Trade-offs of growth: Smallholder Farmers Inclusion In The Palm Oil Global Value Chain and Sustainability
Indonesia Case

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Abstract

Smallholders are far from dead. In many cases around the world, smallholder farmers represent the backbone of rural and national economic development and are considered as both "beneficiaries and agents of sustainable development". The expansion of commodity crops has positively impacted rural livelihoods, providing employment and boosting general well-being among rural communities. This, however, changed the way farmers interact with nature, leading to negative externalities such as deforestation practices, wildlife endangerment and unsustainable working environments. Palm oil (PO) has attracted global attention for its ambiguous and often problematic nature. On the one hand, palm oil's market rapid growth in Indonesia raised dramatic environmental concerns, as its development has come at the expense of fundamental human rights and biodiverse, carbon-rich tropical forests. On the other hand, it brought rural development and increased the national economy, placing smallholder farmers on a leading position. To investigate this *trade-off of growth*, the thesis was guided by the research question "how does the inclusion of smallholder farmers in the PO GVC contribute to sustainable inclusive development?" and was supported by the following three sub-questions: **1.** What are the socio-economic implications of PO expansion on smallholder farmers in Riau and Jambi provinces? **2.** What are the environmental implications of PO expansion in Riau and Jambi and how are these linked to smallholder farming? **3.** To what extent has smallholders' participation in the PO GVC contributed to the shift to the sustainable production of the crop and what facilitates this transition? The thesis was built on the sustainable and inclusive development theoretical framework and shed light on the role of smallholder farmers in enhancing rural livelihoods and boosting national economic growth. The analysis concludes that PO production has played a relevant role in poverty reduction and economic growth in Riau and Jambi, Indonesia. More specifically, its expansion manifested into increased income, access to land and capital, rural development through infrastructure and services and improved household dietary quality and food security. However, because of the strong influence of the Indonesian government's transmigration programme, inequality among farmers arised, as transmigrant smallholder families were given financial and technical support, while autochthonous ones generally were left forgotten. At the same time, palm oil expansion has replaced substantial amounts of tropical forests and led to numerous land conflicts across Indonesia.

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Abbreviations

AVC	Agriculture Value Chain
CIFOR	Center for International Forestry Research
CSO	Civil Society Organization
CPO	Crude Palm Oil
EP	European Parliament
EU	European Union
ESA	European Space Agency
FAO	Food and Agriculture Organization
FFB	Fresh Fruit Bunches
GVC	Global Value Chain
IFAD	International Fund for Agricultural Development
ISPO	Indonesia Sustainable Palm Oil
IVC	Inclusive Value Chains
IVCC	Inclusive Value Chain Collaboration
KKPA	Kooperasi Kredit Primer Anggota
LCLUC	Land-Cover and Land-Use Change Programme
NGO	Non-Governmental Organization
NES	Nucleus Estate and Smallholder
PKO	Palm Kernel Oil
PO	Palm Oil
RSPO	Roundtable for Sustainable Palm Oil
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USDA	United State Department of Agriculture
VCC	Value Chain Collaboration

1. Introduction

Smallholder and family farms are far from dead (Brookfield, 2008). In many cases around the world, smallholder farmers represent the backbone of rural and national economic development and are considered as both "beneficiaries and agents of sustainable development" (Terlau et al. 2018). To this day, the expansion of commodity crops has positively and negatively impacted rural livelihoods extensively, providing employment and boosting general well-being among rural communities while changing the way farmers interact with nature. As a matter of fact, development in agriculture has brought irreversible change to their environments and human rights (Basiron, 2007; Eastin, 2018; Elmhirst et al., 2017; Euler et al. 2015). Global demand for commodities, including coffee, cocoa, tea, soy, beef, timber, and palm oil (PO), has steadily increased over the past few decades, and growth is projected to escalate in the years to come. Among the different agricultural crops, PO has attracted substantial attention from both the public and private sectors for its ambiguous and often problematic nature. A versatile, efficient, and high yielding super crop, PO is the world's most used, consumed, and traded vegetable oil, of which consumption has quintupled since the year 1990 (FAOSTAT, 2015). PO is an essential component of global food security and poverty reduction (Solidaridad, 2020). Most importantly, PO has represented a pathway to growth and development for many economies around the world, especially for Indonesia and Malaysia, the two biggest PO producers and exporters. In comparison to other crops in the tropical world, PO has undergone "one of the highest rates of enlargement" (Pacheco et al. 2017, p. 1). As a matter of fact, "[I]ndonesia's four-fold increase in production since the year 2000 represents the world's largest modern agricultural expansion" (Brookfield, 2008, p. 2). On the one hand, studies show that the increase in PO cultivation in producing areas of the country has addressed poverty reduction by employing millions of people (Syafa'at and Mardinato, 2002; Susila, 2004). An estimated 8.4 million people are employed in the PO sector in Indonesia (Indonesia Ministry of Environment and Forestry, 2019). This number covers the entire PO supply chain, which spans from producers, mill workers, processors, and goods suppliers. Of the total PO plantations, smallholder estates account for 41 percent, employing 2.3 million farmers in the country. On the other hand, the rapid land-use change all comes with a price. PO production and expansion have raised several social and environmental concerns, as its development has come at the expense of fundamental human rights and biodiverse, carbon-rich tropical forests (Heijman, 2010; Koh et al. 2011; Margono et al., 2012). The massive expansion of PO plantations in

Indonesia, and overall in the "Palm Oil Belt", has brought irreversible damage to the natural habitats, biodiversity, and the climate (Basiron, 2007; Fargione et al., 2008; Castellanos-Navarrete and Jansen, 2015). Additionally, the most commonly addressed social consequences revolve around disputes connected to the dispossession of land (Castellanos-Navarrete & Jansen, 2015). Its development into remote areas has forced local communities to evict their ancestral lands to make space for large-scale plantations, bringing irreversible damages to precious primary forests and peatlands ecosystems through devastating deforestation measures (Heijman, 2010; Koh et al. 2011; Margono et al., 2012).

Changing dynamics induced by Globalization and neoliberal restructuring have brought different consequences on smallholder farmers' roles, placing considerable pressures on them to engage with agricultural export-led growth based on comparative advantage (Edwards, 2019). At the same time, even though most of them are primarily dependent on their lands for subsistence-based production, the increased global trade flows induced by market forces has enabled smallholder farmers to participate in and benefit from more commercialized global value chains (Lee at al. 2011; Rigg et al. 2016). While environmental externalities linked to PO expansion have been widely analyzed, in particular, in relation to the topics of deforestation and biodiversity endangerment, fewer academic studies have focused on the socio-economic effects of smallholder farmers' inclusion and participation in the PO global value chain (GVC). Therefore, this thesis focuses on the effects of PO's growing market on the lowest and often neglected group (yet the most essential) of the value chain pyramid, namely, the *smallholder farmers*. Close attention will be given to their inclusion and consequent contribution to sustainable and inclusive development in Riau and Jambi provinces, in Sumatra, Indonesia.

The thesis will answer the following research question:

How does the inclusion of smallholder farmers in the palm oil global value chain contribute to sustainable and inclusive development?

Furthermore, the research will be supported by the following three sub-questions, which will be answered in the Empirical Chapter (4):

1. What are the socio-economic implications of palm oil expansion on smallholder farmers in Riau and Jambi provinces?
2. What are the environmental implications of palm oil expansion in Riau and Jambi?
3. To what extent has smallholders' participation in the palm oil global value chain contributed to the shift to the sustainable production of the crop and what facilitates this transition?

Each sub-question guides one subchapter and will focus on the Riau and Jambi provinces, Sumatra, Indonesia.

1.1 Relevance of the study

This thesis project intends to analyze how smallholder farmers' participation and incorporation into the PO GVC have impacted sustainability and inclusive efforts. Due to its controversial nature, the PO industry was forced to undergo several transformations, especially in the sustainability front. Still dubious, however, is the degree to which smallholder farmers are included and benefit from equitable distribution of value along the chain. Because large corporate plantations predominantly dominate the commodity, adverse incorporation processes and risks of exploitation still take place. Indonesia, the case study of this Master's thesis, is "currently the world's largest producer of palm oil, and, together with Malaysia, accounts for 85 to 90% of total global palm oil production" (Nurfatriani et al. 2019, p. 1). This, in turn, attracts global investment, as buyers as popular as Unilever, Nestle, Procter & Gamble Co and PepsiCo are the leading names among the Fast-moving Consumer Goods (FMCG) industry. The socio-economic and environmental consequences resulting from oil palm production are mixed and often disagreed upon. The contradictory nature of the commodity makes it one of the most controversial products of the sector and subject to many criticisms. With a rising population and consequent steady demand, the industry of this vegetable oil is projected to expand by 3 percent over the next decade (Ibid.), attracting more farmers to switch to the cultivation of PO. How do PO smallholders benefit from engaging in this fast-moving sector? Furthermore, how does their involvement make an impact on sustainable PO production? Does the PO sector provide a win-win situation in which both farmers and the environment win?

The study of the socio-economic effects of smallholder farmers' inclusion and participation in the PO GVCs is of high relevance for the field of Global Political Economy, and more broadly for the

sphere of International Relations because economic growth requires components of societies to incessantly produce to the expenses of natural resources that are finite. The study of the trade-offs of growth depicts an overview of how the economy interacts with people and nature; global political economy, in turn, provides the critical perspective necessary to analyze the dynamics of growth vs. nature.

Methodology

Due to the high availability of information and data on PO and smallholder production, this thesis uses Indonesia as a case study, focusing on the Riau and Jambi provinces of Sumatra. To develop a comprehensive understanding of the complex nature of PO, the author applies a with-in case study analysis and investigates how the inclusion of smallholder farmers into the PO GVC has contributed to sustainable and inclusive development in the forest frontier areas of the two provinces. Riau is one of the provinces where oil palm has become the primary agro-commodity in Sumatra, Indonesia, as it has been first adopted by large-scale plantations and recently by smallholder farmers. Jambi is one of the main provinces where PO competed against another case crop, namely rubber. However, both provinces were subject to the transmigration programme launched by the Indonesian central government, which facilitated growth and development (Abazue et al., 2015; Basiron, 2002; Euler et al., 2015). Though a within case study analysis provides an overview of one specific context, this method will enable the author to depict a comprehensive image of the socio-economic and environmental changes of PO expansion. Furthermore, to support the theoretical framework, the research is framed by academic research papers offered by Journal of Peasant Studies, Journal of Agricultural Economics, Journal of Agricultural and Environmental Ethics, Annual Review of Resource Economics, Food Policy, Society & Natural Resources, Land Use Policy, and World Development. To investigate the main research question and subquestions, the thesis uses data collected by leading researchers in Indonesia through baseline studies and surveys. The Center for International Forestry Research (CIFOR) is useful in providing unbiased data on the challenges and opportunities that PO as a global agro-commodity has brought to producing countries. CIFOR uses a global, multidisciplinary approach and conducts innovative research that are useful to all leading stakeholders in the space of forest and people. Finally, to analyse the third sub question, the author will retrieve data from Solidaridad, an international Civil Society Organization (CSO) dedicated

to transforming supply chains into more sustainable and inclusive spaces, where she conducted an internship between March and July 2020.

Outline

Chapter 1 (Introduction) offers an introduction to the topic of the thesis, lays out its academic relevance, and offers the main and sub-questions. Moreover, the section introduces the with-in case study method of analysis. Chapter 2 (Literature Review) first, elaborates on the theoretical framework this thesis builds on, that is Sustainable and Inclusive Development, and follows a thematic structure that provides an analysis of existing academic work on the topics of smallholder farmers, inclusiveness and marginality, and value chain collaborations. Additionally, this chapter offers a review of the literature concerned with the social and environmental costs of PO production. Chapter 3 (Context Chapter) contextualizes the development and expansion of oil palm in Indonesia and analyzes its specific agro-economic features that have influenced its role in rural development. Chapter 4 (Empirical Analysis) analyzes the two selected case studies of Riau and Jambi, core PO producing provinces of the Indonesian region of Sumatra. The chapter is guided by the three sub-questions presented above. Finally, chapter 5 (conclusion) will summarize the findings of chapter 4, answer the main research question, mention the limits of the research, and will point to the future.

2. Literature review

A substantial amount of research covers issues of the environmental costs and implications of PO expansion emerging from Indonesia, however, relatively little attention is paid to the socio-economic dimension and its contribution to sustainable and inclusive development. PO as a global commodity has lifted millions of people out of poverty thanks to its high-employability characteristic and lucrative nature. In particular, because of the latter feature, interest from the international community has risen, attracting both private and public sectors to push for palm PO's transition from a social and environmental unsustainable industry to a more sustainable and inclusive one. This chapter investigates available literature on inclusive value chain collaboration (VCC) and the role given to and played by smallholder farmers that are employed in different commodities around the world. The section is divided into 3 subsections: it first introduces sustainable and inclusive development as the theory which this thesis departs from, then it elaborates on the contested definition of "smallholder farmer", exposing factors that hinder them from being included in global agro-commodity chains and proceeds by reviewing what different authors claim about VCC's implications on small-scale farmers. The third subsection sheds light on the controversial nature of PO and it focuses on what authors assert about its environmental costs and social benefits.

2.1 Sustainable and inclusive development

There is no single definition explaining what sustainable and inclusive development entails, as policies are different per region, country and also international organizations. However, it is important to have a clear definition, in that it construes how the practice of sustainable and inclusive development will be implemented (Jezeer et. al., n.d.). Therefore, in order to better understand what sustainable and inclusive development means in the current academic debate, this section explores its meaning from different actors and scholars.

The United Nation Development Programme (UNDP) lays down 17 development goals to achieve sustainable and inclusive development, with the overall aim to “bridge economic, social and environmental gaps” through “help[ing] people to contribute to and benefit[ing] from economic growth with minimal impact on the environment” (UNDP, n.d.). More specifically related to smallholders farmer, the UNDP takes a more holistic approach to reach the development goals,

and it does so by improving "productivity, profitability and sustainability from farm to fork" (UNDP, n.d.). This definition shows a perspective from a supranational organization, but there are also other scholars that define sustainable and inclusive development differently. Van Mansavelt (1993) and Fiore et. al. (2019) argue that the concept of sustainability takes in account four crucial issues: (1) food security; (2) employment and income generation; (3) environmental and natural resource conservation; (4) people's participation and empowerment. These definitions take in different aspects of sustainability and inclusiveness, not simply the human-based dimensions, but also placing importance on nature.

Albeit the mentioned definitions are holistic, they are not explicitly related to PO industry nor smallholder farmers. Slingerland et. al. (2019) give a more PO-related interpretation, seeing "smallholder inclusion as engagement of smallholders in oil palm supply chains, thereby gaining access to national and international markets and to technologies to increase yields and income per hectare and per unit of labour". From a more corporate view, "small inclusiveness refers to providing smallholders with market access, and hence not excluding them from supply chain" (Jezeer et. al., xxx). Interestingly, the emphasis Jezeer et. al. (n.d.) puts is that an inclusive approach must include (1) ownership, (2) reward, (3) voice and (4) risk. Here, this definition sees that smallholder farmers should be given an equal participation platform as other stakeholders in the industry, so that their livelihoods are fulfilled.

This thesis adopts a socio-economic approach to study smallholder farmers in PO industry, therefore the definitions by Slingerland et. al. and Jezeer et. al. are chosen, namely that sustainable and inclusive development must be socially and economically benefiting smallholder farmers. However, there is an important layer to be added on top of these socio-economic definitions, because the element of empowerment that is endorsed by the UNDP and van Mansavelt Flore et. al. must be also added. This is why this thesis also brings in Sen's *Development As Freedom*. According to Sen (1988), to be considered as development, not only the freedom to achieve one's well-being is important, but the freedom to choose the path of well-being - capability approach is also equally relevant. In other words, the smallholder farmers must be given the choice to choose how they want to live and what they want to be. In Sen's perspective, in order to be considered as real development, one should be given the freedom to determine the life they wish to lead.

However, it should be recognized that one's positionality in a society can hinder their freedom of choice and thus constrain their development process. Smallholder farmers who decide to engage with and benefit from international global value chains can face several challenges on a personal, local, national and global level.

The next subchapters of the literature review will elucidate on the costs and benefits of being involved in GVC as a smallholder farmer. Much emphasis will be put on the processes of incorporations, which are dictated by internal and external factors, that contribute (or not) to sustainable and inclusive development. In short, this thesis applies a socio-economic approach combined with human development to define what sustainable and inclusive development entails in this thesis.

2.2. Smallholder farmers and agriculture

This Master thesis builds on an old debate. Approaching the end of the 19th century, in 1899, Karl Kautsky published "The Agrarian Question" (Kautsky, 1899; Birner and Resnick, 2010) where he debated the relevance of peasants and smallholder farmers in the face of the rising capitalist agriculture. Because he was convinced of the technical superiority of large farms compared to the small ones, Kautsky questioned why there was a need and justification for agricultural policies specifically targeted to support smallholders. More specifically, he believed that the persistence of peasant producers was "self-exploitative" and not a "socially desirable situation" (Ibid 2010, p. 1442). Similar critics agree that further supporting policies were worthless in that smallholdings' owners would eventually disappear in the face of stronger external forces (Ibid., 2010). To this day, smallholder farmers and their families are far from dead and are vital to global food security and rural development.

For many national economies around the world, agriculture represents one of the most important sectors. It not only makes sure that the countries' "food basket" is filled, but it also contributes to substantial revenue and employment (Abood et al., 2015; Feintreine et al., 2010). More specifically, for most developing countries, agriculture is the backbone of their economy, in that 80 percent of them heavily depend on it as their primary source of employment (Gatto et al., 2015; Qaim et al., 2020). Development in agriculture continues to play a pivotal role in the advancement of these economies, especially in the Asia Pacific region, the focus of this thesis. In

most cases, this transformation is orchestrated by the joint agendas' and commitment of both private and public sectors, which enable and boost the participation of small-scale farmers, who are generally the weakest group of global commodity value chains. It is claimed that the revolution is more significant when smallholders are encouraged to transition their agricultural systems towards high-value activities that are linked to the modern market (Briones 2015; ADB 2014). The bridge created between small farmers and modern markets "increasingly entails participation in organized commodity supply chains" (Briones 2015, p. 43)[1]. Commodity supply chains involve different actors and actions that lead to the interaction between commodity producers, processors, and markets (McCarthy, 2009). Farmers play a pivotal role in the agriculture value chain, where large farms (bigger than 50 ha), located in the Americas, Australia and New Zealand contribute to the food market by 75%-100% with products like cereal, fruit, and livestock and where small and "very small" farms situated in sub-Saharan Africa, South and Southeast Asia and China harvest 75% of most other food commodities worldwide (Fanzo 2017, p. 15; Manugas et al. 2019, p. 19). As Lowder, Skoet, and Raney (2016) argue, both small and large farms have a role in feeding the world's population but are represented and included in the economy to very different extents. This can be attributable to the fact that "smallholder" as a concept is highly debated, which makes development programs and policies difficult to be implemented and make a significant change.

Small but vital

90 percent of the world's 570 million farms are small in size and in character (FAO, 2017). The majority of these small-scale agricultural holdings are located in rural areas of developing countries and are generally operated by smallholder farmers and their families (Lowder et al., 2016) (FAO, 2017). The cultivated lands account for less than 2 ha and represent the main source of income for many of these farmers. The concept and meaning of a "small farm" have long been debated and have not been universally accepted. According to the Gatzweiler and Von Braun (2016) land size (no more than 2 hectares) is the general criterion to define one; however, critical literature has claimed that the "definition by size" can be misleading, in that it completely disregards socioeconomic difference (2016, p 5). In fact, Ebata and Hernandez (2017) argue that in order to define a smallholder farm, attention should be placed on its "economic positionality".

[1] (here referred to as: value chains)

In this view, economic factors such as the extent to which one has access to the market and the level of commercialization, classify a farmer as a "smallholder". Bernstein (2010), on the other hand, finds that farmers' societal role is relatively more defining and comprising; in his line of thought, the forces of production (or the physical aspects of production), such as labor, land, finance, knowledge, and nature are influenced by the relations or conditions of production; these are called "societal aspects" (Ibid., 2010). Thus, the level and quality are determined by the economic position of the farmer. In line with Bernstein's reasoning, measuring the forces and relations of production can determine the size of the farm (Ibid.). For instance, Sub-Saharan Africa is characterized by small farms that are based on subsistence; these generally depend on family labor and produce enough to sustain their households. Furthermore, Rada, and Fugile (2018), assert that the size of a farm can give insights to the level of land productivity. In their view, small farms meet higher levels than corporate-led ones, in that the use of the land is more extensive and sustainable, reaching more produce per hectares (2018, p.1). Finally, Gatzweiler and Von Braun (2016), align with this argumentation and add that higher land productivity is stimulated by higher labor productivity, hence, there are more significant incentives to produce on the small farms.

In 2013, the International Fund for Agricultural Development (IFAD) and the United Nations Environment Programme (UNEP) issued a report entitled "Smallholders, Food Security and the Environment", which sheds light on the essential yet neglected role that smallholder farmers play in managing over 85 percent of the estimated 600 million small-size farms worldwide. The researchers intended to bring to the fore three mattering messages: first, despite the substantial contribution of smallholder farmers to the world's food production, increasing fragmentation of landholding coupled with the lack of financial and technical support, leave the majority of them in a vulnerable and often irreversible position. Secondly, high agricultural productivity can only be achieved if the ecosystems in which they operate are well-operating and healthy. However, it is well recognized that, if not managed properly and sustainably, agriculture has negative repercussions on the conditions of the ecosystems themselves. In this view, by providing quantitative evidence, the authors assert that smallholder farming has the potential to curb and mitigate human-induced climate changes only if suitable farming practices are integrated into the production systems and if empowering governance and infrastructure are set in place (IFAD, 2013). This remark leads to the third and last message that is, in order to meet the demand of an

ever-increasing and urbanizing population, current agriculture exercises require immediate systematic transformation. In their view, it is understood that because of the immense shared experience and knowledge of local conditions, the pathway towards a sustainable agricultural intensification can be achieved through practical solutions that place smallholder farmers at the center (Murdiyarso, 2002). All things considered, it should be noted that even though the report opens up several research fronts that are yet to be explored, little attention is given to the costs and benefits of smallholders' inclusion in global commodity value chains. The following explains what advantages and disadvantages small-scale farmers have when included in value chains.

2.3 Marginality and Inclusiveness in Agriculture Value Chains

Since 2007 and 2008, when global agro-commodity prices reached their highest point, interest in agriculture has significantly increased in the private sector and among policymakers. Modern GVC have proven to equip smallholder farmers with commercial opportunities to enhance their livelihoods. At the same time, however, their participation within GVCs is dictated by conditions related to agricultural production practices and the international compliance standards. These determine the eligibility of inclusion and their position within a given partnership scheme (McCarthy, 2010).

In agriculture, value chains (VCs) are defined as the "structures and networks that combine both production and distribution systems within local, national, regional, and international markets" (Gereffi et al. 2005, p. 79). As such, an agricultural value chain (AVC) comprises a set of linked actors and activities "that bring an agricultural product from production at the farm through to final consumption" (Kissoly et al. 2017, p. 1220) with the value being added at every stage. In this sense, AVCs group different actors and actions in the same production line, requiring constant interaction between the agriculture commodity (AC) producers, processors, and markets. However, the extent to which AC producers are included in the first place and the technicalities of this remain one of the biggest challenges facing the industry. Additionally, albeit the majority of the food produced comes from farms smaller than 2 ha, the position of these farms in the global economy is very marginal by proportion (Fanzo, 2017). The socio-economic *positionality* of the farmer is, therefore, an important condition when it comes to assessing how hers or his inclusion in the AVC contributes to sustainable and inclusive development.

In the context of farming, what defines marginality is "the incapability to provide ample work and/or income to be the main source of livelihood for farmers" (Bernstein 2010, p. 3). Of the 200 million smallholders producing for and feeding the world's population, many live under the poverty line and are therefore neglected (Fanzo, 2017). Arguably, Kent and Poulton (2008) assert that marginal farmers are "people who are farming yet hungry". Because of a lack of means and resources, such farmers face recurrent challenges in compensating for their own inputs (agriculture expenses) and generate a surplus from their production that is able to cover for their own purchasing power and food security. According to Kent and Poulton's (2008) review of the literature concerning agriculture development in Sub-Saharan Africa, there are four key issues that may have the potential to contribute to agricultural growth and uplift farmers from their marginal position, namely: 1) access to land 2) improvement in staple crop productivity 3) investment in public goods (research and infrastructure) 4) increased service provision to smallholder farmers" (Kent and Poulton 2008, p. 37-39).

Inclusiveness

Value chains establish connections between the local and the global markets, which is touted as a pathway towards economic development as higher demand generates employment and alleviates poverty (SOURCE). To respond to a growing population and rapid changes in the agri-food sector, the participation of small-scale farmers in GVC has raised exponentially as "a new strategy for poverty alleviation" (Ros-Tonen et al. 2019, p. 10). Among development institutions, researchers, and policymakers, *inclusiveness* has become a buzzword. On the one hand, the term is used to determine and assess development outcomes, precisely the extent to which individuals and groups of a given society benefit from economic growth (De Haan and Thorat, 2013) or from policymaking (Sen and Bukenya, 2014). On the other hand, inclusiveness is used to estimate the degree of involvement and recognition of the different stakeholders in policy making and decision making (Silver et al., 2010). Put merely, inclusiveness is employed to determine the degree and process of inclusion of the different stakeholders in policy formulation, and to measure whether the social and material benefits of this incorporation is equally distributed among them, regardless of their differences (income, gender, religion, ethnicity, etc.). In this line of thought, inclusiveness stands as a panacea for development actors to demonstrate a given strategy's social component,

which will eventually yield positive development outcomes. In agriculture strategies, these positive outcomes are demonstrated through a more equitable value distribution along the production value chain and consequent overall poverty reduction (FAO, 2015; World Bank, 2011).

2.4 Inclusive Value Chains Collaboration

Smallholders' participation and inclusion in AVCs have gained attention for its contribution to rural development, food security, and poverty reduction (Barrett et al., 2010; Ros-Tonen et al., 2019; FAO 2015; World Bank, 2011). According to the UN Industrial Development Organization (UNIDO, 2011), Inclusive Value Chains (IVC) are "a positive or desirable change in a VC to extend or improve production operations and generate social benefits [. . .] and other development goals" (p. 1). Inclusive Value Chain Collaborations (IVCCs) typically target smallholder farmers, who constitute the rural poor and are affected by different degrees of marginalization and are therefore hindered to access technologies, capital markets, training and education, and input-output markets (Ros-Tonen et al., 2019). The way in which small-scale farmers can participate in agricultural value chains (AVCs) is twofold: (1) vertically - farmers who perform various chain activities such as "crop cultivation, post-harvest handling, storage and marketing of their produce" and (2) horizontally - farmers who undertake management roles through "collective action in farmer groups or cooperatives" (Kissoly et al., 2017; KIT et al., 2006). Therefore, the idea inspired by IVCC addresses two main issues: first, through the equal engagement of smallholders in AVC activities is touted as “a potential pathway to raising the food security and welfare of farmers (Barrett et al. 2010; Bellemare 2012; Fischer and Qaim 2012). Second, collaborations with small farms owners entails the provision of Technical Assistance in sustainable land management and business trainings (Ibid.). Hence, what makes Inclusive VCC different from VC is the emphasis it puts on sustainability issues and horizontal cooperation with non-chain actors (Ros-Tonen et al., 2015).

2.5 Palm oil

Smallholders share in palm oil production

Within the PO sector, smallholders are seen as crucial players in the global PO industry (Vermeulen & Goad 2006; Jelsma et al. 2009; Obidzinski et al. 2012; McCarthy 2012). According

to the United States Department of Agriculture (USDA) (2012), in Indonesia, the largest PO-producing country in the world, oil palm smallholders alone account for about 45% of the total production. Therefore, smallholders represent a very important, but to this day, neglected part of Indonesia's PO base (Jelsma et al. 2009). A large number of these smallholders, fall under the category of supported smallholders (Vermeulen & Goad 2006) and are tied to the government or private sector by various schemes, notably nucleus-estate / plasma (NESPIR), cooperative credit scheme (Kooperasi Kredit Primer Anggota (KKPA)), joint venture (Pola Patungan) (Ibid.) and only a small number of oil palm smallholders operate independently (Gillespie 2011). These schemes all operate at a different level, wherein the oil palm smallholders have certain rights, obligations, and duties with respect to the oil palm they produce (Vermeulen & Goad 2006). The degree of incorporation into the global value chain varies according to the scheme which a smallholder is tied to. This shows that this thesis needs to account for the heterogeneity of PO smallholders in Indonesia. Due to the limited time and scope of this project, future research should investigate the implications of GVCs' participation on smallholder farmers from each partnership schemes. In the context chapter (3), the author will illustrate what each partnership scheme entails in more detail.

PO is an omniscient ingredient that constitutes a variety of products as diverse as toothpaste, makeup products, detergents, instant noodles, chocolate, and crisps and can be virtually found in "[a]round 50 per cent of all supermarket products" (WWF, n.d.). Its versatility goes as far as being the green alternative to fossil fuel, namely biofuel. The expansion of PO is considered in many ways "a microcosm of capitalist development" (Maxton-Lee 2016, p. 1). Besides PO's economic potentials, its development across years and geographies has shown that the industry is linked to conflicts over land and labor and associated with the commodification of nature. In this sense, PO's negative impacts tell a story of accumulation by dispossession and remind of proletariat exploitation dynamics ignited by the owners of the means of production (Cramb and McCarthy, 2016). It is estimated that approximately 84 percent of farms across the world are managed by smallholder farmers (Lowder et al., 2016). The cultivated lands are less than 2 ha and represent the main source of income for many of them. Changing political and economic dynamics induced by Globalization have brought different effects on the role of these farmers and their integration in the global market. Lee at al. (2011) and Rigg et al. (2016) claim that despite the fact that most

of them are primarily dependent on their lands for subsistence-based production, Globalization, by entering its way in the agricultural sphere, has increased global trade flows enabling small farmers to participate in and benefit from more commercialized global value chains. On the one hand, development institutions claim that the commercialization or the involvement of smallholder farmers' production through value chain collaborations is a promising approach to increase rural populations' incomes and enhance livelihood situations. This is made possible through the link that global value chains create between producers, processors, and markets (IFAD, 2015). On the other hand, the incorporation of smallholder farmers into the global market may lead to several risks and barriers due to unfavorable adverse processes of incorporation and international sustainability standards, respectively. Finally, aside from the economic benefits, PO comes at a cost: environmental and social. The following will briefly illustrate the academic debate on the two negative effects of PO expansion.

The environmental costs of palm oil expansion

"Land degradation is a global concern" (Smith et al., 2013: p. 1). It is argued that in tropical areas, the type of degradation happening to the soil is attributable to the radical conversion of the forest into farmlands (Abazue et al., 2015). Among agricultural commodities, it is interesting to see that although PO is regarded as the crop which requires less land in terms of size, it still brings about irreversible damages to rainforests and peatlands in which it is being cultivated. Tropical countries situated in the "Palm Oil Belt" have been experiencing biodiversity and nature's loss since the crop was introduced as commercially valuable. Among these countries, most dramatic was the negative repercussion on Indonesia's biodiverse and carbon rich rainforests. (Ibid, 2015; Ibid. 2020). The Rainforest Rescue (n.d.) asserts that oil palm plantations currently cover "more than 27 million hectares of the Earth's surface". According to Index Mundi (2014), the PO price increased to a 412 % between 2000 and 2011; this encouraged PO producers to intensify their production processes, which, therefore, required them to enlarge their lands even more. The expansion of these areas has critically endangered the environment, biodiversity and local communities residing within their proximity (Castellanos-Navarrete and Jansen, 2015). Finally, deforestation practices diffused rapidly, leading to a fast disappearance of trees in the rainforest (Basiron, 2007) and legal and illegal slash-and-burn practices are consequently contributing to

greenhouse gas emission (Fargione et al. 2008). Research has shown that this phenomenon is particularly common in regions in which weak land-tenure regimes persist (Hall, 2011).

The social benefits of oil palm production

Several studies focused on the monetary contribution that a large sector, such as agriculture, brings to an economy. It is assumed that countries rich in natural resources have an asset, as production becomes aimed at international export, leading to elevated monetary entries. The economic contribution of the PO industry is a topic of high relevance in academia. Syafa'at and Mardinato (2002) analyzed the effect of PO on the Indonesian economy using an input-output study framework and concluded that the reliance on this commodity represented the main source of output growth in the economy. This gave Indonesia an additional boost for moderate to fast recovery in times of financial crisis, like that of the 1997-1998, which dramatically affected several economies in East and Southeast Asia (Syafa'at and Mardinato, 2002). Moreover, Susila (2004), who specialized in the analysis of the PO industry, claimed that the commodity contributes to the societal uplifting from poverty as it enhances economic growth on both local and national level. In this view, the former is assumed to be correlated to the fact that the PO sector generates employment in rural areas, which consequently assists in an even income distribution, whereas the latter, is associated to the growth in international investments, currency earnings, output and in general to a more active involvement of major international competitors in the sector. Susila and Setiawan (2007) through a Significance Analysis of Microarray (SAM) analysis, were able to further emphasize that the estate crop industry in Indonesia plays a relevant role on the economic growth, in that it fosters employment and equitable income distribution. The authors then concluded that both PO and cooking oil were the highest contributors to national growth. However, it is important to keep in mind that because of the ever-increasing demand of PO, cultivable areas are being stretched up, making "land grabbing" a larger problem. The control of these areas by more powerful outsiders is a "symptomatic of a neoliberal process in which land is commodified and move from local people to private companies" (Hagen & Minter 2019, p. 65). This consequently undermines indigenous alternative modes of production and magnifies social disparities (Ibid, 2019). All in all, we understand that oil palm driven growth and development comes at a very important price. The extent to which smallholders' involvement in its global value

chain depends on the system that has been set in place for them. This will be investigated in the next two chapters.

3. Context Chapter: Contextualizing Oil Palm production in Indonesia

This chapter contextualizes the development and expansion of oil palm in Indonesia and analyzes its specific agro-economic features that have influenced its role in rural development in the Archipelago. Indonesia, the largest PO producer and trader in the world, as the case study, stands as a unique example that shows how PO production has played a crucial role in boosting the national economy, most notably in rural areas. Moreover, Indonesia's PO market has witnessed shifts in participation, power, commitments, and interests due to the adoption of different governance structures and changing global economic dynamics. At the same time, Indonesia lays under a magnifying glass for the social and environmental negative impacts caused by PO development, that have attracted significant attention from campaigners, Non-Governmental Organisations (NGOs), and consumers, consequently turning into global movements to boycott the production, trade, and consumption of PO for many years. More recently, with the emergence of key players such as the Roundtable for Sustainable Palm Oil (RSPO), Indonesia Sustainable Palm Oil (ISPO) and the establishment and involvement of NGOs, technology companies (Satelligence) and CSOs from all around the globe, much effort has been applied in the shifting of the PO industry to more sustainable sourcing and procurement.

The following explains the relevance of Indonesia as the case study of this Master thesis and contextualizes PO as the driver of socio-economic and environmental change in the country.

Palm oil expansion in Indonesia

Oil palm (*Elaeis guineensis*) is a single-stemmed tree native to tropical regions of Western Africa, which thrives in "continuously wet, equatorial conditions within 10^ of the equator" (Cramb and McCarthy 2016, p. 27), below an altitude of 600 m and in the proximities of lakes or watercourses. PO trees grow in the tropic regions of Asia, Africa and South America, which constitute the so-called "Palm Oil Belt". Within the Asia-Pacific, PO trees stretch from southern Thailand, Malaysia, West Sumatra, through Palawan and Mindanao[2], mature oil palms bear large, plum-sized fruits that grow in the form of large bunches called "fresh fruit bunches" (FFBs). Each bunch is composed by three lucrative components, namely: the outer skin, the pulp containing the (palm)

[2] Largest islands of the Philippines. One located in the central-West and the other in the South of the Archipelago.

oil and the nut situated in the heart, which is built of a shell and a kernel. When processed, the pulp and the kernel produce solid, edible, and orange/red crude palm oil (CPO) and solid, edible, and yellow palm kernel oil (PKO) respectively. The PO's economic lifespan is estimated to be around 25 to 30 years and punctually produces fruits throughout all seasons (Basiron et al., 2015), a feature that attracts numerous (external) entities along the value chain. Every year, as a global average, the crop bears roughly 3.8 tons per hectare (tons/ha), with 6 tons/ha produced in the "best plantations in Southeast Asia" (Rival and Levang, 2014) and 10 tons/ha in genetic field trials.

The introduction of the crop into the Southeast Asian region dates back to 1848, during the colonial period of the Dutch East Indies when the Dutch planted four oil palm seedlings in the Buitenzorg Botanic Gardens in Java. In 1875, the Dutch transferred the matured oil palms to Sumatra, precisely in the region of the former Sultanate of Deli, to grow the crop for commercial purposes. Because of the favorable tropical climate, temperature and soil, regular rainfalls, and high level of sunshine, the moving of the PO trees resulted in very successful harvests, which made it quickly spread across the region (Corley and Tinker 2003, p. 6). The beginning of the twentieth century marked Indonesia's PO commercial developments, with the first large PO plantation established in Sumatra (Ibid, p. 15). Soon after, in 1938, both Indonesia and Malaysia had advanced substantially, exceeding Africa in terms of production of PO and the generates revenue. Despite a brief setback caused by World War II, PO development in Malaysia and Indonesia quickly evolved thanks to strong state participation. While for Malaysia, the progress took place from the 1960s onwards, in Indonesia, this started a decade later through state-owned companies founded in the Sumatra region. Progressively, with structural adjustments and economic liberalization taking place, Indonesia's PO market gained substantial attention from the private sector, which saw an opportunity for agriculture development. Since the 1970s, PO's market impressive progress has been hugely orchestrated by the Indonesian Government in various ways. Historically, PO expansion occurred alongside transmigration; due to the overcrowded Javanese island and underdevelopment of the "outer islands", the Government initiated the transmigration programme which aimed at re-settling Javanese people, particularly in Sumatra but in Kalimantan and Papua, to speed up and spur economic growth processes of these rural and remote islands (Lebvang, 1997; Budidarsono et al., 2013; Gatto et al., 2015; Cramb and McCarthy 2016). The programme consisted of providing Javanese transmigrants two hectares of land, financial support and

Technical Assistance to plant and harvest PO trees (Ibid., 2013). As a matter of fact, this plan brought about a never before seen rapid growth of both outer islands and the PO industry to the extent that the Government decided to implement policies aimed at attracting private investments and establishing an open market. From the 1990s on, local and international companies started to directly engage with producers in Sumatra and develop partnerships in which companies gained access to a portion of the small owner's land to create a company-managed nucleus estate, in exchange for seeds and technical assistance (McCarthy and Cramb, 2009; Woittiez, 2019). More recently, however, smallholder farmers have expanded their lands independently without Government financial support nor contract schemes (Ibid., 2020; Cramb and Curry, 2012; Cahyadi and Waibel, 2016; Krishna et al., 2017).

As highlighted in the literature review, value chains collaborations between smallholders and companies are not trouble-free. In the PO context, partnerships between scheme farmers and companies are also associated to land conflict and the dispossession of ancestral lands (Obidzinski et al., 2017). Moreover, when done incorrectly, partnerships of this nature often fail to distribute value fairly, as companies are usually more informed about the competitive market dynamics. Yet, in Indonesia local landowners have been willing to venture in these collaborations and benefit from the oil palm boom for its attractive financial benefits. According to Gatto et al. (2015), much of the PO expansion in Southeast Asia took place on land areas that have already been cultured for food and cash crops, or on degraded forests' soil and fallow lands, that are lands that are not seeded for one or more growing seasons (EUROSTAT, 2020). However, the rest of the oil palm plantations were established by means of destructive fires on pristine and biodiverse rainforest and carbon rich peatlands (IUCN, 2018; Ibid., 2020; Bibbs et al., 2010; Margono et al., 2014).

This chapter has contextualized the rapid PO expansion in Indonesia. It can be understood that the Indonesian Government played a pivotal role in the industry's development, which also gives reasons as to why PO has grown so fast as a global commodity. In this context, Indonesian PO smallholder farmers are central to the debate of sustainable and inclusive development, in that they are considered to be both drivers and beneficiary of this progress.
The next chapter dives deep into the topic and focuses on two specific provinces of Sumatra, namely Riau and Jambi.

4. Empirical Chapter

We live in a globalized world where natural resources are finite (FAO, 2015; Newell, 2012; Krishna et al., 2014). With ever-increasing population and intensifying interconnections between economies by means of less rigid barriers to entry for most of the developed ones, production and consumption are saturated, as businesses have more resources to add to their inputs and to increase their returns (Magdoff and Foster, 2011). In this context, agriculture plays a vital role in the global growth and development, in that resource-based economies have driven rural development. Land and natural resources have been continuously exploited to deliver to the global demand for food and energy (Margono et al., 2012; Barbier, 2010; Morgan, 2017). As explained in the previous chapters, the utilization of natural resources is a double-edged sword as it exacerbates two scenarios: one which shows capital accumulation and the other one that shows degradation and impoverishment. Expanding and pervasive dynamics of globalization and neoliberal forces have placed agriculture in an important position, challenging it with socio-economic transformations (Contó et al., 2014). The PO case provides a unique example of how complex economic growth is and how it impacts every facet of a given society. As a matter of fact, oil palm has become the most notorious driver of both wealth and degradation in Indonesia, mainly for the purpose of responding to the global demand for both oil palm-based products and biofuels (Ibid).

Therefore, to show this dichotomy, this section dives deep in the PO expansion discussion and analyzes what socio-economic implications PO development has brought to smallholder farmers participating in its global value chain and the consequent repercussions on rainforests and peatlands of Indonesia. For the scope and relevance of this thesis and on the basis of available, up-to-date information, the author focuses on Riau and Jambi provinces, Sumatra, Indonesia.
The chapter is divided into three subchapters, each answering one sub-question:

1. *What are the socio-economic implications of palm oil expansion on smallholder farmers in Riau and Jambi provinces, Sumatra, Indonesia?*
2. *What are the environmental implications of palm oil expansion in Riau and Jambi provinces?*
3. *To what extent has smallholders' participation in palm oil global value chain contributed to the shift to the sustainable production of the crop and what facilitates this transition?*

4.1 Socio-economic implications

1. What are the socio-economic implications of palm oil expansion in Indonesia on smallholder farmers?

PO development has had socio-economic and environmental implications. Compared to its negative ecological repercussions, socio-economic effects vary extensively according to the producing area's historical, economic, and social contexts. Indonesia, alongside Malaysia, is the global leading producer and trader of oil palm, but has very different realities from within. The historical unfolding, the government's role in managing oil palm's expansion, societal inclusiveness and marginality, and local and international economic dynamics populate the complex realm of PO in the country. Numerous studies conducted on the socio-economic impacts, suggest that PO expansion in Southeast Asia has generally delivered positive outcomes, particularly on the farm household level, in relation to "poverty reduction, income gains, capital accumulation, and higher expenditures on food, health, education, and durable consumer goods in smallholder farm households" (Qaim et al. 2020, p. 6.10; Alwarritzi et al., 2016; Cramb & Curry, 2012; Kubitza et al., 2018a). Thus, the author focuses on two provinces of Sumatra, namely Riau and Jambi, and analyzes what types of smallholder farmers engaged with PO GVC, how they have been included, and what kind of socio-economic effects PO GVC has brought to smallholders working in plantations in Riau and Jambi.

Socio-economic effects of palm oil expansion on smallholder farmers in Riau

Situated on the 2nd largest island of Indonesia, located at the heart of Sumatra on the eastern coast, extended across the strait of Malacca and close to Singapore and Malaysia, Riau has been exposed to international trade since the beginning of times (OEC, n.d.; Rist et al., 2010; RSPO, 2019). In the early 1980s the province has been the main target for the central government's both agricultural development policy and trans migrant programme (Santosa, 2011). Riau province has been exposed to PO plantations developments since its first introduction in the Sumatra region by the Dutch in 1875. In the region and across the country, oil palm agriculture has extended and developed through several business models. The most common form is through large-scale, and mono crop estates ran by large corporations and supported by private and/or state investors (CIFOR, 2019). Moreover, as highlighted above, in Indonesia, oil palm production engages large,

medium, and small farmers through a range of different partnership schemes, and the type of farmers included differ as well. The first large-scale oil palm plantation was established in Rokan Hulu Regency, which sits on the west side of Riau, in the center of Sumatra. The plantation was organized and managed by a state-owned plantation enterprise called PTPN (CIFOR, 2019).

It can be claimed that PO smallholder farmers in Riau, Sumatra can be classified as 1) trans-migrant, 2) independent migrant, and 3) non-migrant/native. Due to its strategic position, Riau has been exposed to "continuous regional and global influences" (Susanti, 2016; Sibhatu, 2019; Woittiez et al., 2013), witnessing migration for employment purposes in mining, logging, and plantations. Since the Indonesian government's transmigration programme was launched in 1979[3], the population of Riau was composed by 24 percent migrants[4] and the rest indigenous people. The native inhabitants[5] have been cohabiting the province with Javanese, Chinese, Buginese, Batak, and Minang migrant groups, which made the Riau's population increase from 1.6 million in 1971 to 6.8 million in 2019 (Ibid).

Data on the socio-economic impacts of oil palm expansion in Riau point to positive outcome in terms of poverty reduction, but highlight a wide income difference among autochthonous and migrant farmers (Edwards, 2015; Derzen, 2011). Moreover, a study on livelihoods in the province show that because of the government's incentives, migrants are well-off and are able to access and purchase the land of indigenous people and buy oil palm seeds to plant (Ibid., 2011; Heijman, 2010). All in all, empirical research confirms that the development impact of large-scale PO plantations in Riau "strongly induced local economic growth" (Budidarsono et al., 2013).

Socio-economic effects of palm oil expansion on smallholder farmers in Jambi

PO expansion on Jambi occurred on a slower pace and in different way compared to Riau. Jambi province sits in central Sumatra, on the southern border of Riau, both sharing the National park "Taman Nasional Bukit Tiga Puluh". During the first half of the twentieth century until the 1970s,

[3] With the goal of speeding up the development process of the outer islands and to increase the potential of their agriculture sector.
[4] Of which 67 percent of them were brought to the province via the central government's programme.
[5] The Sakai and Talang Mamak

the province's economy was dominated by rubber production in large agroforestry systems and it represented the main source of income for local communities (Gatto et al., 2015; Ibid., 2020). Progressively, the PO crop was introduced in the 1980s by large public-sector companies. Similarly to Riau, Jambi was part of the transmigration programme launched by the Indonesian central government, in which smallholder farmers were included through Nucleus Estate and Smallholder (NES) schemes. The NES schemes provided financial and technical support to transmigrant smallholder farmers to launch their oil palm smallholding under a company contract. From the 1990s onwards, the successful outcome of the NES schemes attracted the private sector, which created a similar scheme involving autochthonous smallholder farmers. These schemes, however, created inequality among smallholder farmers, in that transmigrant ones were given more attention, while autochthonous ones were forced to initiate their businesses independently, investing their own capitals and using their own labour force. Moreover, Qaim et al. (2020) shows that despite rubber was still the most prominent crop in the province, smallholder farmers involved in the PO production benefited significantly. Research confirm that "oil palm generates higher incomes than rubber" (Ibid., 2020; Ibid., 2015). On the farm household level in Jambi, the revenue generated contributed positively to the household's welfare, particularly in terms of food security and nutrition. Smallholder farmers who adopted oil palm as their main source of income saw an increase in calorie consumption and general dietary consumption. Furthermore, higher incomes derived from the switch to PO also contributed to overall rural development in Jambi, as PO smallholder farmers purchased their food from their local markets instead of relying on subsistence farming (Sibhatu and Qaim, 2018).

To conclude this subchapter it can be claimed that PO expansion in Riau and Jambi happened at different pace, but unfolded in a similar way. The transmigration programme induced both provinces' populations to grow, as the Central government of Indonesia reallocated families from the overcrowded Java to underdeveloped and less busy outer islands. The programme introduced PO production to both provinces, in which transmigrant smallholder farmers were given a plot of land, financial support and technical assistance to start their oil palm cultivation businesses. Autochthonous small farmers, though they were employed in other crops, decided to switch to PO and benefit from the incorporation, but due the lack of government's support and lack of capital and expertise, the benefits were lower. This created inequality among the different farmers but

increased overall wellbeing in both Riau and Jambi. However, the expansion of PO facilitated rural development, as households employed in the PO GVC saw a general positive income effect, which influenced both food security and dietary quality.

4.2 Environmental implications

1. What are the environmental implications of palm oil expansion in Indonesia?

Every year, a country the size of Panama is lost to deforestation.
According to the UN Food and Agriculture Organization (FAO), deforestation is the "conversion of forest to another land use". Approximately 40 percent of the planet's land is employed for agricultural production. The expansion of these areas provokes accelerating conversions of forests into cultivable land, which systematically harms ecosystems, biodiversity and forcibly causes forest communities to displace. Deforestation in Indonesia has had compelling and worrisome repercussions on the archipelago's ecology. The European Space Agency (ESA) estimated that at the beginning of the 20th century the forest cover of Indonesian was estimated to be 84% of total land mass, however, at the end of the century, only half of that estimate remained untouched (n.d.).

While PO expansion has brought several socio-economic changes associated to poverty reduction and overall rural development, most attention from the international community is drawn to the environmental implications of PO, particularly in Indonesia, the largest PO producer and exporter of the world. To respond to the sprouting demand for vegetable oils globally, the expansion of agriculture lands and intensification of the crops' production systems have been inevitable. Several studies recognize that oil palm "is a driver deforestation and land-use change" (Quaim et al. 2020, p. 6.5; Gatto, Wollni & Qaim, 2015; Gaveau et al., 2016; Green Livelihoods Alliance, 2019; Villamor et al., 2014; Wick et al., 2011; Therville et al., 2011). Moreover, the industry has been associated to endangerment and losses in biodiversity as well as ecosystem functions. On the farm management level, PO production has been denounced for its use of pesticides (Moulin et al. 2017; Lord & Clay, 2006; Sheil, 2009) and carbon release (Germer & Sauerborn 2008; Harsono et al. 2012). The lucrative feature and global high demand of PO has encouraged very diverse farmers - in terms of capital and expertise - to venture into its production and exercise agricultural practices that are profitable for them, but detrimental to the environment. This subsection of the empirical

chapter will analyse how PO expansion in Indonesia has negatively affected the environment and will focus on the Archipelago's rainforests and peatlands, areas that have been largely destroyed as a result of PO enlargement.

RIAU

Riau province is strategically situated on the central eastern coast of the Sumatra island: along the Strait of Malacca, conveniently adjacent to Singapore and Kuala Lumpur, the capital of Malaysia. Crossing the province there are four large rivers, namely: Siak River, Rokan River, Kampar River and the Indragiri River. The presence of these rivers provide favorable conditions for agricultural crops to thrive. While the highlands' soil rich in minerals are touted to be fertile and suitable for agricultural use, peatlands are considered to be the most vulnerable and the less appropriate for agricultural purposes (Whitten et al., 1987) (Susanti, 2016). According to NASA's Land-Cover and Land-Use Change Programme (LCLUC), "the fastest rate of deforestation in Indonesia has occurred in central Sumatra's Riau province, which is also one of the fastest in the world" (n.d.).
Like many other agricultural commodities, PO is a controversial crop. While it brings substantial economic advantage to local communities and the national economy, land use and land change have been the main trade-offs of this growth. The Indonesian rainforest and peatlands have been and are still being destroyed to make space for PO plantations through deforestation. In Riau, massive areas of land have been converted for the extension of PO trees plantations and for supportive logistics infrastructures. The latter have been essential in providing increased accessibility to land tenures and facilitating people's access to natural resources. The Ministry of Forestry of Indonesia claimed that between 1970 and 2010, approximately half of the forest area was replaced by annual and perennial crops, shrub, settlements and infrastructures (MoF, 2014). Between 2003 and 2006, Riau experienced a deforestation rate of 158 thousand hectares each year, and a rate of 191 thousand hectares between 2006 and 2010 (MoF, 2011). In 2010, the Forestry Agency of Riau Province reported that 1.6 million hectares of the forest have been allocated to oil palm concessions. The number accounts for almost 80 percent of the total PO plantations established in the province (Ibid).

JAMBI

Situated at the heart of Sumatra, Jambi is considered as a "late bloomer" in the PO development compared to the other provinces of the "out islands". Deforestation in the tropical lowland rainforest of Jambi started a century ago, long before the oil palm crop was introduced, but only from the 1970s, land change and logging into Jambi's rainforest and peatlands intensified. Between 1990 and 2000, Jambi province lost the majority of its lowland rainforest to agricultural concessions (Clough et al., 2016; Ibid, 2020); however, only since a couple of decades ago it has increasingly become a hotspot of OP cultivation (Gatto et al., 2015). Today, Jambi's land use is primarily dominated by monoculture plantations, with rubber and oil palm taking the lead in terms of land cover (Margono et al., 2012). Between 1996 and 2011, the area used for oil palm cultivation quadrupled: starting from being 150,000 ha to 550,000 ha respectively. During the same span of time, however, the land cover for rubber grew by only 27 percent, from 510,000 ha to 650,000 ha (Ibid., 2012). This demonstrates that despite the rapid growth of oil palm plantation, rubber still remains the dominant crop in Jambi. Gatto et al. (2015) examined land-use dynamics in Jambi through a village survey data of randomly selected villages. Their findings conclude that oil palm plantations were not the main driver of deforestation. Instead, land conversion in Jambi occurred as a response of rubber increasing global demand (Ibid.).

All in all, it can be deemed Riau and Jambi experienced PO expansion differently in terms of environmental change. While Riau saw PO being directly connected to deforestation and fires, Jambi this was associated to rubber plantations. In recent years, new government policies tackling the negative impact of PO farming has taken a serious toll on independent smallholder farmers' incomes. For this reason, numerous initiatives have been created by environmental organizations and CSOs to encourage and support farmers employed in the PO GVC to practice sustainable PO farming. The following will further elaborate on what facilitates the transformation of palm oil production and how smallholder farmers are key players to make the switch.

4.3 Solidaridad and sustainable supply chains: the shift towards sustainable and inclusive oil palm production

To what extent has smallholders farmers' participation in PO global value chain contributed to the shift to sustainable production of the crop and what facilitates this transition?

The previous sections have demonstrated that oil palm global value chains have provided smallholder farmer with an opportunity to participate and benefit through the different types of partnership schemes set in place for them from the Indonesian central government. However, it has been examined that the benefit generated from the sale of the crop is not distributed equally among the farmers, due to a variety of reasons connected to policies, positionality (inclusiveness and marginality), government's incentives and private sector's interest to invest. Moreover, PO's global value chain development has required large plantations to stretch in Indonesia's rainforests and peatlands, especially in Riau and Jambi, two hotspots of both PO development and deforestation. For this reason, banning the use of PO has been a topic of discussion among developed importers, with notorious non-profit organizations, such as WWF and Greenpeace, speaking up for the biggest concerns in front of the public (Greenpeace, 2019). On this note, news on the negative externalities caused by PO production have managed to reach consumers worldwide, making them distance themselves from palm-oil based products through marketing strategies which claim that oil coming from these palm trees was harmful for their health (Corriere.it). In 2018, the European Parliament (EP) voted to "ban the use of palm oil for the production of biofuels in the European Union (EU) by 2020, with the proclaimed aim to stop the deforestation of rainforests in mainly Indonesia and Malaysia." (Klepper, 2018). However, it is well recognized that the banning of oil palm production can lead to negative outcomes on both the socio-economic and environmental levels. Most importantly, banning or curbing oil palm production is not a realistic option, in that it would make more than 4 million smallholder[6] farmers and laborers lose their jobs and fall into poverty again. Furthermore, eliminating oil palm from the market would result into rising demand for other vegetable oils, which "would entail even more land-use change and natural habitat loss" (Ibid 2020, p. 6.15). What can be the solution? How can the PO industry be both inclusive and sustainable?

[6] in Indonesia alone,

The following and last subchapter of the empirical analysis elaborates on the actors and initiatives that aim at shifting the oil palm production industry from being harmful for people and nature to being profitable for everyone and everything. Due to the scope of the thesis and the extensive literature, the author will only briefly elaborate on the certification schemes, but she recognizes the vital importance of the Roundtable on Sustainable Palm Oil (RSPO) and the successful work it has done, since its establishment in 2004, to make the shift towards a more sustainable and inclusive oil palm production possible. To do so, the section will answer the following question: *To what extent has smallholders farmers' participation in PO global value chain contributed to the shift to sustainable production of the crop and what facilitates this transition?*

The inclusion of smallholder farmers into the international markets and supportive mechanisms

Current initiatives that aim to create sustainable and inclusive supply chains take the forms of certification schemes, partnerships with the public and private sectors and collaborations with NGOs and CSO. To date, there are numerous internationally recognized organizations, that dominate the scene of sustainable supply chains, issuing certifications. In the PO context, the most prominent that until now has had the largest impact is the RSPO. Formed in 2004, the RSPO is an international NGO established "[w]ith the objective of promoting the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders". (RSPO, n.d.) The Roundtable was established as a response to the negative critiques concerning the PO industry for driving deforestation, endangering biodiversity, displacing local communities, and contributing to global global warming and climate change through land clearing methods. It advocates for sustainable and inclusive oil palm production through its certification system (RSPO, n.d.).

Zero-deforestation supply chains lay strong in their commitments. Smallholder farmers that are included in these schemes benefit from the technical assistance that teaches them to implement sustainable agricultural practices within their production systems and are rewarded for their "good practice" (Ibid.). In order to access the certification criteria, smallholder farmers need to confirm to a set of criteria and standards, which include "[a] commitment to transparency, compliance with

all national legislation, responsible treatment of workers, a prohibition on the destruction of primary forests and 'High Conservation Value' (HCV) areas, and respect for the customary land rights of local communities".

In connection to the question of positionality of farmers, certification schemes are often criticized upon, as they are often unattainable and difficult for marginal farmers to access. Certifications require additional capital and in order for plantation to keep being certified, smallholder farmers who lack the capital are often unable to satisfy auditors requirements, which penalizes them and make them lose access to the sustainable market (which today is a great source of income for farmers).

In this line of thought, smallholder farmers who lack the capital to access the sustainable market end up being marginalized. If certifications target smallholder farmers, but these farmers are constrained by their lack of knowledge and resources to access them, how can certifications schemes make sure that supply chains become sustainable and inclusive?

The following subsection elaborates on a CSO in particular that has been successful in transforming global value chains into a sustainable and inclusive space for the past fifty years, as it implements an inclusive approach "to increasing palm oil while protecting the planet" (Solidaridadnetwork, n.d.).

Solidaridad: Making palm oil supply chains inclusive and sustainable

Solidaridad[7] is a global network of organizations and an international CSO headquartered in Utrecht, the Netherlands and based in almost every region of the world, that strives to make supply chains more inclusive and sustainable worldwide. Solidaridad operates in supply chains of thirteen

[7] The author of this MA thesis has completed an internship placement from March to July 2020, where she was part of the Global Palm Oil team and investigated mechanisms and initiatives that reward smallholder farmers involved in the PO GVC for their environmental performance. The project entailed field research in Indonesia for a period of 2 months (which was planed to contribute thesis research, however, due to current events with the COVID-19, the this was limited to desh research and internal documents.

commodities[8] and its main objective is to facilitate and assist the development of supply chains in an ecologically, socially and financially sustainable way. Solidaridad mission is to help farmers and producers yield more sustainably and add value to the commodities, which will allow the primary producers to improve their livelihoods and especially income levels. Hence, decent working conditions and fair living wage lay at the center of their sustainable and inclusive agenda, which, in their vision, is only achievable through the transformation of production practices and education. PO is one of the commodities that Solidaridad works on, especially in West Africa, Indonesia and Latin America. PO is an extremely versatile crop, as it can be used for food, animal feed production, home and personal care products and as biodiesel (Solidaridad, n.d.; Ibid, 2020). Solidaridad believes that in order to create a PO supply chain that is truly inclusive and respectful for the environment, transformation in the supply chain is essential. To do so, their Palm Oil programme takes an inclusive approach aimed at increasing PO production while protecting the environment. "To create a sustainable and inclusive PO sector, the programme focuses on producer support, creating a service sector which provides a supportive infrastructure for good practices; optimised landscape functions, lobby and advocacy to create an enabling policy environment and creating incentives from the market for sustainable production. Furthermore, monitoring and communication tools and materials are used to support effectiveness and visibility of the programme" (Solidaridadnetwork, 2020).

Solidaridad believes that in order to meet the growing demand for PO, it is crucial to making better use of land that has already been cultivated. This means that PO production can easily be achieved without expanding into precious, biodiverse and forest areas. Solidaridad has ample experience in the technical aspects of the PO industry (field agronomy, logistics and milling technology). To achieve their mission, Solidaridad gives priority to PO producers, by working directly with them in order to support sustainable production and livelihoods.
To do so Solidaridad:

1. Facilitates producers to optimize oil palm production (yields and quality of Fresh Fruit Bunches -FFB) on existing land through adoption of best management practices, where

[8] Namely: cotton, livestock, tea, sugarcane, fruit & vegetables, gold, soy, cocoa, textiles, palm oil, aquaculture, diary, and coffee (Solidaridadnetwork.org, 2020. " Commodities" Accessed from https://www.solidaridadnetwork.org/supply-chains)

needed sustainable knowledge transfer channels are developed by Solidaridad, mills or other local service providers.

2. Supports improvement of artisanal and small-scale mills wherever relevant.
3. Uses digital 3S tools to boost the adoption of best practices, resulting in increased productivity, more formalized jobs, a stable market access, whilst reducing environmental impacts.
4. And ensures that rights of communities, women, (migrant) workers, disadvantaged and marginal groups are assured, and that communities that depend on PO or live in PO producing landscapes benefit from the improved production and processing of PO.

On the landscape level Solidaridad is committed to:

- Facilitate palm oil producers and supply chain actors to contribute to better landscape quality by investing in sustainable production in oil palm plantations (using less land, water and inputs per ton of oil brought to the market), and by reducing the encroachment on high conservation value / high carbon stock (HCV/HCS) land for the expansion of oil palm planted areas
- Palm oil production and palm oil stakeholders are integrated into local multi-stakeholder processes to discuss, plan and implement land use, taking the needs and desires of all stakeholders (including future generations) into consideration.
- In countries where national standards play a role, for example Indonesia/ISPO and Malaysia/ MSPO, these initiatives are supported to ensure they contribute to realising sustainability impacts.
- In countries where RSPO National Interpretations are developed we contribute to these.

- In countries and regions where favorable conditions are identified, we will promote jurisdictional certification processes, as a simple mechanism to achieve the certification of small producers.

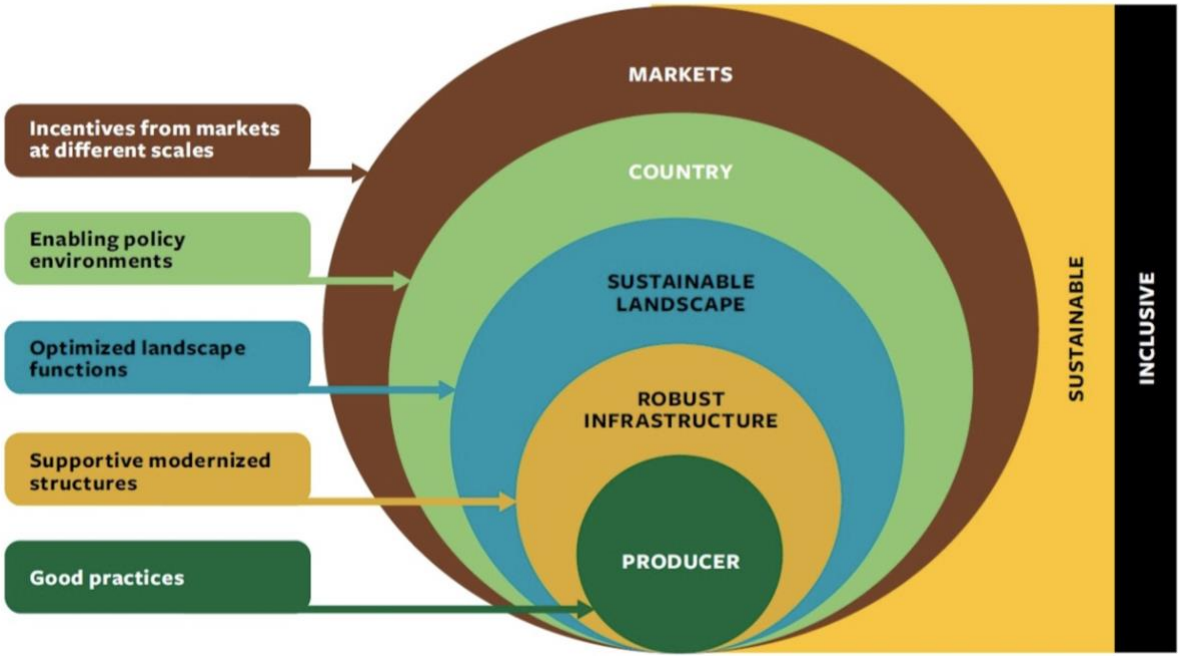

Figure 1: Solidaridad Palm Oil Programme: Sustainable and Inclusive approach. Accessed on June 2020, https://sites.google.com/solidaridadnetwork.org/solidaridads-palm-approach?pli=1&authuser=2

5. Conclusion

In conclusion, this Master's thesis aimed at exploring the complex nature of PO. In particular, it focused on the inclusion of smallholder farmers within the PO global value chain, topic that often tends to be overshadowed by PO's environmental destructive features.

The research question "how does the inclusion of smallholder farmers in the PO GVC contribute to sustainable inclusive development?" has guided the main discussion, which was consequently supported by the following three sub-questions: **1.** What are the socio-economic implications of PO expansion on smallholder farmers in Riau and Jambi provinces? **2.** What are the environmental implications of PO expansion in Riau and Jambi and how are these linked to smallholder farming? **3.** To what extent has smallholders' participation in the PO GVC contributed to the shift to the sustainable production of the crop and what facilitates this transition?
The thesis project was built on the sustainable and inclusive development theoretical framework and shed light onto the role of smallholder farmers and agriculture in enhancing rural livelihoods and boosting national economic growth. To provide the readers a comprehensive overview of the socio-economic and environmental impacts of PO expansion, the thesis adopted a with-in case study methodology and focused on two specific provinces in Sumatra, Indonesia, namely Riau and Jambi. These areas are considered to be two of the main hotspots of PO production.

The literature review investigated available literature on inclusive IVCC and the role given to and played by smallholder farmers that are employed in different commodities around the world. In particular, it showed that despite the pivotal role that smallholder farmers play in providing food to the world, they are still faced with several challenges that are related to questions of marginality and societal differences. GVC, when done right, can provide communities and actors pathways for development. Inclusiveness, in this view, is essential to make agricultural value chains "the new strategy for poverty alleviation" (Ros-Tonen et al. 2019, p. 10). Furthermore, inclusive value chains collaboration put both producers and nature on the same level, which facilitate the achievement of sustainable and inclusive development.

PO has attracted substantial attention from both the public and private sectors for its ambiguous and often problematic nature. It is versatile, efficient, high yielding super crop, and he world's

most used, consumed, and traded vegetable oil, of which consumption has quintupled since the year 1990 (FAOSTAT, 2015). In Indonesia, palm oil is a big contributor to the local economy. It has generated employment for 5.6 million people directly and contributed to $18 billion US of export value. This thesis was able to show that PO production has had a relevant role in poverty reduction and economic growth in rural areas in Indonesia. Riau and Jambi provinces are the perfect example of this outcome as PO expansion manifested into increased income, access to land and capital, rural development (through infrastructure and services) and improved household dietary quality and food security. However, because of the strong influence of the Indonesian government's transmigration programme, inequality among farmers arised, as transmigrant smallholder families were given financial and technical support, while autochthonous ones generally were left forgotten. At the same time, palm oil expansion has replaced significant amounts of tropical forests and led to significant land conflicts across Indonesia. In Riau and Jambi deforestation began when PO was introduced. While in Riau, deforestation is closely linked to PO expansion, in Jambi, the rubber sector took the blame.

There are several initiatives that facilitate the transition of palm oil production to a more inclusive and sustainable one. Among others, Solidaridad, through its inclusive and sustainable PO programme has been able to reach millions of farmers in the Americas, Africa, South and Southeast Asia helping them to enhance their incomes and their yields while conforming to Mother's Nature boundaries and needs.

Smallholder farmers are indeed far from dead. The inclusion of smallholder farmers in the palm oil global value chains contributes to development in several ways. When done right, palm oil can lead to rural development, as it employes millions of people but only if it is done sustainably, it can lead to sustainable and inclusive development. To achieve sustainable and inclusive development, agriculture and in particular smallholder farmers require international commitment. As palm oil demand is expected to grow in the years to come, the international community should adopt Solidaridad's inclusive and sustainable approach.

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