause. However, PAL was not willing to do it, so this KUD and PAL terminated their partnership.

About the mill's certification, PAL's mill is not certified yet but the representative of PAL[57] mentioned that PAL's mill will be certified by RSPO certification. RSPO is chosen because it is related to the needs of its partners. He explained that the changes that might happen after the mill is certified are the installations of the names of the processing-stations in the mill and the installation of information about work safety. He also mentioned that the operational activities might not be changed because they depend on the operational standards of the company. In relation to the cut-off issue for certification, in the Principles and Criteria for the Production of Sustainable Palm Oil, RSPO mentioned in principle 7.3 that "new plantings since November 2005 have not replaced primary forest or any area required to maintain or enhance one or more High Conservation Values (HCVs)" (RSPO, 2013). This rule means that PAL needs to be more selective in accepting the FFB when the RSPO certification is implemented because the mill will not be allowed to process the FFB from a HCV land that was cleared after November 2005. Responding this issue, the representative of PAL mentioned that if it is the rule, then the company will follow the rule. However, because PAL is not in the process of implementing the certification yet, it cannot be concluded yet about how PAL would ensure that FFB that is accepted into the mill will fulfill the requirements.

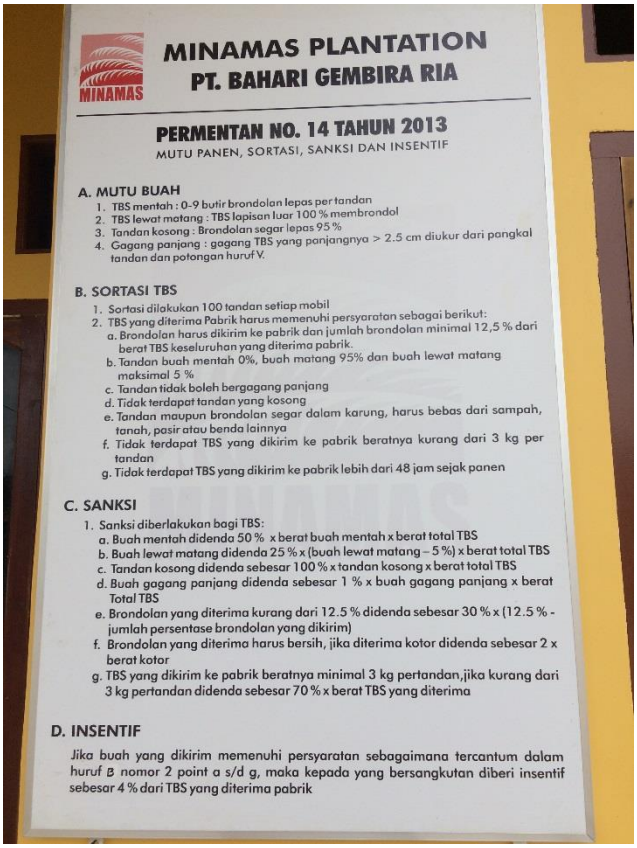
4.2.2. Bahari Gembira Ria (BGR)

As I explained before in chapter about historical background, BGR is a company that supported smallholders for their first plantation. BGR and smallholders with the support from KUD manage the 2 ha of plasma land together. To repay the company for the first plantation, smallholders need to pay BGR about 30% of the value of their yield every month. The amount of money that smallholders need to pay back is around IDR 17 million (± EUR 950). According to some smallholders that I interviewed[58], they could pay back all of their debt in 3-5 years. A

[56] According to an interview with SH19 on 6th Jan 2018
[57] According to an interview with LO03 on 2nd Jan 2018
[58] According to interviews with SH02 on 22nd Nov 2017, SH04 on 22nd Nov 2017, SH06 on 6th Dec 2017, SH07 on 3rd Jan 2018, and SH08 on 10th Jan 2018

representative of BGR[59] mentioned that the contract with smallholders will expire when the oil palm is not productive anymore. As long as smallholders still have debt to the company, they still need to send all the FFB to BGR. Lenience is given for smallholders that still have not paid off their debt. They could do the flat repayment, i.e. repayment for IDR 500,000 (± EUR 30) per month.

Since around July 2017, BGR applied *Permentan* regulation No 14 of 2013 to select the FFB that can be accepted by mills. Through this regulation, BGR needs to be stricter in selecting the FFB. The implementation of this regulation has been a challenge for smallholders. The representative from BGR mentioned that smallholders need to understand why this regulation has to be applied. This is for their own benefit to have sustainable oil palm. He mentioned that BGR has tried to implement this regulation since four years ago. In the first year, the regulation was disseminated by representatives of BGR to smallholders, but the response was not good. They tried to disseminate the information again about the regulation in the next years until the management of BGR reached a point that the regulation needs to be implemented because BGR's loss was getting higher. Hence, in 2017, *Permentan* was implemented by BGR and the information about the rules is located in front of every KUD. Figure 6 shows the regulations of *Permentan* that is put in every KUD office. It is difficult for smallholders to follow the regulations, especially the rule about the palm loose fruits (*brondolan*). In one of the rules in *Permentan*, the amount of *brondolan* has to be at least 12.5% of the total weight of FFB that is accepted by the mill (it is shown in Figure 6 point B number 2a). A smallholder[60] mentioned that it is difficult to measure the *brondolan* before the harvesting process because there are people that collect the fallen *brondolan* in smallholders' plantations. Hence, counting the fallen *brondolan* is not reliable to decide whether the FFB is in time to be harvested or not. He mentioned that the situation is different with BGR's plantation because its plantation is secured, so counting the fallen *brondolan* is reliable to decide the time for harvesting. Another smallholder[61], who is also the


MINAMAS PLANTATION
PT. BAHARI GEMBIRA RIA

PERMENTAN NO. 14 TAHUN 2013
MUTU PANEN, SORTASI, SANKSI DAN INSENTIF

A. MUTU BUAH
1. TBS mentah : 0-9 butir brondolan lepas per tandan
2. TBS lewat matang : TBS lapisan luar 100 % membrondol
3. Tandan kosong : Brondolan segar lepas 95 %
4. Gagang panjang : gagang TBS yang panjangnya > 2.5 cm diukur dari pangkal tandan dan potongan huruf V.

B. SORTASI TBS
1. Sortasi dilakukan 100 tandan setiap mobil
2. TBS yang diterima Pabrik harus memenuhi persyaratan sebagai berikut:
   a. Brondolan harus dikirim ke pabrik dan jumlah brondolan minimal 12,5 % dari berat TBS keseluruhan yang diterima pabrik.
   b. Tandan buah mentah 0%, buah matang 95% dan buah lewat matang maksimal 5 %
   c. Tandan tidak boleh bergagang panjang
   d. Tidak terdapat tandan yang kosong
   e. Tandan maupun brondolan segar dalam karung, harus bebas dari sampah, tanah, pasir atau benda lainnya
   f. Tidak terdapat TBS yang dikirim ke pabrik beratnya kurang dari 3 kg per tandan
   g. Tidak terdapat TBS yang dikirim ke pabrik lebih dari 48 jam sejak panen

C. SANKSI
1. Sanksi diberlakukan bagi TBS:
   a. Buah mentah didenda 50 % x berat buah mentah x berat total TBS
   b. Buah lewat matang didenda 25 % x (buah lewat matang – 5 %) x berat total TBS
   c. Tandan kosong didenda sebesar 100 % x tandan kosong x berat total TBS
   d. Buah gagang panjang didenda sebesar 1 % x buah gagang panjang x berat Total TBS
   e. Brondolan yang diterima kurang dari 12.5 % didenda sebesar 30 % x (12.5 % - jumlah persentase brondolan yang dikirim)
   f. Brondolan yang diterima harus bersih, jika diterima kotor didenda sebesar 2 x berat kotor
   g. TBS yang dikirim ke pabrik beratnya minimal 3 kg pertandan,jika kurang dari 3 kg pertandan didenda sebesar 70 % x berat TBS yang diterima

D. INSENTIF
Jika buah yang dikirim memenuhi persyaratan sebagaimana tercantum dalam huruf B nomor 2 point a s/d g, maka kepada yang bersangkutan diberi insentif sebesar 4 % dari TBS yang diterima pabrik

Figure 6 The regulation from the Ministry of Agriculture (*Permentan*) No 14 of 2013

[59] According to an interview with LO02 on 3rd Jan 2018
[60] According to an interview with SH01 on 9th Jan 2018
[61] According to an interview with SH25 on 22nd Nov 2017

head of one of groups of farmers in KUD Makarti, confirmed this issue about *brondolan*. He said that when the amount of *brondolan* in one bunch is less than 12.5% of the weight of the bunch, than that bunch of fruit is considered raw, so the fruit cannot be accepted and are not paid. Moreover, the rejected bunch would not be returned to the smallholders, so they cannot sell that bunch to other mills that do not implement *Permentan*. Because of this risk, he and the smallholders in his group has decided to sell all their FFB to PAL.

The representative of BGR said that, since the regulation has been implemented in the mill, the amount of FFB that got into the mill has been decreasing, but they have reached the OER target (22-23%). It is better for BGR to have less FFB but better OER, instead of more FFB but lower OER. However, if the quantity of FFB will not increase, there is a possibility that BGR creates a partnership with companies that do not have their own mill. Besides of that, BGR could also implement two prices, *Disbun* price and business price, so the FFB from non-plasma land can then be accepted by the mill.

The more selective rules in accepting FFB in BGR happened at the same time when PAL started the operation of its mill. At this time, many smallholders sent all of their FFB to PAL because it has less strict rules and the highest price from *Disbun* was still applied. This had happened for a few months. Responding to this issue, BGR sent a warning letter to groups of smallholders to remind them that they need to send the FFB to BGR. The representative of BGR[62] stated:

> "… we (BGR) are foster father (for the smallholders). As parents, we will not abandon our children even though they are disobedient. … (about the warning letter) usually until the third warning letter. After that, they (smallholders) will be invited to discuss the problems. …we could lead to the legal way because the contract has legal power."

How BGR and smallholders use the terminology of foster father (*bapak angkat*) shows the structural hierarchy between them. BGR as the foster father of the smallholders shows the issue of *Bapakism* (father-ism) in their relationship. This term is used in explaining the father-children relationship in the context that is beyond family, like in the neighbourhood, working environment, society, and so on (Mulder, 1994). This term implies that 'the children' are expected to obey and comply with 'the father'. The word 'foster father' is also used by smallholders when they were talking about replanting. They mentioned that in the replanting, they need to look for a foster father that could support the replanting process.

Regarding the 'disobedience' of smallholders, after the first warning letter, the team of smallholder development (*Bina Tani*) from BGR approached the groups to find a solution for this issue. After the discussion, smallholders and BGR agreed that a representative from BGR is going to assist and oversee the harvesting process and will select the FFB that can be sent to BGR's mill. The remaining FFB can be sent to PAL. From one of my observations[63], the best (about 35-40%) of FFB in a harvest time will be brought to BGR. In this observation, 10 out of

[62] According to an interview with LO02 on 3rd Jan 2018
[63] According to an observation of harvesting process in 13th Jan 2018

24 tons of FFB was brought to BGR's mill. PAL is actually in disadvantageous position because of this system.

The representative of BGR mentioned that it is reasonable for smallholders if they have difficulties in implementing the *Permentan*. The harvesting process is usually done by labourers and they are paid based on the amount of yield. Hence, it is more profitable for them if they could harvest more fruits. For the landowner, it is also more profitable if their land could produce more FFB because it means they will get more revenue from it.

In relation to intensification, the *Permentan* could help smallholders to improve the sustainability of their oil palm productivity, especially for the stability of the yield. One of the proofs can be seen from the yield in KUD Karya Mandiri. The smallholders in this KUD need to send all of their FFB to BGR because they are in the process to be certified by RSPO and this process is supported by BGR. At the same time, they also are no longer having partnership with PAL. The situation pushes these smallholders to comply with *Permentan* regulations. It was difficult in the beginning, but the FFB from this KUD is getting more stable after the implementation of *Permentan* regulation.

The shortage of supply of FFB to the mills, both PAL's and BGR's, actually gives the chance for smallholder to improve their productivity to fulfill the demand of FFB from the mills, either with intensification or expansion. However, for the interviews with smallholders, there are no smallholders that explicitly say the shortage could be the chance for them to improve their productivity. This chance actually can be the reason for smallholders to expand their land because there is room in the mills to accommodate their FFB.

4.3.The Roles of NGOs and Their Relationship with Smallholders

There are two NGOs that currently operate in Petaling area, which are SNV and Setara. SNV is a not-for-profit international development organization which works in agriculture, renewable energy, and water, sanitation, and hygiene. This organization focus on 'increasing people's incomes and employment opportunities in productive sectors like agriculture as well as on improving access to basic services such as energy, water, sanitation and hygiene' (SNV, 2018a). One of projects of SNV is in Indonesia named Berbak Green Prosperity Partnership. This project has objectives to strengthen the livelihood of 10,000 smallholders, detect and halt deforestation through monitoring of oil palm production, and increase the production of oil palm sustainably (SNV, 2018b). One of the key components for SNV in implementing this project is inclusive business trainings to support the inclusion of smallholders in sustainable palm oil supply chain (SNV, n.d.) One of activities in the inclusive business training is the training about Better Management Practice (BMP), which was conducted in Petaling area, Jambi. Through cooperation with Wageningen University, SNV creates a BMP training programme that has as its objective 'strengthening smallholders' knowledge and capacity in order to increase the yields in existing plantation, while minimizing deforestation and other environmental impacts' (SNV,

n.d.). This BMP training has a target to support 10,000 smallholders in Muaro Jambi and increasing oil palm yields by 20 percent after two years of intervention (SNV, n.d.).

In implementing this project in Petaling area, SNV built a partnership with Yayasan Setara Jambi (Setara). Setara is a NGO in Indonesia that offers support for consultation and training for oil palm smallholders, NGOs that support the sustainability of oil palm, and other stakeholders that have interests in smallholders (Setara Jambi, 2018). In implementing the BMP training for smallholders in Petaling area, Setara started with the BMP training for chosen smallholders to be local trainers. These local trainers then would teach in classes to other smallholders with the assistance from trainers of Setara. I explain more about the BMP training and how the training relates to the issues of intensification and expansion in the section about knowledge as an asset.

Figure 7 BMP Training from a local trainer in Mingkung Jaya village

In conducting the training for smallholders, SNV and Setara have close relationship with KUD from each village. To monitor the training process in Petaling area, SNV chose one person from the management team of KUD Makarti in Sido Mukti village to be a representative of SNV. This man was delegated to be a consultant from SNV-side to monitor the process in BMP training project. By recruiting a local person to be the consultant of the training, every training process could be observed closely. This consultant also worked closely with the trainers from Setara. According to my observation, this man was chosen as consultant because he was a young smallholder, has experiences in management of people from his position in KUD, and has a higher education. Therefore, compared to the other persons in the management team of KUD, he was considered having the ability to be the consultant of the BMP training.

SNV and Setara have an important role in strengthen smallholders' knowledge about management practice of oil palm. From the evaluation meeting about the BMP training project, smallholders gave positive response for the training and they expected that the training could reach more smallholders. This training is closely related to smallholders' actions in intensification. Smallholders could use the knowledge from the training to improve their productivity in the existing land.

4.4. How Local Organizations Affect Smallholders' Decisions

As I explained in the theoretical framework, intensification is about improving the yields in the existing plantation and improving the quality of FFB. In this case, the companies have a role to support smallholders in intensification. This is also related to the transmigration program from the government. In the transmigration program, BGR had a main role in giving smallholders access to good quality of seeds. The contract between BGR and smallholders from the transmigration also led to better price of FFB from plasma land, which is regulated by *Disbun*. The relationship between BGR and the smallholders of plasma land also led to the implementation of RSPO certification. BGR supported one of the KUDs in the Petaling area to be certified by RSPO. BGR, which implements *Permentan* in selecting FFB for its mill, and RSPO-certified KUD creates a situation for smallholders to follow *Permentan* in their management practices in order to send all their FFB to BGR's mill. Smallholders are required to be more selective in the harvesting process that could lead to the stability of their yield. The company is also in an advantageous position since the better quality of FFB is supplied from smallholders that could lead to the improvement of OER. However, smallholders do not receive any incentives or higher price of FFB because of the higher OER. Another company, PAL, also has a role in connecting KUD Makarti with SNV that could support the ISCC certification process of the KUD. In the next section, I explain more about how the certifications (RSPO and ISCC) affect smallholders' decisions for expansion and intensification.

The role of KUD in managing the plasma land also affects smallholders' practice of intensification. Plasma smallholders have been supported by KUD since the beginning phase of their plantation, so they have the tendency to assign KUD to be in charge of the management of the land. As an example, in relation to the replanting issue, smallholders mentioned that the process of replanting would need to be discussed with KUD and they could not make a decision about replanting by themselves. It means that KUD has an important role in the replanting process to find a good support, which could lead to better quality and quantity of yields in the future.

In relation to the issue of expansion, the local organizations do not have the authority to limit the smallholders' practice to do expansion. However, like I mentioned in the chapter about historical background, the smallholders that are tied to the company can more easily do expansion since they produce higher OER because of better seeds and receive a higher price of FFB which could lead to the increase of revenue of smallholders. Their expansion consists preferably of buying plasma land. In relation to certified-organizations, I explain about how certifications affect the expansion in the next section.

In relation to the roles of NGOs, SNV and Setara have a direct impact in influencing smallholders to do intensification. Through the BMP training, they have changed smallholders' practices in order to produce more and better FFB. Smallholders have done some changes in their management practice to improve their yield, like using the organic fertilizers, implementing the proper way in spraying and fertilization, arranging the fallen fronds in U-shape, etc.

However, the training does not have direct impact on the practice of expansion. The training provides the information about the right type of land to plant oil palm, but the trainers do not have the authority to limit smallholders to expand to mineral soil only. I explain further about the impact of training in the section about how knowledge, as a capital, influences smallholders in intensification and expansion.

4.4.1 How Certifications Affect Intensification and Expansion of Smallholders

In relation to how certification links to the expansion issue, in the principles and criteria for production of palm oil from RSPO, it is mentioned in principle 7.4 that 'extensive planting on steep terrain, and/or marginal and fragile soils, including peat, is avoided' (RSPO, 2013). It shows that the certification does not allow smallholders to do expansion in peatlands/swamp area. Hence, smallholders who own plantations in a swamp area could not certify their FFB. However, for smallholders who did expansion in swamp area, there was no intention from them to be certified. One of smallholders[64] who own a plantation in swamp area does not even know about certification. Those smallholders did expansion in the swamp area because they wanted to own more land. The owners of swamp area know that the FFB from their land will have poor quality and the cost for the land management is higher than the cost for mineral soil. However, the affordability of swamp area triggered them to buy the land. This swamp area is considered an asset for which the value will be improved in the future. This issue is explained deeper in the section about how land could affect smallholders' decisions for expansion and intensification. More in-depth information will be provided on different types of ownership of non-plasma land in section 5.1.

In relation to ISCC certification, there is also a rule that mentions that "raw material shall not be obtained from land that was peatland in January 2008 or thereafter and no longer had this status" (ISCC, 2016). For smallholders who are certified by ISCC in Sido Mukti village, this rule did not affect them because most of the area in this village is mineral soil. In addition, according to the representative of KUD Makarti in ISCC certification, the threshold of January 2008 is about the land clearing, not about the first planting of oil palm. Since smallholders did clear the land before January 2008, they could comply with this rule and hence be certified by ISCC.

In relation to expansion, the rules of certification aforementioned that do not allow smallholders to do expansion in peatland/swamp area did not affect smallholders' decisions for expansion in swamp area. From the interviews I had with smallholders, the owners of swamp area are not part of the certification programs and they do not know about certification. About expansion in the future, from the interviews I had with smallholders that are part of the certification process, the issues of expansion in swamp area or peatland had never come up as one of their challenges. The representative of KUD Makarti in ISCC certification mentioned that the most prominent rule is about smallholders that could not be part of certification if their land was opened after January

[64] According to an interview with SH02 on 22nd Nov 2017

2008. There were no smallholders that mentioned about the rule of certification that do not allow them to do expansion to swamp area or peatland.

In relation to intensification, smallholders who have been in certification process are affected by the certifications. The first issue is about BMP training, in which smallholders who are in the certification process, both RSPO and ISCC, have access to the training. Since ISCC certification is for the owners of non-plasma land and RSPO certification is for the owners of plasma land, the training is more impactful for ISCC-certified smallholders. Before the training program from SNV and Setara, the training about better management practices were given to only smallholders who own plasma land because the training were from BGR who has contract with plasma smallholders. Even for the training from NGOs, since KUD is the mediator between NGOs and smallholders, KUD tend to choose plasma smallholders as a priority to be trained. This is also related to the fact that the majority of smallholders in Petaling area is plasma smallholders since it is a transmigration area. ISCC certification opens a chance for smallholders who own non-plasma land to get access to the training. However, there is a tendency that the owner of non-plasma land is also the owner of plasma land. I only found one ISCC-certified smallholder who owns the non-plasma land only.

The training could lead to better quality and higher amount of yield that is produced by smallholders. For non-plasma smallholders who are certified by ISCC, the change of their management practices lead to better market and better price of FFB. They used to sell their FFB to middlemen. After the certification process has been started, they could sell their FFB to PAL. The change of market also changes the price of the FFB since the business price of FFB from the company is higher than the price of FFB from middlemen. Then this change of price leads to the increase of revenue of non-plasma smallholders.

For RSPO-certified smallholders, BMP training is also expected to help smallholders to improve the quality and quantity of their yields. However, since RSPO is implemented by plasma smallholders, which already gain the high price of FFB that is regulated by *Disbun*, so there is no increase of price of FFB for RSPO-certified plasma smallholders. Smallholders are aware of this issue. Hence, instead of a higher price of FFB, RSPO-certified smallholders expect the guarantee that their FFB is always bought with the price from *Disbun*. In addition, they also expect the stability and the higher amount of yield that could lead to the increase of their income. The management of RSPO-certified KUD also mentioned about the additional fee that they could gain annually. The management of KUD does not know yet about the details of this fee, but this fee could be related to the premium price that is implemented by GreenPalm.

GreenPalm is a certificate trading program that has a role as a mediator between smallholders who produce RSPO-certified oil palm and manufacturers/retailers who wants to buy certified oil palm (GreenPalm Sustainability, 2016). Through GreenPalm, smallholders could trade their certified-CPO for premium prices. However, for the plasma smallholders, the premium price from GreenPalm is only about 0-1% of CPO prices (Rietberg and Slingerland, 2016). This premium price is also only available for RSPO-certified smallholders. A representative of ISCC-

certified KUD[65] mentioned that it is unfortunate that they could not sell the ISCC certification like RSPO certification. However, he mentioned that the ISCC representative promised that smallholders could gain 30 dollar per ton of CPO per year if the whole production chain is certified by ISCC (including the smallholders and the company's mill).

According to a research result by Rietberg and Slingerland (2016), it is explained that the certification leads to higher operational costs at smallholders level. This is confirmed by the case of ISCC certification in KUD Makarti. Since smallholders need to hire a Spraying Team Unit (*Tim Unit Semprot*/TUS), it becomes an additional expense for smallholders, especially for smallholders who used to do spraying by themselves. This issue thus leads to infringement because smallholders do not want to hire TUS to do the spraying. This infringement is recognized by the representative of KUD Makarti in ISCC certification. He mentioned that he understands the smallholders' situation so he lets it happen. For RSPO certification, TUS is also required to be hired by smallholders for a proper spraying process. However, KUD Karya Mandiri is still in the process of forming this team, so TUS is not available yet for the RSPO-certified KUD. Nevertheless, I assume that the case in ISCC-certified KUD could also happen in the RSPO-certified KUD, in which smallholders do not want to hire TUS for their plantations because of the additional cost. Still about the operational cost, smallholders said that there is a cost reduction of herbicide since they apply the proper way for spraying by selectively spraying the weed instead of spraying the whole weed (*semprot total*). Compared to the research result from Rietberg and Slingerland (2016), they explain that certification leads to a decrease of the cost of herbicide but it was replaced by the labour cost to hire TUS.

4.5. Replanting Issues

Replanting issue is one of the topics that come up from my fieldwork. In Sido Mukti village, the replanting process will start in about 5 years. To support the replanting process, KUD Makarti in this village obliges the smallholders to pay IDR 100,000 (± EUR 5.89) per month for the needs of replanting 2 ha of plasma land. This regular payment has been done for three years. Besides the support from KUD, BPDP also has a program to support the replanting process of smallholders that could support smallholders for IDR 50 million (± EUR 2,944) per 2 ha of land for the replanting.

The village government and KUD will cooperate to obtain the support from BPDP. Funding from BPDP is applicable when management of oil palm plantation is done collectively[66]. KUD and the village government now are trying to collect information about the process and requirements to get this funding. According to a representative of KUD, IDR 70 million (± EUR 4,144) will be needed to do replanting in 2 ha of land[67]. Hence, KUD has a job to look for a

[65] According to an interview with SH21 on 20th Dec 2017
[66] According to an interview with SH26, a representative of village government, on 14th Dec 2017, and an interview with a representative of SNV, LO04, on 13th Jan 2018 in the meeting evaluation about BMP training
[67] According to an interview with SH14 on 18th Dec 2017

company to be the foster father (*bapak angkat*) in order to fulfill the needs of replanting[68]. However, one of declarators[69] in Sido Mukti village mentioned that IDR 50 million is enough to do replanting in 2 ha of land, but the cultivation process will be more secured if the company could support the process. As comparison, he said that the palm could produce yields in 3.5 years if the company could support the process. Without the support from the company, the palm will produce the yields in 5 years.

PAL and BGR also have roles in replanting issues for smallholders in Petaling area. In the MoU between KUDs and PAL, one of the issues is about replanting. PAL plans to support the replanting process of smallholders. However, since smallholders still have not been able to reach their target to supply 500-700 tons of FFB per day to its mill, PAL still needs to evaluate their plan to support the replanting[70]. For the replanting, PAL offers smallholders the system of KKPA (*Kredit Koperasi Primer untuk Anggota*). BGR also offers KKPA scheme. A representative of BGR[71] mentioned that all companies now use the KKPA scheme. In this scheme, the company will support the expense for all the replanting process, including the cost of management in the beginning phase of plantation until the palm could produce yield and the costs of harvesting process, fertilization, spraying herbicide, pruning, and other management practices. After the palm could produce yield, the expenses for the management of plantation then will be drawn from the salary of smallholders every month[72]. According to one of smallholders[73], there is a tendency that the replanting will be supported by PAL because currently PAL does not have its own plantation. Hence, PAL's mill relies on the yields from Petaling area.

The issue about KKPA system has been known by the representatives of village government and KUD. Responding to this scheme, a representative of the village government[74] mentioned that he heard from some smallholders that this scheme put smallholders in disadvantageous position. This could happen because in this scheme, smallholders need to pay all of the management practice that will be done by the company, including activities that they could do by themselves, like fertilization and spraying herbicide. A representative from KUD[75] said that discussion still need to be done about the detail of this KKPA scheme. He expected the company to be able to support the whole process of replanting, including cutting down the palms, the plantation of seedlings process, and the support for the management process until the palm could produce yields, in about four years. He also expected that the company could give a loan to the smallholders to support their daily expenses in the first four years of plantation while waiting for the palm to be able to produce yields. This support is really necessary, especially for the

[68] According to an interview with a representative of village government, SH26, on 14th Dec 2017
[69] According to an interview with SH24 on 11th Jan 2018
[70] According to an interview with a representative of PAL, LO03, on 2nd Jan 2018
[71] According to an interview with a representative of BGR, LO02, on 3rd Jan 2018
[72] According to the interviews with a representative of PAL (LO03) on the 2nd Jan 2018 and a representative of BGR (LO02) on the 3rd of Jan 2018
[73] According to an interview with SH08 on 10th Jan 2018
[74] According to an interview with SH26 on 14th Dec 2017
[75] According to an interview with SH14 on 18th Dec 2017

smallholders that only rely their lives on the plasma land. Some smallholders have more than 2 ha of plasma lands because they bought plasma land from others. These smallholders will also needs support since all their lands will be replanted at the same time.

From smallholders' points of views, they still need to discuss this replanting issue with KUD. Some smallholders assign the decisions for replanting to KUD. Other smallholders have initiated to prepare for the replanting process. A family of smallholders[76] mentioned that they already have cattles and the yields from non-plasma land as sources of income when their plasma land needs to be replanted. One of smallholders, that also acts as a local trainer for the BMP training project[77], addressed her concern about replanting to the representatives of Setara and SNV in the evaluation meeting of the training. She expected the training about BMP could be conducted again when smallholders in Petaling area is closer to the replanting phase. Hence, smallholders could be reminded and learned again, especially about the initial phase of oil palm plantation. This expectation was also mentioned by another local trainer[78]. He mentioned that the replanting phase will be the time when smallholders could restart their plantation from zero. Therefore, it will be better if this replanting process could be supported by the knowledge from the training.

4.6.Conclusion

This fourth chapter explains about how the roles of local organizations and their relationship with smallholders affect smallholders in their intensification and/or expansion. The analysis in this chapter relates to part of social capital that I put focus on in analyzing the livelihood of smallholders. It shows how smallholders use their social resources (networks, membership of groups, relationship of trust, and access to wider institutions of society) for their livelihoods (Carney, 1998). One of the findings on how smallholders use their network is when FFB from non-plasma smallholders could be brought to the mill through plasma smallholders. This case could happen because it was supported by the social relations among smallholders (as neighbours, family, or friends), and empathy and trust among them. Another factor that influences the livelihood of smallholders is their membership in KUD. Smallholders give their trust to the management KUD to make decision, including the decisions about replanting and certification. This membership in KUD gives the outsiders easier access to smallholders. Once the management of KUD is convinced to change its management practice, then its members (the smallholders) will follow.

Another interesting case is about the relationship between smallholders and the companies. The common view about it is that smallholders are always under the influence of the company, or as I said before, the company is seen as the foster father of smallholders. However, this research shows that the smallholders also have the way to show their power to the company. When the

[76] According to an interview with SH07 on 3rd Jan 2018
[77] According to SH27 on 13th Jan 2018 in the evaluation meeting of BMP training project from Setara and SNV
[78] According to an interview with SH28 on 30th Dec 2017

company made decision that put smallholders in the disadvantageous position, the smallholders clearly showed their disagreement about it by ignoring the invitation for a meeting in the company. In this case, it shoes that smallholders have bargaining power. Since this area has two companies that could receive FFB from smallholders, smallholders have more power to choose and not in the limited situation to supply their FFB.

CAPITALS IN AFFECTING SMALLHOLDERS' DECISIONS

In this chapter, I explain how capitals could affect smallholders' decisions and actions in intensification and expansion. I divide the capitals into five, which are land, labour, financial capital, inputs, and knowledge and experience. For the analysis of social capital, I only put focus on the analysis of how relationship between local organizations and smallholders affect expansion and intensification. The issues of land, labours, and financial capital relates to both intensification and expansion. Meanwhile, the issues of inputs and knowledge are more related to the intensification. As I explain in each section of capitals below, all capitals are related to each other. The accessibility of particular capitals is also related to the historical background of smallholders.

5.1. Land

In this part, I explain how the availability of land, the types of land, the price of the land, location, and the property status of the land could influence smallholders to do expansion and/or intensification. The types of land are related to the issue of plasma and non-plasma land, and to the historical background presented in chapter three. The types of land, either swamp area or normal soil (smallholders call 'mineral soil'), are also factors that could lead to different actions in expansion and/or intensification. I also explain about the property status of the land, especially about what smallholders called 'sporadic land', which also could lead to different actions of expansion and/or intensification.

Land issues are closely related to the smallholders' decision for expansion. In transmigration areas like Petaling area, available land to be used for expansion has decreased. The choice that smallholders have is either doing expansion towards new land in Palembang (South Sumatra Province) or buying cultivated land from other smallholders. Smallholders have their own ways of thinking in choosing the type of land to be expanded. Like I mentioned before in chapter three, some smallholders would only want to expand by buying plasma land from another smallholder because FFB from plasma land has better quality and higher selling price than FFB from non-plasma land. On the other hand, other smallholders do not mind to expand to swamp area because of the low price of the land eventhough the productivity of FFB would be low and the management of land would be more difficult. From this case, it can be seen that some smallholders consider that it is better to immediately have a plot of land instead of saving more money to buy better land.

The swamp area in this study is located in South Sumatra Province. Although it is a swamp area, farmers still cultivate oil palm in that area. Smallholders that expand to swamp area tend to purchase land to accumulate their assets. One of the smallholders[79] that bought land in swamp area mentioned that he knows that management practice in cultivating oil palm in swamp area will be more expensive and difficult. However, he thinks about the asset of the land. His land is

[79] According to an interview with SH29 on 2nd Jan 2018

close to the mill and between two villages (Sido Mukti village and a village in South Sumatra). He knows that the value of the land will increase so he does not want to sell the land even though the land has not been profitable yet. So far, all the profit from the oil palm in swamp area has been spent on fertilizers. Swamp area is also cheaper than mineral soil. The price is half the price of mineral soil.

The cost of land management and labour is different between mineral soil and swamp area. The owners of swamp land already know about this issue before they buy the land. For the initial phase of oil palm plantation in swamp area, smallholders need to build ditches and mounds of soils (*tapak timbun*) for the planting. According to one of the owners of swamp area[80], heavy equipment is needed to build ditches and its rent costs IDR 500,000 (± EUR 28.22) per hour. He mentioned that he spent IDR 10 millions (± EUR 564.36) to build ditches and *tapak timbun* in 2 ha of land. According to another smallholder[81], the wage of labourers to build *tapak timbun* is IDR 15,000 - 20,000 (± EUR 0.85 - 1.13) per palm. The high cost to manage swamp area lead to the management practice that is not optimum because some smallholders could not afford to manage the land properly. One of smallholders[82] mentioned that he did not have money to build ditches so the ditches in his land are from the company that coincidentally needed to build ditches around his land.

The land in South Sumatra province, which is in borderline with Jambi province, is mostly bought by farmers from Petaling area. The status of the land is called 'sporadic' land. According to one of the owners of sporadic land[83], the certificate of sporadic land costs IDR 500,000 (± EUR 29.50) per 2 ha. While another smallholder, who is also a representative of a KUD,[84] mentioned that sporadic land costs IDR 200,000-300,000 (± EUR 11.8-17.7) to pay the compensation to the village government. For the sporadic land, farmers who want to cultivate crops will demarcate a piece of land and then ask permission to the head of the village to plant crops in that area. The head of the village would give the farmer a sporadic land certificate, which means the farmer is allowed by the village government to plant in that area. Then if the farmer wants to sell this piece of land, he could sell the sporadic land certificate to other people. This case of sporadic land happens outside the area of transmigration villages where the land is still available and people could demarcate the land they want to use. The status of sporadic land is only known by the village government. Since sporadic land does not have a national legal land certificate, the selling price of the land is low. For comparison, the price of one ha of cultivated land with a sporadic certificate is less than IDR 50 millions (± EUR 2,940), while the price of one ha of cultivated land with a national legal certificate (*Sertifikat Hak Milik*/SHM) is around IDR 120 millions (± EUR 7,080)[85]. The certificate of sporadic land also cannot be used as collateral in the bank, but it can be used as collateral for a loan IDR 25-50 million (± EUR 1,470-

[80] According to an interview with SH29 on 2nd Jan 2018
[81] According to an interview with SH30 on 3rd Jan 2018
[82] According to an interview with SH30 on 3rd Jan 2018
[83] According to an interview with SH31 on 4th Dec 2018
[84] According to an interview with SH21 on 10th Jan 2018
[85] According to an interview with SH21 on 10th Jan 2018

2940) in KUD[86]. A smallholder[87] mentioned that it is possible to change the sporadic certificate into SHM but the cost will be expensive. While another smallholder[88] mentioned that it is not possible to get SHM from the land in South Sumatra (the sporadic land) because the land is owned by the national government. According to a representative of a village government[89], the sporadic certificate does not have legal force. Sporadic certificate is more like a permission from the village government to the smallholders to use the land.

Related to the property status of the land, a smallholder that did expand[90] mentioned that it is difficult and expensive to obtain a SHM certificate, so most of smallholders cultivate land without SHM because there has never been a problem regarding the legality of the land thus far. A representative of the village government[91] mentioned that smallholders actually realize that the land without SHM certificate could be taken over by the government anytime and smallholders want to take that risk. According to him, smallholders are willing to take this risk because they already have been gaining advantages from cultivating the land. Currently, there is a program from the government to obtain a SHM certificate with only IDR 200,000 (± EUR 11.70), while normally it will cost IDR 1.8 million (± EUR 105.3) per SHM. Hence, according to the representative of village government, the size of the land does not change the cost of SHM as long as the land is certified in one SHM. However, one of the smallholders[92] mentioned that the cost to obtain a SHM certificate depends on the size of the land. According to her experience, it cost IDR 1.5 million (± EUR 87.75) to obtain a SHM for 0.25 ha of land. According to the website of the national land agency (*Badan Pertanahan Nasional*/BPN), the cost to certify the land depends on the size of the land. There are three components that people should pay to certify their land, which are the cost to measure the land, the cost of the committee, and the fixed registration cost (BPN, n.d.). The high price of obtaining SHM certificate is also confirmed by another smallholder[93]. He mentioned that he needed to pay for IDR 4 million (± EUR 234) to obtain a SHM certificate for his housing site. He mentioned that the process was supported by the village government, so it could be more expensive if he managed it by himself.

In relation to the access to land, as I mentioned in the previous chapter, smallholders' access to land closely related to the historical background. Because of the transmigration program, the land is more accessible for transmigrants. This history also relates to the current situation since the smallholders from the transmigration program got more access to capitals from their contract with the company. This issue then relates to the issue of exclusion. Because of the regulation from the government about the transmigration program, transmigrants got more benefit than spontaneous migrants in Petaling and local people at the border of Jambi but in South Sumatra

[86] According to an interview with a representative of KUD Makarti, SH14, on 18th Dec 2017
[87] According to an interview with SH3 on 4th Dec 2017
[88] According to an interview with SH30 on 3rd Jan 2018
[89] According to an interview with SH26 on 14th Dec 2017
[90] According to an interview with SH01 on 20th Nov 2017
[91] According to an interview with SH26 on 14th Dec 2017
[92] According to an interview with SH31 on 4th of Dec 2017
[93] According to an interview with SH32 on 16th Dec 2017

Province (who were/are excluded). It also relates to the issue of the market, where the price of land excludes some smallholders. The plasma land on which a good plantation has been established, is only accessible to smallholders with sufficient financial capital to buy expensive land. This high price then excludes landless smallholders and smallholders with only non-plasma land to buy land because of the lack of financial capital. Regulation and market create a disadvantageous position for smallholders who were not part of the transmigration program. This is also how the historical background of smallholders related to access and control of land.

In relation to expansion, it can be concluded that smallholders do not consider the legal status of land to do expansion. Some smallholders just look for affordable land, which means they tend to do expansion in sporadic land. The types of land (plasma, non-plasma, mineral soil, and swamp area) are also factors that are considered by smallholders to do expansion. The availability of funding to buy the land and the willingness of smallholders to wait and save more money are also factors that co-determine the types of land that smallholders would buy.

In relation to the intensification, the types of land affect the feasibility of intensification. Like I mentioned before in chapter three, plasma land can more easily be intensified than non-plasma land because it has better quality of seed, better selling price of FFB, and better management because it is supervised by the company and KUD. Intensification in mineral soil is also more feasible than intensification in swamp area. The land management of swamp area really depends on the season. When it is rainy season, the palms drown so fertilization cannot be done and harvesting process is difficult to do. One of the smallholders[94] mentioned that he already has swamp area for 10 years and the palms that could produce are only the ones that are not in the watery area. This happens because the palms drown so the FFB is rotten. However, he does not want to sell the land because it is an asset for him and he expects that the price of the land will raise in the future. Aside from oil palm, he runs a motor repair shop that could give main support for his living expenses.

5.2. Labour

In this part I explain about the availability and affordability of workers of oil palm plantation. I explain the details of wage of workers and the comparison of wage between workers in swamp areas and workers in mineral land. I also explain how the needs of labour are different depending on the situation of the smallholders' household. In addition, I relate the labour issue with the training program because workers are the ones who manage the plantation directly. I explain how these issues relate to the intensification and/or expansion.

[94] According to an interview with SH29 on 2nd Jan 2018

Figure 8 The harvesting process (top left), the fertilization process (top right), the process of spraying herbicide (bottom left), and the process of loading FFB in to the truck (bottom right)

The workers have important roles in intensification because they are the ones who manage the land directly. They 'interact' with the land more often than the landowner. Workers in this area are usually younger man. They are migrants that came after the transmigration program and the second generation of migrants from the transmigration program. The wage of workers depends on the activity they do in the management of land. The workers are hired for harvesting, fertilization, spraying herbicide, pruning, and weeding. For harvesting, the wage of workers depends on the amount of yield they harvest. It is normally IDR 120,000-130,000 (± EUR 6.82-7.62) per ton of FFB. If the harvesting process is done by two workers or more, then they need to split the wage. To harvest 2 ha of land, the landowner hires two workers, in which one person takes down the yield from the tree and another person collects the yield and brings it to the collection point (*Tempat Pengumpulan Hasil*/TPH). In some cases, there will be an additional worker, which is usually a woman, who has a job to pick the palm loose fruits (*brondolan*). The

picker is normally paid IDR 50,000-60,000 (± EUR 2.93-3.52) per 2 ha of land. For fertilization, the wage of workers depends on the number of bags of fertilizers that is used by the smallholders. The wage of workers is IDR 10,000 (± EUR 0.57) per bag of fertilizer. Smallholders use 6-12 bags of fertilizer in 2 ha of land. For pruning and weeding, the wage of workers depends on the size and condition of the land. The wage of workers to spray herbicide is also depends on the condition of the land. However, one of smallholders[95] mentioned that he usually pays the workers IDR 400,000 (± EUR 23.44) to spray herbicide in 2 ha of land.

In the swamp area, the wage of workers is higher than on mineral soil. One of the owners of swamp area[96] mentioned that it is costs IDR 150,000-170,000 (± EUR 8.79-9.96) per ton of FFB to pay workers in the swamp area. However, it also depends on the condition of the land. For example, it could take a half day to harvest 300 kg of FFB in swamp area. If the workers are paid according to the tonnage, the smallholders just need to pay IDR 45,000 (± EUR 2.64). However, since the workers take a half day to do the harvesting process, he would pay IDR 100,000 (± EUR 5.86) to them. The situation in a swamp area also makes it difficult to find workers that want to work on it. An owner of land in the swamp area[97] mentioned that the workers are not difficult to find as long as the wage is fitting to them. However, one of the workers[98] mentioned that he does not want to take a job in a swamp area because it would be difficult to work on it.

Elderly and out-of-village landowners usually hire workers for every activity in plantation management. It is different with other smallholders that live around their plantation, which still do some activities by themselves. The harvesting process is considered as the most difficult process, so they always hire workers for harvesting. While for other activities, like fertilization and spraying herbicide, they could do it by themselves or do it together with a worker.

Because most of the work in plantation management is done by workers, they have an essential part in intensification. However, interviews with some workers show that they have never attended any training about management practice because the participants of training are mostly the landowners. This is confirmed by a local trainer[99], who is responsible to choose the participants of his training. He mentioned that the owner of the land is the priority in choosing the participants. The training goes to the landowners and then they have to deliver the information to the workers. This has been an issue because the training material needs to flow in a longer chain, from the trainers to the landowners to the workers. According to some landowners, workers will change the activity in plantation management if the landowners asked them to. However, it takes time to change habits. Hence, the landowners need to do more supervising and keep reminding workers about the change. In some cases, landowners give more trust to their workers, so they said that it is not a problem to make the workers change to better management practice.

[95] According to an interview with SH06 on 20th Nov 2017
[96] According to an interview with SH30 on 3rd Jan 2018
[97] According to an interview with SH30 on 3rd Jan 2018
[98] According to an interview with SH33 on 31st Dec 2017
[99] According to an interview with SH28 on 30th Dec 2017

The workers mentioned that working in oil palm plantation is lucrative. It is a common understanding that the more hard-working you are, the more you will earn. This is different if they work as a construction worker or a factory worker because then they will get the same income every month regardless how hard-working they are. One of the workers[100] mentioned that from the harvesting and fertilization he did in half a day, he could earn IDR 100,000 (± EUR 5.86). For comparison, if he worked as a labourer in Java, he would only earn IDR 60,000 (± EUR 3.52) a day. Also, if he worked as a rice farmer, he would earn IDR 35,000 (± EUR 2.05) a day. The economic advantage of working as workers in oil palm is also taken by the people from outside the village to collect money. Like I mentioned in chapter three, one of the workers[101] I met is from East Java and he only works as an oil palm worker in Sido Mukti village for 6-7 months to collect money to buy a plastic machine in East Java.

In relation to gender issues, in oil palm plantations most of the workers are men. Smallholders mentioned that working in an oil palm plantation is a physically demanding work so the workers are usually men. However, it is possible for women to work in an oil palm plantation if they are able to and want to. Mostly, the women workers I met are the pickers of loose palm fruits. Beside the fruits picker, I only met one woman who did heavy work, which is bringing the FFB from the paths (*pasar pikul*) to the collection point by using a motorcycle. In an interview, she mentioned that she[102] usually works bringing the FFB to the collection point by using a motorcycle or pulled rickshaw (*angkong*), spraying herbicide, and pruning. Since she is still young (26 years old) and only has one son that could be left alone at home, she still has strength and time to work. She usually works together with her husband. Another woman[103] that I met mentioned that she also used to work together with her husband in managing their own land. While her husband did fertilization, she was weeding. However, after she gave birth to her first daughter, she does not have time to work anymore. Nowadays, the management in their oil palm plantation is handled by her husband and they hire workers to manage the plantation.

Figure 9 A picker of palm loose fruits (*brondolan*)

[100] According to an interview with SH32 on 16th Dec 2017
[101] According to an interview with SH13 on 16th Dec 2017
[102] According to an interview with SH34 on 13th Jan 2018
[103] According to an interview with SH16 on 21st Nov 2017

In relation to intensification, it can be concluded that the labour issue is closely related to the intensification for elderly owners of land that could not manage the land by themselves and the owners of land from outside the village. In managing the plantation, they depend on workers. Hence, if they could not afford to hire the workers, their plantation would be overgrown. I observed a process of spraying herbicide in an overgrown-plantation. A worker[104] that was working to spray the herbicide and clean the land mentioned that the owner of this land lives in the city, Jambi. He only hires labourers to clean his land if he could afford the workers. However, the harvesting process of this land is still done regularly. For smallholders that live around their plantation, when they could not afford the workers, they themselves will work on their land. However, this could slow down the process. One of the workers[105] that also has land mentioned that it is a slow process in managing his own land because he still needs to work as a worker in other smallholders' land.

Expansion is also related to the availability of labour. An owner of land in South Sumatra[106] mentioned that her new land is still uncultivated because she has not found a proper worker that wants to work together with her in managing the land. She looks for a worker that knows about oil palm management so they can divide the profit from her land in two equal portions. So far, good workers she found want to buy the land, instead of working it together. She needs a worker that has proper knowledge about oil palm plantation because she does not have the knowledge. The training programs from NGOs or companies have not reached South Sumatra province yet.

Connection between expansion and labour also related to the types of land that smallholders expand on. In one of my interviews, a smallholder[107] mentioned that to buy land for expansion, he prefers oil palm cultivated land because then he does not need to hire workers to clean the land anymore. In another case, there is a family of smallholders[108] that does not want to do expansion anymore because they are elderly and does not have any strength to manage a land. They also do not want to buy more land because all of their children already have a land and they still manage an uncultivated land. Thus far, she and her husband always manage their plantation by themselves. Hence, when they think they could not manage the land anymore, they decided to not doing expansion anymore. It is implied that the decision to hire workers is not an option in managing the land.

5.3. Financial Capital

In this part, I explain about the sources of financial capital and accessibility to these sources. It is also related to the historical background, as people from transmigration program have better access to the loan because they could provide the collaterals. In relation to expansion and/or

[104] According to an interview with SH35 on 29th Nov 2017
[105] According to an interview with SH35 on 14th Dec 2017
[106] According to an interview with SH12 on 14th Jan 2018
[107] According to an interview with SH36 on 22nd Nov 2017
[108] According to an interview with SH02 on 3rd Jan 2018

intensification, I explain how the accessibility to the sources of financial capital, the bravery in taking risk, and the affordability of planting materials, land, and labour affect smallholders' decisions.

Smallholders have two sources of financial capital, which are bank and KUD. In KUD, the maximum amount of loan depends on the financial situation of the KUD. In KUD Makarti in Sido Mukti village[109], the maximum amount of loan is IDR 50 million (± EUR 2,835). There is no minimum amount of loan, but usually smallholders ask for a loan that is more than IDR 1 million (± EUR 56.70). In KUD Makarti, smallholders need to pay off the loan in three years at the latest and the interest is 1.4% per month. Compared to the interest in the bank, the representative of KUD Makarti mentioned that the interest in KUD is now higher than banks since banks now have a program named 'the credit for the poor' (*Kredit Usaha Rakyat*/KUR). Since KUR program, now the interest in bank is only 0.4% per month. Beside the savings and loan (*Unit Simpan Pinjam*/USP) program, KUD Makarti also has a program that allows smallholders to pay fertilizers in installments. Since smallholders usually do fertilization every 3-4 months, the credit for fertilizers needs to be paid off in 3-4 months also.

To get a loan for IDR 25 million (± EUR 1,418) or more in KUD, smallholders need to have collateral. They usually use their SHM certificate or proof of motor vehicle ownership (*Buku Pemilik Kendaraan Bermotor*/BPKB). A certificate for sporadic land is also allowed to be collateral in the KUD, while the bank does not allow it to be collateral. Since a loan in banks is only accessible for smallholders that have SHM certificate, smallholders that were part of a transmigration program had better access to the loan in the banks. From the transmigration program, they received three SHM certificates, which are certificates for plasma land (2 ha), non-plasma land (1 ha), and a housing site (0.25 ha). This creates a situation where it is more feasible for smallholders from the transmigration program to accumulate their capital than for smallholders that were not part of transmigration program. It creates a bigger gap between them.

Farmers' decision-making on expansion and intensification is influenced directly by the availability and the access of financial capital. It links with the affordability of other capitals, like land, labour, and inputs (seeds, fertilizers, pesticides). If smallholders were asked how to improve the productivity in their current land, smallholders would first relate it to the issue of fertilization. They mentioned that they would give more fertilizer and do better fertilization practice to their current land for intensification. However, the affordability of fertilizers is an issue. They know that more fertilizer will improve their productivity, but they could not afford more fertilizer. I explain about what 'better fertilization' is meant by the smallholders in the section about inputs.

The connection between intensification and financial capital is also confirmed by a local trainer.[110] He mentioned that the change of management practice is not only about knowledge, but also related to the issue of funding. Smallholders know that they have to do fertilization

[109] According to an interview with a representative of KUD Makarti in Sido Mukti village, SH14, on 18th Dec 2017
[110] According to an interview with SH28 on 30th Dec 2017

regularly, but to do it properly and regularly, they would need funding to buy the fertilizers. Another example about the connection between financial capital and intensification is about pruning, and how it related to the issue of labours. Smallholders know that they should do pruning to increase their productivity. However, they need to hire labourers to do pruning, which will require more funding. Intensification and financial capital are also related to the type of seeds that smallholders buy to start a new plantation. A smallholder[111] mentioned that he bought the more affordable seed which has poor quality since he could not afford to buy certified seeds from Indonesian Oil Palm Research Institute/IOPRI (*Pusat Penelitian Kelapa Sawit*/PPKS) in Medan. He mentioned that it is better to have the plantation first with the affordable seeds than waiting for a longer time to buy better seeds.

In relation to expansion, most of the smallholders said that if they had more money, they would like to do expansion. In an interview, a farmer[112] mentioned:

> "I think it is humane. When you already have one thing, you plan to have one more. When you already have a motorcycle, you plan to have a car."

I see this as farmers' behaviour in accumulating capitals. The financial capital is also related to the types of land that smallholders buy. If the funding is available, smallholders would buy a cultivated land. According to interviews with the owners of swamp area, they chose to expand to swamp area because they are more affordable than mineral land. This issue then will relate to the issue of intensification because intensification is more feasible to do in mineral land.

Expansion is also related to farmers' bravery in taking risk. Some farmers do not want to take another loan while they still have to pay current loan. Since there are a few sources of financial capital (KUDs and bank), it is possible for smallholders to get a few loans at the same time from different sources. One of the labourers[113] mentioned that he wants to buy new land but now he is still not courageous enough to get a loan. A family of smallholders[114] also mentioned that they do not have courage to get too much loan from the bank. They try to do expansion as minimum as possible. They only did an expansion once to buy land for the oldest son. While their other son will receive the plasma land that currently they cultivate. Since the children already have a family of their own, the 2 ha of land from the parents is used by the children as an initial capital to be self-sufficient.

5.4. Inputs

In this part, I explain how seeds, fertilizers, and herbicides are used by smallholders in their management practices. I explain the accessibility and affordability of inputs that become reasons why smallholders choose particular type of inputs. Regarding the seeds, I also explain how the

[111] According to an interview with SH35 on 14th Dec 2017
[112] According to an interview with SH06 on 6th Dec 2017
[113] According to an interview with SH33 on 31st Dec 2017
[114] According to an interview with SH07 on 3rd Jan 2018

accessibility of seeds is related to the contract with the company in the PIR-Trans program. In addition, I explain how training helps smallholders to do better management practice regarding the usage of planting materials. Then I explain how the issues of accessibility and affordability of inputs affect smallholders' action in intensification.

Oil palm is a commodity that needs intensive use of inputs to be farmed successfully (McCarthy, 2010; Woittiez et al., 2017), so access to inputs is an important means to cultivate oil palm. Research from Euler et al. (2016a) and Soliman et al. (2016) also confirm this statement, in which they mention that factors that cause a yield gap and inefficiency of oil palm plantation are related to input issues. This shows how intensification is closely related to the input that smallholders use in their management practice. Seeds, fertilizers, and herbicides will be my focus of discussion in this sub-chapter to relate inputs with the issue of intensification.

In relation to seeds, like I mentioned in the previous section, historical background relate to the intensification because plasma land that has been supported by the company use the good quality of seeds, named tenera. This is also related to the financial capital. Non-plasma land that smallholders cultivate has poor quality of seeds, which are mixed between tenera and dura, because of the affordability. Easier access to mixed seeds is also one of the reasons why smallholders use them, instead of tenera. Smallholders could only buy the good quality of seeds (the certified seeds) by ordering them to IOPRI.[115] Accessibility and affordability of seeds become the reason why smallholders choose mixed seeds for the plantation in non-plasma land.

The higher demand of poor quality of seeds is also confirmed by a woman[116] who sells seedlings in Sido Mukti village. She mentioned:

> "Smallholders tend to ask for the type of seedlings that have long fronds and big fruits. This type is not certified. Smallholders prefer this type of seedling because the fruits are heavier than the other type. For the certified seedling, it has shorter fronds and smaller fruits, but this type usually continuously produces fruits."

Because of the higher demand of uncertified seedlings, she supplies more uncertified seedlings than the certified ones. Each certified seedling costs IDR 25,000 (± EUR 1.42), while the uncertified one costs IDR 15,000 (± EUR 0.85) per seedling. For a new plantation of 2 ha of land, smallholders generally buy 300 seedlings. They plant 280 seedlings first, and then use the other 20 seedlings for replacements. She bought the uncertified seeds with price IDR 250,000 (± EUR 14.2) per bag in which it contains 250 seeds per bag. The certified seeds cost IDR 1.6 million (± EUR 90.89) per bag which it also contains 250 seeds per bag. One of smallholders[117] also confirmed this comparison of price between certified and uncertified seedlings. According to him, for a small certified seedling cost IDR 15,000 (± EUR 0.85), while for the quite large uncertified seedling cost IDR 10,000 (± EUR 0.57).

[115] According to a representative of Setara on a training on 13th Jan 2018
[116] According to an interview with SH31 on 4th Dec 2017
[117] According to an interview with SH35 on 14th Dec 2017

The usage of poor quality seed, especially in non-plasma land, has affected smallholders' current situation. The poor quality of seed leads to less amount of CPO. Hence, FFB from non-plasma land has lower price than FFB from plasma land. This is also related to the contract between the company and the smallholders of plasma land. FFB from non-plasma land is sold to middlemen or the company that offer business price. Poor quality of seeds is also related to the low efficiency of productivity (Soliman et al., 2016). Responding about the inefficient productivity of oil palm in smallholders' plantation, Soliman et al. (2016) recommended to build a policy about the distribution of high-quality seeds to smallholders.

In the trainings from NGOs, type of seed is also a concern that has been discussed by the trainers. In the training session, smallholders are reminded that the decision about the type of seed they use in their land will affect their land for 25-30 years until the palm is not productive anymore. Hence, it is really important to ensure that smallholders use the good quality of seed in their land that could lead to intensification.

In relation to the type of fertilizer, there are three types of nutrients that are mainly used in different forms of fertilizers by smallholders, which are Nitrogen (N), Phosphorus (P), and Potassium (K). Smallholders usually do fertilization every three to four months in which they use 6-12 bags of fertilizers per 2 ha of land in each process of fertilization. For the transportation of fertilizers from KUD's fertilizer storage room to the plantation site, smallholders rent a car that costs around IDR 100,000 (± EUR 5.68).

Besides the chemical fertilizers, organic fertilizers are also used by smallholders that are willing and capable to buy them. Smallholders that are also raising cattle use the manure from the cattle as fertilizers. Besides that, smallholders also could access organic fertilizers in the mill. They could buy empty fruit bunches (EFB) from the mills and use them as fertilizer. The price for the EFB is IDR 200,000 (± EUR 11.80) per mini-truck of EFB. According to one of smallholders[118], one mini-truck of EFB can be used to fertilize only 6-10 palm trees. Forty mini-trucks are needed to fertilize 2 ha of land. For him, it will take 2 years to fertilize all palm trees in his 2 ha of land because he could not afford all the EFB in one purchase.

In relation to the smallholders' knowledge about fertilization, the training from NGOs also helps smallholders. One of the five training modules is about fertilization. Training helps to inform smallholders about the proper technique to fertilize and spray herbicide, and the appropriate type of fertilizers for abnormalities in oil palm. From the trainings I observed[119], the module about fertilization is the best module that could attract smallholders' attention because it provides smallholders with the opportunity to tell the trainers about the issues and abnormalities of their plantation and ask for solutions regarding the proper type of fertilizers that they could use to solve the problems. Information about the abnormalities of oil palm is also available in the

[118] According to an interview with SH04 on 22nd Nov 2017

[119] According to observations of a training in Petaling Jaya village on 21st Nov 2017 and a training in Sido Mukti village on 17th Dec 2017

KUD's fertilizer storage room[120]in the form of a poster. The information is complemented with the recommendations about the types of fertilizers that could be used as solutions for the abnormalities, including the dosage of the fertilizers and how to apply the fertilizers.

In the issue of intensification, when smallholders were asked about the technique to increase the productivity of their oil palm plantation, they always relate their management practice with better fertilization. What they meant by 'better fertilization' is better type of fertilizers, higher dose of the fertilizers, stricter routine of fertilization, and adding organic fertilizers, like EFB and animal manure. In the training from the NGOs, it was mentioned that there are 4T that smallholders need to remember for a good fertilization process, which are proper type of fertilizers (*Tepat Jenis*), proper timing (*Tepat Waktu*), proper dosage (*Tepat Dosis*), and proper place (*Tepat Tempat*).

The direct connection between fertilization and productivity is stated in the research result from Euler et al. (2016a) which mentions that fertilization could significantly reduce the yield gaps. Fertilizer experiments by Woittiez et al (2018) with smallholders in Jambi have shown effects of better fertilizer uses. According to the research, yield gap happened when smallholders use the fertilizers with lower dose than they are supposed to do, especially in the productive phase of oil palm (Euler et al., 2016). Research from Feintrenie et al. (2010) in Bungo district also mentions that the dosage and application of fertilizers are very important in affecting the FFB yields. However, these research results are contradicted by the research result from Soliman et al. (2016), who mention that smallholders could reduce the amount of fertilizers and herbicides they use substantially and they still could maintain their FFB yields. This research concluded that it is important to ensure that smallholders do better management practice, and it is not necessarily use the higher amount of fertilizers and herbicides (Soliman et al., 2016).

In relation to the usage of herbicide, spraying herbicide is not an activity that is done by smallholders regularly[121]. The timing to spray herbicides depends on the situation in the land. Spraying herbicide also depends on the availability of financial capital of smallholders. Like I mentioned before in the sub-chapter about labour, when it is the time to spray herbicide but the smallholders could not afford the herbicide and hiring the labourers, they would postpone the spraying until they could afford it.

In relation to intensification, the change of spraying practice has happened since the training session from the NGOs. More smallholders are aware that it is better to not do 'total spraying' (*semprot total*) for the plantation. It means smallholders need to know which weed is good and bad for oil palm, and only spray the bad weed and leave the good weed. This way also helps smallholders to use the herbicide efficiently. This is confirmed by the research result from Soliman et al. (2016) that mentions that smallholders could reduce the dosage of herbicides substantially and still maintain the same yield. This leads to the efficiency of the use of input while at the same time has good impact for the environment (Soliman et al., 2016).

[120] According to an observation in KUD Makarti's fertilizer storage room in Sido Mukti village on 30th Nov 2017
[121] According to an interview with SH01 on 9th Jan 2018

5.5. Knowledge and Experience

In the beginning of this part, I explain about different sources of first knowledge about oil palm plantation between smallholders that are part of PIR-Trans program and the ones that are not. I also explain how young farmers gain their knowledge about oil palm. Then I explain the training about better management practice from NGOs (Setara and SNV), including the factors that could lead to change of management practice after the trainings, insights from local trainers and representatives of KUDs about the trainings, and some additional knowledge that smallholders gained from the trainings. In addition, I also explain how smallholders deal with the issue when management practice from training materials is different with their experience. Then I relate the knowledge and experience of smallholders with the issues of intensification and expansion.

In relation to the smallholders' knowledge about management practice of oil palm, there are a few differences between the knowledge of smallholders that are bound with the company and smallholders that are not. Smallholders that were part of transmigration program learned about the management practice of oil palm for the first time from the company, especially in the period when they managed the palms in the initial phase of plantation under the supervising from the company. They also have learned from what they observed in the company's management practice. As an example, one of the smallholders[122] mentioned that he learned to use EFB as an organic fertilizer because this is what he saw, and imitated what the company did. Because BGR also used EFB as fertilizers then he also followed this practice. This example shows that smallholders also learn from what they observe in the company. For the smallholders that are not bound with the company, which came after transmigration program, they have learned from people in their neighbourhood. Smallholders have learned from each other about better management practice in oil palm plantation. This is emphasized by one of my observation in the harvesting process[123]. In the harvesting process, a smallholder could only harvest 170 kg of FFB from his land, so one of the weighing workers recommended him to use calcium carbonate (*kapur pertanian*/*kaptan*) or MOP (Muriate of Potash) in his plantation. This shows how smallholders learn from each other to manage oil palm. For young farmers, they usually gain knowledge about management practice of oil palm from their parents. This is confirmed by a young farmer[124] that mentioned that he has started to work to manage oil palm since his parents invited him to their plantation to clean the circles around the trunks. This happened when he was 16 years old. When he was 17 years old, he has started to work in other people's plantations as a labourer until now. Hence, his parents are his first source of knowledge to manage oil palm plantation.

The training from the NGOs (Setara and SNV) also is a source for smallholders to gain knowledge about better management practices (BMP) of oil palm plantation. Like I mentioned in

[122] According to an interview with SH37 on 4th Dec 2017
[123] According to an observation of harvesting process in Sido Mukti village on 2nd Dec 2017
[124] According to an interview with SH33 on 31st Dec 2017

the chapter about local organizations, training from the NGOs were currently conducted for smallholders in Petaling area. This training project is funded by Millennium Challenge Account - Indonesia (MCA-Indonesia). MCA-Indonesia is an institution that manages Compact Grant, which is a partnership between U.S. and Indonesia, with focus to "reducing poverty through economic growth in Indonesia" (MCA-Indonesia, 2017). The trainings in Petaling area were conducted from July 2017 until January 2018, and had a target to reach 6,600 smallholders to be trained[125]. The BMP training project started with training for the local trainers. From four villages in Petaling area, 100 potential local trainers were trained. However, not all of the local trainers are ready to be trainers for other smallholders. As an example, in Sido Mukti village, 10 smallholders were trained to be local trainers, but only one smallholder is willing and ready to teach in classes, and these classes were still assisted with a trainer from Setara. According to a prepared local trainer[126], 8 trained local trainers were not ready to teach in classes, and another one was sick. According to a representative from Setara[127], the local trainers are expected to be the people that smallholders could ask to about oil palm management practice since they are always around the neighbourhood.

The training materials from the NGOs focus on BMP. There are five modules that are taught in three classes of training: (1) FFB quality-checking, harvesting process, and transportation; (2) plantation management in general and controlling weeds; (3) plantation management according to the types of the land and planting materials; (4) fertilization; and (5) pest and disease. According to an interview with a representative from Setara[128], she believes that smallholders have changed their management practice to be better gradually. Besides gaining knowledge from the trainings, each attendee of the trainings also receives incentives, which are accommodation fund and a certificate as a proof that they did attend classes to learn about BMP of oil palm. The incentives could trigger smallholders to participate in the training because they receive compensation cost to leave their job for three classes of training. However, these incentives could divert smallholders' motivation to learn. In one of the training classes, I overheard that one of the smallholders insisted on sending more than one family member to attend the training, while the rule is that each household could only send one representative. I assume that this case is related to the incentives that participants could obtain from the trainings.

For the case in Sido Mukti village, the attendees of the training were chosen by the local trainer. With a written invitation, he asked smallholders to come to the trainings. The local trainer from this village[129] mentioned that he prioritized the owners of the land in choosing the potential attendees. If the owners of the land are not available, then they could send a representative from their family to attend the training. He believes that the change of management practice depends on the owner of the land. He mentioned that from 40 trainees in his class, there would be five to

[125] According to an interview with a representative of Setara, LO05, on 18th Dec 2017
[126] According to an interview with SH28 on 30th Dec 2017
[127] According to an interview with LO05 on 18th Dec 2017
[128] According to an interview with LO05 on 18th Dec 2017
[129] According to an interview with SH28 on 30th Dec 2017

ten people that could change their management practice. According to him, generally, smallholders that do not change their management are the ones that are already satisfied with their yields, so they do not want to change their habit. Beside of that, some smallholders do not want to change their habit if they could not get a fully-explained reason why they should change their management practice For example, in arranging the fallen fronds around the tree, smallholders should put the bottom part of the fronds, which contain stomata, at the top side because the stomata will open when the weather is hot and it will be easier and faster for the fronds to be composted[130].

According to a local trainer[131], the change of management practice is also related to the financial situation of smallholders. For example, to have better management practice, smallholders need to do fertilization and pruning regularly, which means that they should be able to provide the fertilizers and labour. The relationship between the change of management practice and financial situation was also mentioned by a smallholder[132] in Mingkung Jaya village. He mentioned that there are some cases where smallholders know what they are supposed to do but they do not do it because they could not afford to do better management practice. This is also related with the accessibility to financial capital, land, labour, and inputs that I mentioned in the previous sections.

Enthusiasm of attendees of the trainings is high. In one of the trainings in Sido Mukti village[133], from 50 smallholders that were invited to the training, 40 smallholders attended the training (80% of the invitee). In the next evening[134], the electricity was off so the lighting for the training was from an electric generator, but smallholders still attended the training even though it was dark. Enthusiasm of smallholders in learning from the training was also shown in a meeting to evaluate the training process. This evaluation meeting was attended by local trainers, representatives of KUD and village government, trainers from Setara, a representative of management of Setara, and a representative from SNV. In this meeting[135], local trainers mentioned that they expect that the trainings could reach more smallholders. A representative of KUD[136] mentioned that he expects the training could reach 80% of smallholders in four villages in Petaling area. A local trainer[137], which is also a smallholder, mentioned that she hoped that the training will be conducted again when the timing is closer to replanting period, so the smallholders would be reminded and learn deeper about the proper way to initiate a new plantation. Beside of that, another representative of KUD[138] mentioned that he was concerned

[130] According to an informal conversation with a trainer from Setara, a local trainer, and a few of smallholders after a training class in Sido Mukti village on 17th Dec 2017.
[131] According to an interview with SH28 on 30th Dec 2017
[132] According to an interview with SH15 on 25th Nov 2017
[133] According to an observation of a training in Sido Mukti village on 16th Dec 2017
[134] According to an observation of a training in Sido Mukti village on 17th Dec 2017
[135] According to an observation of an evaluation meeting of training project from Setara and SNV in Petaling Area on 13th Jan 2018
[136] According to SH21 in the evaluation meeting on 13th Jan 2018
[137] According to SH27 in the evaluation meeting on 13th Jan 2018
[138] According to SH17 in the evaluation meeting on 13th Jan 2018

about the trainers from Setara that has never worked in oil palm plantation. He gave recommendation for the trainers to do more of the plantation work so they would understand more about the situation in the plantation, like the harvesting process, fertilization, pruning, etc. He mentioned that smallholders would give more trust to what the trainers teach if the trainers know how it really is to work in the plantation. Overall, smallholders are pleased with the trainings that were done by Setara and SNV.

In some interviews that I did with smallholders, besides gaining new knowledge about BMP of oil palm plantation, they also mentioned that the trainings helped to remind them about some knowledge they already know. They also said that some knowledge, especially about management practice in the beginning phase of plantation, is needed when they are closer to the replanting period. As examples, here is some new knowledge that smallholders gained from the trainings:

- About the pruning, smallholders used to arrange the fallen fronds in straight lines. After the training, they arrange the fallen fronds in U-shape. According to one of smallholders[139], the U-shaped arrangement could help to avoid the fertilizers to stay around the trunk in the rainy season and avoid the erosion in sloping area.
- About the technique in fertilization, now smallholders spread the fertilizers in a circle around 2.5-3 m from the trunk instead of close to the trunk. According to one of smallholders[140], it will help the palm to absorb the fertilizer easier because 2.5-3 meters from the trunk is where the tip of the root is.
- About the treatment for weeds, smallholders now need to pay attention about the types of weed that is good and bad for oil palm. According to one of smallholders[141], an example of a good weed is a fern kind and an example of a bad weed is the wooden kind.
- Related to the previous point, since smallholders need to know which weed is good or bad, then they need to spray herbicide to bad weeds only. Smallholders used to spray herbicide to the whole weeds, which they named '*semprot total*' or totally-sprayed. After the training, they need to check first the bad and good weeds and spray the bad weeds only. One of smallholders[142] mentioned that this technique could save the time and cost because less herbicide is used.

Issues came up when the training materials from NGOs were different with the experience and practice that smallholders have done for years. Smallholders rely more on their experience than the theory from training. This becomes a problem because the training has an objective to change smallholders' habit if the habit was considered could be changed to be better. If there is any contradiction and smallholders would believe more on their experience, it means the training was not convincing enough to change smallholders' habit. Based on one of my observations in the

[139] According to an interview with SH01 on 21st Nov 2017
[140] According to an interview with SH22 on 25th Nov 2017
[141] According to an interview with SH06 on 6th Dec 2017
[142] According to an interview with SH06 on 6th Dec 2017

training, one of the smallholders mentioned that the training materials are just theory and the smallholders know better about the real practice. An example of contradiction between experience and theory is about one of the weed named Clidemia Hirta, or what is called '*cabe-cabean*' by farmers[143]. According to the theory in training materials, this type of weed is bad for oil palm so it need to be sprayed. However, according to the farmers, this weed is good for oil palm because it could help the tree to save the water inside the ground. Hence, farmers would let this weed grow in their land because they rely more on their experience.

Figure 10 Clidemia Hirta or *cabe-cabean*

Smallholders' knowledge about better management practice is an important factor in relation to intensification process. To increase the productivity, smallholders need to know the appropriate methods to optimize the productivity of oil palm plantation. When smallholders were asked about increasing productivity in their current land, they always answer about fertilizations, even though fertilization is not the only thing that could be done for intensification. Relation between knowledge and intensification should also be supported by the capability of smallholders to implement their knowledge. Hence, their financial situation, relationship with labourers, and accessibility to good and sufficient inputs are also very important concerns.

In relation to expansion, knowledge of smallholders is important in choosing the proper type of land. However, the expansion issue is not directly related to the smallholders' knowledge, but more about access to financial capital, preference, and the purpose of expansion. Smallholders that have the objective to have land as an asset usually do no mind if they have to buy swamp area even though the productivity will be poor. They expect the price of the land will increase in the future and they could sell the land in case they need money. Meanwhile, smallholders that have as their objective to produce oil palm, they tend to buy plasma or non-plasma land that is already planted by oil palm. A local trainer[144] mentioned that the objective of the trainings from NGOs is to improve the yields of oil palm plantation. He mentioned that the facts about the lower productivity and the more expensive management cost in swamp area than in mineral land

[143] According to an interview with SH01 on 9th Jan 2018
[144] According to an interview with SH28 on 30th Dec 2017

are already understood by smallholders. This shows that training materials give more impact to intensification than expansion.

5.6.Conclusion

In this fifth chapter, I explain how each type of capital influences smallholders' decisions for intensification and/or expansion. In relation to the livelihood framework, the analysis of capital includes the issue of how people access the capital, the capability and strategy in using the capitals, and how the capitals can be used for meaningful living (Bebbington, 1999). As I explained in the previous sections, the accessibility of land, labour, financial capital, inputs and seeds, and knowledge about better management practice influence smallholders in intensification. This access to capitals also relates to the historical background of smallholders started the oil palm plantation and their relationship with local organizations, like KUD. For instance, in relation to the access of seeds, the migrants from the transmigration programme received the good quality of seeds since the government and the company supported them in the beginning phase of plantation. How the relationship with KUD affects the access of capital is related to how training about BMP from the NGOs through KUD was given to the plasma smallholders as the priority since they are the members of KUD. These accesses to capitals and how smallholders use the capitals then affect their practice of intensification and/or expansion.

DISCUSSION AND CONCLUSION

6.1. Discussion

By analyzing the factors that affect smallholders' decisions for intensification and expansion, this research tries to give insights about how to trigger smallholders to do intensification instead of expansion in improving their productivity. This research shows that smallholders would still do expansion, even though they could improve their productivity through intensification. Policy in the national and global level shows the effort to decrease the expansion and prioritize intensification for smallholders. Certification is one of the global-level institutions for smallholders to do better management practices so they could improve the quantity and quality of their yields. RSPO-certified smallholders in one of the KUDs in Petaling area have changed their practices and the company that receives their FFB has recognized that the OER has increased because of the change. However, the smallholders have not received additional incentives because of this change. The price of the FFB remains the same. In this case, the benefit to be certified is not yet available for smallholders.

Besides RSPO, ISCC certification is also implemented in Petaling area. The spraying team unit becomes an issue for smallholders in implementing ISCC regulations. Smallholders are required to hire TUS for spraying in their land. However, smallholders are not prepared to afford the labour of TUS. Hence, smallholders try to dodge from the requirement to hire TUS and do the spraying by themselves. In this case, it is important to ensure that smallholders have the capability or are supported to be able to follow the rules of the certification. Before the certification process begins, it is important to take a closer look at the smallholders' subsistence. The evaluation is not supposed to be only through the eyes of KUD, but also in the smallholders' level.

The programs in the national level are also in favor to prevent a new plantation of oil palm. As an example, this research found that there is a program from the government in South Sumatra to give the right for smallholders to use land to cultivate rubber. However, because of the loose control from the government and the tempting earning from oil palm, the smallholders use the land to cultivate oil palm. The unclear property status of land also creates 'sporadic lands', in which smallholders are at risk by cultivating oil palm in this land because they only receive the permission from the village government and this permission is not recognized at the higher level. In these cases, it is important to ensure that local government, especially village government, is also in favor of preventing expansion of oil palm in their area. The contradiction between formal policy lines and actual development of oil palm also happens in another area, like in Kalimantan, where the expansion of oil palm is still increasing while the regulation tries to limit the expansion.

International standards intervene in the process of intensification and expansion when smallholders or the company that smallholders have contract with involve with the certification.

The certification helps to increase the productivity of oil palm in the existing plantation, but it does not mean the certification prevent the expansion. This case study shows that the certification alone could not avoid the expansion. One of the programs of the Indonesian government that support intensification is ISPO certification. Like other certifications, ISPO certification requires smallholders to have a land ownership certificate (The Regulation of Ministry of Agriculture Number 11 of 2015 about ISPO). To overcome this issue, the government has formalization and titling program to facilitate low-income smallholders in obtaining a land certificate. In this program, the government has target to formalize 9 million ha of land and 12.7 million ha of social forestry area (*perhutanan sosial*) (Directorate General of Information and Public Communication, 27 March 2017). Through this program, more smallholders will obtain legal land ownership certificate and it will increase their feasibility to be certified by ISPO. The clear land rights of smallholders could also be a pre-requisite to avoid conflict in facing the rising land values (Rist, Feintrenie & Levang, 2010).

ISPO certification and land ownership certificates will also increase the possibility for smallholders to be supported by BPDP in their replanting process. Through the program from BPDP, smallholders could gain IDR 25 million (± EUR 1,475) per ha for the replanting (BPDP, n.d.). According to the Decree of Directorate General of Plantation (2017), in the oil palm replanting, the land have to be in condition that potentially could implement and obtain ISPO certification. Moreover, ISPO certification is one of the requirements to gain the support for the facilities and infrastructures for the replanting. Therefore, the program to facilitate the land ownership certificate will help smallholders to obtain ISPO certification and funding for the replanting process from BPDP. In addition, the program could help smallholders to access the financial capital since the land ownership certificate can be used as collateral for a loan in the bank.

In their research about smallholders' yield gap, Euler et al. (2016a) used quantitative methods in analyzing the smallholders' production constraints. They concluded that, in general, the yield gap is affected significantly by management practices. The result shows the direct cause of yield gap. Different from quantitative research, this research uses a case study method that gives deeper, more complex, and indirect causes to explain smallholders' current management practice. As shown by the research of Euler et al. (2016a), smallholders do not adapt their labour and fertilizer dosage to the higher resource demand of the palm. Hence, the recommendation to tackle this issue is the technical assistance and availability of fertilizers. Meanwhile, according to this qualitative research, the situation is more complex than this. Smallholders know that they need more labour to improve their management practices, but it will need higher cost. In addition, the training about better management practices usually goes to the owner of the land while actually the labourers do the work on the plantation. The lower production of smallholders is also caused by the type of seed. Smallholders that initiated the plantation by themselves, without support from the company or the government, usually use the poor quality of seeds. Therefore, the quantitative research could see that plasma smallholders are in better management

practices than independent smallholders. It was assumed that it happened because the plasma smallholders were under the supervision of company in the early stage of plantation. In this research, I explain the benefits and challenges of the plasma smallholders, how the plasma smallholders could gain more benefit, and how it would creates a bigger gap among smallholders.

The use of the livelihood framework in this research helps me to understand the whole picture of the way smallholders make decisions for intensification and/or expansion. The decision-making process is commonly related to the psychological process of individual. By using the livelihood as a framework to analyze the decision-making process, I gained a bigger picture about the situation of smallholders that could affect their decisions for intensification and/or expansion. However, because of the limited time, there are some aspects in the livelihood framework that I could not address deeper in this research, like social capital of smallholders.

This research has some limitations. First, since this research is a case-study research, the information from it refers to the situation in Petaling area, Jambi. On the one hand the in-depth study provides more insight in smallholders' reasons to intensify or expand. The insights from this research can, however, not be generalized to all oil palm producing areas. More research in different geographical areas will be needed to get the general picture of intensification and expansion in oil palm development. Especially in areas that still have forest available, such as in Kalimantan, the possibilities for expansion will differ from the situation in Jambi. Second, because of the time limitation, I could only focus in some areas of livelihood framework, which are historical background, relationship between smallholders and local organizations, and access to capitals. Moreover, most of the information from this research is gained from Sido Mukti village and Tri Mulya Jaya village because these are the villages that implement certification in their KUDs. There is a lack of data from the other two villages in Petaling area. Lastly, I did not have a chance to interview the representative of the management of SNV. Since the management of SNV is located in Jakarta, I could only reach the local representative of SNV, who is also a representative of one of KUDs in Petaling area. Because I had always met the representative of Setara and SNV at the same time, I could not analyze the different ideas between these two organizations in implementing the BMP training project.

6.2. Conclusion

In this research, the main objective is to analyze which and how the factors affect smallholders' decision for intensification and/or expansion. Through the livelihood framework that is adapted to the context of oil palm development, this study focuses on how the historical background of smallholders, the relationship between smallholders and local organizations, and smallholders' access to capitals could affect smallholders' decision. First of all, I would like to emphasize that when smallholders are faced with these two possibilities to improve their productivity, they would do both if they would have the capability to do both. The different capabilities of

smallholders to do intensification and expansion are explained in this study. Moreover, it has also analyzed how the different factors and capabilities of smallholders lead to different practices in intensification and expansion.

Regarding the intensification issue, there are four main factors that affect smallholders' decision and practice in intensification, which are access to inputs, access to knowledge about BMP, labour issues, and certification. Inputs are good quality seeds (tenera) and fertilizers. Smallholders in Petaling area have different histories about how they were involved in oil palm development. For scheme smallholders that were part of transmigration program, the good quality seeds they used in the first planting were supported by the company. Meanwhile, independent smallholders that were not bound by contract with the company tend to buy affordable seeds, which have poor quality. The different quality of seeds then affects the quality of yields and the price of the FFB. Fertilization is also one of factors that affect smallholders' decision and practice in intensification. Fertilization is always the first response of smallholders when they were asked about how to improve the productivity in their existing lands. For intensification, they mentioned that they need to apply better type of fertilizers, use higher dose of fertilizer, do fertilization more regularly, and add organic fertilizer in their plantation. However, the availability and affordability of fertilizers become obstacles for smallholders. The issue of affordability of inputs thus relates to the issue of access to financial capital. Financial capital is also related to smallholders' historical background since it is more accessible for scheme smallholders because they have SHM that could be used as collateral for a loan. Labour issue also affects the intensification. This issue is closely related to elderly and out-of-village smallholders. These smallholders have more difficulty in managing their plantation directly, so they always need labourers to support the management practice. It leads to nonoptimal practice when they could not afford the labour to manage their land.

Certification is another factor that affects smallholders' practice in intensification. Certification creates a situation for smallholders to do better management practice. In ISCC certification, smallholders are required to hire TUS to spray herbicide in order to do spraying properly according to ISCC standards. Certified smallholders also need to be trained about BMP to change their management practice so they could increase the yields and maintain the stability of the yields. For RSPO-certified smallholders, a situation to do intensification is also created. The certification process is supported by the company that also implements *Permentan* in selecting the FFB for its mill. Hence, smallholders need to send all their FFB to the company's mill and they need to follow *Permentan* so all of the FFB could be accepted by the mill. The quality of FFB from RSPO-certified smallholders is getting better, yet the price of the FFB is not increased. Training about BMP for these smallholders also supports the intensification. The additional knowledge from the training could help smallholders to increase the yield and maintain the stability of their yield. However, the results of the BMP training have not been able to be evaluated yet. Moreover, smallholders could only implement what they gain from the training if they could afford 'the better management practices'. Given that many smallholders hire labour

and that training focuses on plantation owners rather than labourers, the question remains whether the labour will indeed implement better management as promoted by the trainings.

Regarding expansion, either expansion into new land or buying planted land, smallholders always relate the reasons of expansion to family needs. The first prominent reason is they do expansion for their children. For smallholders that have young adults, expansion for their children has as objective to increase the amount of land they have, so they could give and inherit the land to their children. The land from the parents is usually used as an initial capital for the children to be self-sufficient. For smallholders that have young children who are still in school, the expansion has as objective to afford the education for the children. When smallholders have more land, they would produce more yields, and this could increase their revenue. Hence, if the children want to go to higher education, the parents could provide the tuition fee. Another reason for smallholders in expansion is to use their land as an asset/investment. It is humane behaviour for them to buy more land if they could. It means they are trying to accumulate the capitals through land. The price of land is expected to increase in the future.

The main factors of smallholders' decision and practice of expansion are related to the types of land and the issue of financial resources. The different quality of seeds that smallholders used in their first planting and the contract between smallholders and the company create different types of land, which are plasma and non-plasma land. Plasma and non-plasma land have different quality of seeds, different management, and different price of FFB. These differences then affect smallholders' practice of expansion. On the one hand, some smallholders prefer to buy planted plasma land from other smallholders. On the other hand, some smallholders prefer to expand to non-plasma land, either by buying a planted one or buying a new land, because it is more affordable.

Financial capital is also one of the factors for smallholders in doing expansion. Scheme smallholders that own SHM have better access to financial capital since they could use the SHM to be collateral for their loan. Meanwhile, most of the independent smallholders who were not part of transmigration program do not own SHM so it is more difficult for them to access financial capital. This issue then leads to a bigger gap between scheme smallholders and independent smallholders. Scheme smallholders are in a more advantageous position than independent smallholders to expand in better type of land (plasma land).

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