Norwegian University of Life Sciences
Faculty of Veterinary Medicine and Biosciences
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Palm Oil Production in the Peruvian Amazon basin

A case study of current effects and emerging localized alternatives in Loreto district

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Charlotte Bratberget Jensen

Declaration

I, Charlotte Bratberget Jensen, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature:

Date:

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Abstract

An analysis of palm oil production in the Peruvian Amazon basin was carried out in a systemic way, as part of a whole, with its complexities. With an agroecological perspective, the social, ecological and economic effects of this production are discussed. Additionally, alternatives that could better fulfil the necessities of farmers were explored.

The oil palm, *Elaeis guineensis,* originally from West Africa, is a common plant in an enormous industry that is extensive in South East Asia, mainly in Indonesia and Malaysia. The monoculture production has become massive in several parts of the world and is expanding rapidly in Latin America, along with the global demand. The Peruvian State and foreign agencies, such as the UN and USAID, promote oil palm production as a means to replace illegal drug activity in Peru, and articulates that it is a development project. A case study was conducted with participant observation and in-depth open-ended interviews, which were performed in five locations in the Peruvian Amazon. A total of 26 people related to palm oil production were interviewed.

Some of the negative effects explored characterize palm oil production as socially problematic and ecologically disastrous; yet, it is often economically beneficial in the short run. Although palm oil production increased income for some households, the long-term consequences included instances where land of fertile soil was cheaply sold or encroached from local people. Furthermore, interviewees reported problems such as the disappearance of people, hidden cocaine production, corrupt decision-making and loss of safety in villages where palm oil workers arrive from other parts of the country. Ecological consequences of palm oil are also discussed. Among these the deforestation of enormous areas of primary forest are frequent. Consequently, other ecological problems appear as a result of these deforested areas, such as soil erosion, species migration, and fewer habitats and ecological services for people's livelihoods.

In contrast, experiences with local sustainable alternatives to palm oil were examined. These alternatives may compete against palm oil from an economic perspective, and exceed it in ecologic and social perspectives. Examples are found in cocoa and timber agroforestry. An essential need to foster alternative production is land entitlement. This condition would allow farmers to feel ownership and find it worthwhile to consider a longer time perspective in their projects. Even though former practices have worked well without a title of ownership, today private property and commercialisation of land make the situation a lot more vulnerable without proofs of ownership.

Key words: palm oil, agroecology, monoculture, Peru, land entitlement.

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Abbreviations

Chacra – A small farm (Origin from the ancient Quechua language)

GEAS – UNEP Global Environmental Alert Service

IIAP – Instituto de investigaciones de la Amazonía Peruana (*Research Institute of the Peruvian Amazon)*

INRENA – Instituto Nacional de Recursos Naturales

JARPAL – Jardines de palmas *(Gardens of palms)*

MINAG – Ministerio de Agricultura – Ministry of agriculture

NCI – Naturaleza y cultura Internacional *(Nature and Culture International)*

RSPO – Roundtable on Sustainable Palm Oil

SPDE – Sociedad Peruana de Ecodesarollo

UNEP – United Nations Environment Programme

UNODC – United Nations Office on Drugs and Crime

USAID – United States Agency for International Development

You oughtn't abide, sitting calm in your home
Saying: Dismal it is, poor they are, and alone
You cannot permit it! You dare not, at all.
Accepting that outrage on all else may fall!
I cry with the final gasps of my breath:
You dare not repose, nor stand and forget

(Arnulf Øverland, translated by Lars-Toralf Storstrand)

1. INTRODUCTION

The oil palm, also called African palm, is originally from West Africa, where evidence shows that it was used as a food crop as early as five thousand years ago. In addition, palm oil casks were found in Egyptian tombs, which are also thousands of years old. Based on this data, palm oil can be considered as one of the earliest traded commodities (The History and Origin, 2013). During the British industrial revolution, palm oil was traded overseas for use in candle making, and as a lubricant for machines. The demand increased and Europeans invested in palm oil production, first in West Africa, then expanding to Southeast Asia. Palm oil was first grown commercially as plantations in Malaysia from 1917 onwards and it is now produced in large-scale monoculture plantations (Sheil et. al., 2009; The History and Origin, 2013).

The development of monocultures was analysed by Wallerstein (2011) who describes the evolution of the three different areas of the world: periphery countries, semi-periphery and core countries. The grouping of these countries mainly distinguishes the industrialised countries from the non-industrialized countries as a result of the worldwide division of labor. Many authors have contended that the proliferation of monoculture in the countries of the periphery as opposed to variety and specialization in the countries of the core is a feature of capitalism (Wallerstein, 2011). Foster (2002) analyses Marx`s discussion of modern agriculture and to cite Marx: “the growth under capitalism of large-scale agriculture and long distance trade only intensifies and extends the metabolic rift [the disconnection between human beings and the nature].”

The palm oil industry has become massive in several parts in the world and there is plenty of literature about palm oil production and its effects (see for example GEAS, 2011 and Koh and Wilcove, 2008). Within this literature, both negative and positive effects of palm oil production are exposed. Positive effects are often connected to economic possibilities; whereas negative effects, frequently, are connected to social and ecological aspects. Examples of these negative effects can be found in primary rain forests and local communities in countries such as Malaysia and Indonesia (Fitzherbert et al., 2008, Colchester et al., 2006, Koh and Wilcove, 2008, Pautrat and Segura). For decades Malaysia and Indonesia have been large producers of palm oil, and their production brought about deforestation of huge areas of tropical rain forest (Fitzherbert et al., 2008; Koh and Wilcove, 2008). In Indonesia, oil palm cultivation in itself caused 27 percent of the country’s deforestation between 2007 and 2008. By 2020, the palm oil cultivation is expected to account for

40 percent of the deforestation in Indonesia. The latter means that by 2020, there will be plantations grown in around 40 per cent of the peat lands in Indonesia (Gilbert, 2012). Moreover, Colchester et al. (2006) describe that oil palm expansion for rural Indonesians:

> "[I]mplies a major reallocation of land and resources, dramatic changes to vegetation and local ecosystems, substantial investment and new infrastructures, movements of people and settlements, major transformations of local and international trade and requires the intervention of multiple government agencies." (2006:11.)

According to Altieri (2009), it is difficult for developing countries to feed themselves because of global forces. "A number of countries have organized their economies around a competitive export-oriented agricultural sector, based mainly on monocultures" (Altieri, 2009:para.1). Further, Altieri enumerates the multiple aspects that can be affected by industrial agriculture. In this case it is represented by palm oil production:

> "Industrial agriculture also brings a variety of economic, environmental and social problems, including negative impacts on public health, ecosystem integrity, food quality, and in many cases disruption of traditional rural livelihoods, while accelerating indebtedness among thousands of farmers."

Acknowledging this rapid global growth of palm oil production, Dammert (2013) asks "Which factors explain an interest that big to expand the crops of oil palms?" His response focuses on the global prices on crude palm oil, which have developed steadily, especially during the last ten years, and the prognosis indicates that the tendency will continue.

Another factor explaining the growth of this industry is the large number of products that today have palm oil as an important ingredient. Cooking oil, margarine, shortening and ice creams are some examples. In addition, palm oil is used in a wide range of cosmetic products such as detergents, wax, lipsticks, creams, soaps and shampoos. In industrial processes, palm oil is used as a lubricant and contains *olein*, which is a component used in plastics, textiles, esters, emulsifiers, explosives and pharmaceutical products (Colchester et.al, 2006). Furthermore, the United Nations Environment Programme (UNEP), Global Environmental Alert Service, contend that the demand of palm oil is expected to double within 2020 (GEAS, 2011). Fitzherbert et al. (2008) state that the "oil palm *Elaeis guineensis* is grown across more than 13,5 million ha of tropical, high-rainfall, low-lying areas, a zone naturally occupied by moist tropical forest, the most biologically diverse

terrestrial ecosystem on Earth" (2008:538). Contributing to this growth, the European Union encourages the use of palm oil also as biodiesel, and its target is to replace 10 percent of transport fuel with biofuel by 2020 (Gilbert, 2012).

In Latin America, after many decades of its establishment, the palm oil industry is also increasing rapidly (Bazmi et al. 2011; Franqueville, 2003; Janssen and Damian Rutz, 2011) In Peru the first palm oil project started in 1973 after the idea was introduced by a French technical-mission plan in 1969. The plan was to evaluate and inform about the possibility to establish a crop like oil palm in Peru (MINAG, 2001). Since then, there have been four main initiatives with palm oil in Peru: two organized by the state, one undertaken by private owners, and the latest experience is based on small-scale oil palm farmers that are part of an association.

In the Peruvian Amazon forest, the production of oil palms has become a large-scale monoculture industry. These areas have received important investments-projects in oil palm production. These projects intend to use already degraded agricultural land to grow the palms. However, evidence shows that the area used for oil palm production now goes beyond already degraded land to areas of primary and secondary tropical forest. In fact, 13,076 ha of primary forest was deforested during a few months in 2013 due to the expansion of oil palm production in Loreto and Ucayali (Pautrat, 2013). In Peru, the United Nations Office on Drugs and Crime (UNODC) made an offer to farmers growing coca bushes to change to oil palm, in order to stop production of illegal plant material (UNODC et al., 2005). The Ministry of Agriculture in Peru (MINAG), informed that they would invest in palm oil production to generate "social, economic and environmental sustainability of the producers of this crop" (MINAG, 2012:5). Another common argument used to promote palm oil production was that palm oil is one of the easiest growing vegetable oils. As such, it demands few resources and, therefore, can increase the income of farmers and further economic development in Peru.

In the particular case of Peru, MINAG argued that the companies bought the land used for oil palm production directly from the farmers. Alternatively, palm oil companies obtained these lands by concessions from the government in the cases where the land was not titled. Until now, 50 per cent of oil palm production in Peru was run by companies such as Grupo Romero (MINAG, 2012), and farmers that grew oil palms depended on selling their fruits to the big companies running the processing plants.

The Peruvian state and the UNODC saw palm oil production as a positive and needed alternative in Peru (MINAG, 2012, UNODC et al., 2005). This production was necessary to achieve biofuel demands and reforestation, to replace illegal coca production, and serve as a good source of income, among other reasons (MINAG, 2012, UNODC et al., 2005). However, recent studies show that palm oil has brought about negative effects in Peru (Dammert et al., 2012; Pautrat and Segura, n.d.). These contradictory points of view show that there are different interests and perspectives involved in the palm oil production.

- Problem statement

Evidences show that consequences regarding palm oil production have been disregarded.

- Objectives and research questions

The main objective of this study is to explore different cases of palm oil production in Peru and how it is established in different contexts. Since palm oil has been promoted by the Peruvian State and foreign agencies such as UN and USAID to replace illegal drug activity (UNODC et al., 2005, USAID, 2014), this research aims to study the situation of palm oil production in the Peruvian Amazon basin- in order to explore the experiences that locals in this region have with palm oil production. The specific objectives are to address negative and positive effects of palm oil production considering: (i) social aspects, (ii) ecological aspects, and (iii) economic aspects. A final specific objective is (iv) to explore the existence of sustainable local-alternatives to palm oil production in this region.

To fulfill these objectives I will discuss the experiences of palm oil production in Peruvian Amazon basin, and answer the following research questions:

1. What are some of the positive and negative effects of palm oil production?
2. Are there sustainable local-alternatives to palm oil production?

My findings are based on a case study approach with participant observation and in-depth, open-ended interviews done in five locations in the Peruvian Amazon related to palm oil production.

2. MATERIALS AND METHODS

2.1Fields sites

I conducted fieldwork for my study mainly in the lowland tropical rain forest of Peru, in Loreto county, and in San Martin, a highland Amazon county. Loreto County, the largest in Peru, is one of the areas with more arable land in the country, and therefore where one finds the greatest potential for palm oil production (Pautrat, 2013). Pautrat also notes that within Peru, Loreto is the region with the highest deforestation (2013). Loreto is still partly covered with Amazonian tropical forest and is the home of the big rivers Ucayali and Marañon, which together form the Amazon river. The most diverse county in Peru in terms of ethnicities and languages, Loreto has less contact with the rest of Peru because of limited road connection and instead relies on fluvial connection with the bordering counties. Palm oil production is well established in these areas (Figure 1). In the lowland tropical rain forest, I did fieldwork in Iquitos, Manacamiri, Tamshiyacu and at the road between Iquitos-Nauta. In the highland Amazon basin, I did fieldwork in a community close to the city of Tarapoto called Pongo de Caynarachi.

Figure 1: Map of Peru (Source:http://www.peruhorizons.com/about_peru, modified by this author.)

Iquitos was my base throughout the fieldwork[1]. It is a journey of several days by bus and boat to reach Iquitos from Lima. The boat went from Yurimaguas to Iquitos in river Marañon that right after Iquitos will form the Amazon River together with river Ucayali. Iquitos is connected to the rest of the region and the country only by air and fluvial transportation. I slept in a hammock on the boat for two nights. The contrast was huge from the peaceful view of an immense, deep forest along the river, to the hectic view of products being shipped on the same boat between the big cities. The boat trip is two or three days–depending on whether they were traveling downstream or upstream. The commercial activity was still remarkable as evidenced by tens of three-wheeled motorbikes carried on the ferry. Arriving in Iquitos, the first thing that caught my attention was the view of a huge pile of sawdust, big oil tank ships and many other vehicles at the harbour, indicating that a lot was going on in this city that was to be my base during the fieldwork. I reached Manacamiri and Tamshiyacu with boat from Iquitos, and the fieldwork along the road between Nauta-Iquitos by bus[2]. After the visit in the lowlands areas surrounding Iquitos I left Iquitos by plane with direction to Tarapoto, a big city in the highland part of the Peruvian Amazon. From Tarapoto I reached Pongo de Caynarachi by car. In Figure 2 the field sites are shown in a map of county Loreto.

Tamshiyacu is the capital of district Fernando Lores and have 7000 inhabitants in 132 communities (Pautrat, 2013). It is located four hours away from Iquitos by "peque-peque" boat, which is a motor boat used for regular transport in several Peruvian rivers. Alternatively, a more expensive boat takes one and a half hour from Iquitos to Tamshiyacu ——which seemed to be used of people travelling a lot. I travelled with both boats and as I observed it was not a clear difference of what kind of people using the different boats – nevertheless, the slowest one brought more people on board.

2.2 Agroecological approach

Agroecology can be defined as *"the integrative study of the ecology of the entire food system, encompassing ecological, economic and social dimensions"* (Francis et al., 2003, p.100). It is essential in agroecology to see complex systems in a holistic and broad way. In the tropics, it is often a conflict between preservation of tropical forest and agricultural development which makes an agroecological approach even more important (Gliessman, 1992). I analyzed palm oil production, with its complexities, in a systemic way, as part of a whole, and used an agroecological

[1]Iquitos is the biggest city in the Peruvian Amazon with approximately 314,000 inhabitants (NEIRA, E. 2011.) WateTransport and Rural Livelihoods: The case of Iquitos, Mazán and Paraíso in the Peruvian Amazon River.)
[2] Between Iquitos, and the small town Nauta there is a 100 km long highway that connect these two places and does not go further.

perspective to discuss social, ecological and economic impacts of this production. Further, my study explored alternatives that could fulfill the needs of and serve as better substitutes for farmers.

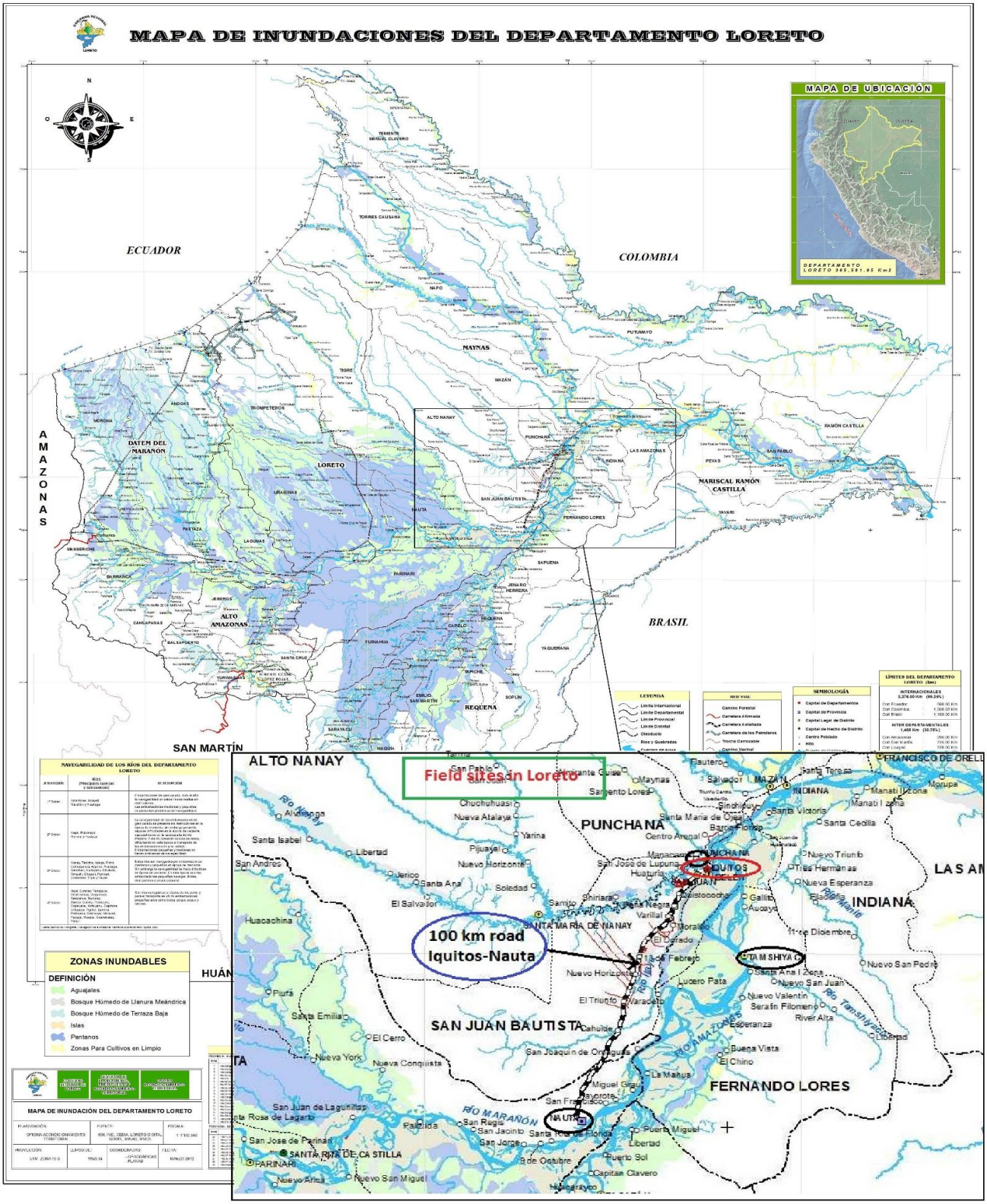

Figure 2: Map of Loreto county

(Source: https://www.shelltercluster.org/Americas/Peru/Peru_Floods_2012/Pages/Documents.aspx, modified by this author.)

2.3 Research design and methods

I chose to use qualitative methods and a case study approach to do my research. I travelled to Peru in November 2013 and conducted my fieldwork from then until January 2014. The first part of my research took place in the city of Iquitos, where my aim was to obtain an overview of the situation of palm oil in Peru, with a focus of the area of Loreto. Based on what I learned through interviews with different people related to palm oil in Iquitos, I chose the villages to include as cases. The villages are situated in the counties of Loreto and San Martin. Both in Iquitos and in the villages I used participant observation and informal conversations in addition to in-depth interviews for my data collection.

I interviewed 26 people with different backgrounds and relations to palm oil production. The participants present sectors like farmers (fourteen male- and three female), teachers and researchers through their work in the Amazon area (four male participants). In addition, I interviewed environmental and indigenous rights organisations (two male and two female participants), agricultural engineers (two male) and activists (two female and two male) who fight for ecological issues and the rights of indigenous people. Most of my participants were in their 50s and 60s, with the youngest ones in their 20s, and the oldest in his 70s. A more detailed table of the participants is found in appendix 1. The language used during the interviews was Spanish, which all the interviewees spoke, and which I dominate myself. I got help to do the interviews in the villages by a female language-teacher and guide, who served as my research assistant. She knew the local area and her presence helped me gain trust in the rural areas.

During the interviews, I included “extra questions” (Berg, 2001: 75) that were helpful to check reliability of responses, especially since I conducted the interviews in Spanish. If an answer was unclear, I added another question that would clarify the reply. When I wanted to know more about a subject I asked probing questions that made the interviewee go more in deep (Berg and Lune, 2012). I have given the participants pseudonyms to keep their anonymity, unless they explicitly told me I was allowed to use their real names. I replaced the original names with common names in Peru to make the discussion more lively and personal replacing The ethical requirement became extremely relevant, as there have been several killings of indigenous leaders and environmental activists in Peru the latest years (Hill, 2014; Líderes indígenas amazónicos asesinados, 2014). I will present the different field sites more in detail in the next section.

I spent extensive time in the field before I started the interviews. I stayed with a family in Iquitos that helped introduce me to the community and helped with practical issues along the stay. I joined the daily life in the city and in some Kukama villages[3] before I went to the field to do interviews. As a participant observer, I joined social events, seminars, and lectures to get to know the area and the people. Through these events, I obtained important information, which helped me understand the situation related to my research. I became more familiarised with the local people; their expressions; their humour and some social norms, and I identified those who were involved in palm oil for further conversations.

I met the interviewees at their homes, in their office or in a cafeteria. The interviewees were open to talk about their work and insight in the palm oil production and this made it easier to conduct the interviews. We often started talking about general issues, followed up with explaining my work and why I was in this region of Peru. I asked permission to record the interviews and explained how I would store the data. I used a recorder in all except five of my interviews. The desire for a spontaneous conversation made me reconsider the use of a recorder, which in some shorter interviews was not necessary. All transcripts of the interviews are my own translations from Spanish to English.

[3] Kukama people is a under group of the indigenous group tupi-guarani that has its origin in the countries between Paraguay and Ecuador. (Source: https://intercontinentalcry.org/peoples/kukama/)

3. RESULTS

3.1 General Results

Carlos, an indigenous leader from the Kukama people[4], argues that their forest, the Amazon, has high biological diversity: fauna and birds, tree species and food products. This diversity provides richness of environmental and economic services that, according to him, they use in a sustainable way. Carlos contends that in this rich forest, the agribusiness being established is not only oil palm production, but also other monoculture projects that will destroy the biological diversity. He continues:

> "However, if we can maintain the diversity we have, and if the government was conscious of this [diversity and natural resources] as income to the Peruvian state, they would invest concretely in these places and we would not be in the critical situation we are in now." (Personal communication, January 9, 2014)

Moreover, Carlos argues against palm oil production from the perspective of the Kukama's traditional knowledge and values, as opposed to the occidental understanding of development:

> "If we look at the form of life of others and do not value our own way as a huge richness that surrounds us, we will be able to allow the destruction. Nevertheless, if we value what we have, we will protect it. They say it [palm oil production] is an activity that generates economic income and make people live a better life. We do not think like that. We believe that oil palm production can generate income, but this money will not immediately give a better life for the people. Because, to reach a better level of life for the people means to enjoy the healthy environment of having clean water sources, to have forests, to keep having the resources we use in daily life. They will degrade these resources if these activities continue." (Personal communication, January 9, 2014)

Conversely, Carlos argues that the occidental culture has a different way of looking at the world. "What is development?" – he asks. "For them [the occidental culture], development is to have a refrigerator and television in their houses, and to not worry about having something to eat. But

money cannot always give us everything" (Personal communication, January 9, 2014). Carlos' arguments connect negative socio-economic and ecological effects caused by palm oil production—as perceived by the Kukama culture. Carlos also explains that he has reflected with his community about these issues. They have compared their economy today with the alternative to work on a palm oil plantation, and concluded that even from that perspective, it does not pay. However, one should bear in mind that if negative effects of palm oil are evidenced from multiple perspectives, the potential alternatives should also consider these perspectives. Carlos emphasizes further negative social effects that—according to him—are caused by palm oil production:

> "We, who live in communities precisely where this activity is executed, see how this activity is leading to the kind of development that includes more bars, brothels, drugs, corruption and prostitution." (Personal communication, January 9, 2014).

The points presented above convey a small glimpse of the different debates connected to palm oil production in Peru. Results obtained during my research process are presented in the sections below. I conducted interviews in five different places, nevertheless, each case is unique and difficult to compare. To answer the first research question: "What are some of the positive and negative effects of palm oil production in Peru?" I will present the results from each place separately, which I later sum up in the discussion. The second research question: "Are there sustainable local-alternatives to palm oil production?" will be discussed in the discussion by analyzing alternatives to palm oil.

3.2 Yurimaguas and its surroundings

The findings obtained from this area show a small insight from a family working at a palm oil plantation where the profit is minimal and they are dependent on the big company to buy their cheap fruit. This area has huge areas of monoculture plantations and the use of fertilizers deteriorate the already depleted soil. As an alternative to this practice, a forest engineer has an investigation center where they work with how one can recuperate deforested areas. He proposes an integrated agroecosystem with sustainable forest management and commercialization of the wood. Following are the results presented more in detail.

On the bus to Yurimaguas (see the map in *figure 1*)—the city where the boat to Iquitos leaves from—one could see kilometers of oil palm plantations. Most of these palms belong to the company Grupo Romero, a Peruvian business group that owns many important companies in different sectors, mostly in Peru. In addition to being the leader of sale of oil in Peru, Grupo Romero has companies in telecommunication services, maritime cargo transport, textile industry and food industry with soybeans, sunflower seeds, sugar cane and palm oil[5]. Further, Grupo Romero has the director of the Credit Bank Peru[6] and the leader of Credit Bank Bolivia.

Arriving in Yurimaguas, I met a forest engineer and soil researcher, Jorge Miguel Pérez Vela. He confirmed that Grupo Romero owns much of Peru. Pérez Vela works in forest and soil management. He explained that it is a bad idea to grow oil palms in the type of soil they have in this area since it is necessary to use fertilizers that easily deteriorate the already depleted soil. However, according to Pérez Vela, the Peruvian government pursues to grow oil palms because it is profitable. He presented an example of a family working on a palm oil plantation outside of Yurimaguas. The family explained that the cost of fertilizers is the same amount as what they earn on their crop. They started the production because it was an offer from the government, which promised to provide machetes and fertilizers; something they never got. However, I still wondered why these farmers did not change activity. A female member of the family helped me understand: "When one has started and put in a lot of [monetary and physical] effort, it is difficult to change activity". These farmers do not have the processor for the fruit[7], so with 200 hectares of oil palms they sell the fruit cheap to Grupo Romero (personal communication, October 28, 2013).

An investigation center of agroecological products, services and representations is to be found on the outskirts of the city Yurimaguas, PROSAE. Pérez Vela, the forest engineer operates an interesting tree planting project of species that grow well in the acidic tropic soil at the centre. According to him, the soil in the area of Yurimaguas is known as acidic and with low natural fertility. Pérez Vela saw the amount of deforestation and the poor soil quality in this region and wanted to do something about it; "How to give trees a more important role in those places where the strength or future of oil palms do not exist? Not only trees for wood, but environmental services like better water conservation, better return of biodiversity, fauna and birds among other things. It is a huge potential." (Personal communication, November 5, 2013). The most important, he states, "Is

[5] Grupo Romero, n.d.(http://www.gruporomero.com.pe/gruporomero/el-grupo-romero/empresas/.)
[6] (http://elcomercio.pe/economia/negocios/dionisio-romero-se-aleja-presidencia-banco-credito-peru-noticia-267084)
[7] The palm oil is extracted from the fruits of the palm with an extraction plant that take out the oil from the fruit.

the commercialisation of the wood that will gain a lot more than the oil palms." With his profession in forestry engineering with further studies in soil and climate, he has important knowledge to deal with complex agroecosystems. A question Pérez Vela asked himself, "how to recuperate deforested areas?" Pérez Vela planted 20 different tree species at his investigation centre to see which species grow well – and ended up with six species (Table 1) that grew well in the environment in acid soils of lowland Amazon region. To finance the projects conducted at the investigation centre Pérez Vela has a firm that sells cleaned drinking water.

Table 1: Tree species found to be suitable for the environment of lowland Amazon region (Jorge Miguel Pels, personal communication, 2014)

Tree species for reforestation	
1)	Caoba (majungni) – S macrophylla
2)	Capirona – Calicophyllium Sprucianum
3)	Estorque – Myroxilum Balsamum
4)	Quillobordón – Aspidozmia Verguesú (yellow tree species)
5)	Maupa – Simarouba Armara (produces nitrogene)
6)	Polaina – Guazuma Ulmifolia

One of the tree species found suitable, Maupa (Table 1) is good to cultivate with other trees because it produces nitrogen, without being a leguminous plant. When discussing the use of tree species for timber, as an alternative to the wish of a better income, we cannot tell a small-scale farmer and his family to only grow trees. A family cannot wait for the valuable trees to grow because they need food on the table in the waiting period. Thus, Pérez Vela expresses that one has to combine the tree planting with grazing land and other crops. He also tells about the experience that per hectare areal, thousand of hens can be bred. With a pond available, fish can be included for food, also the amazon bees can produce valuable honey in the process of pollination of trees. One can also include fruit trees and Pérez Vela shows a lime tree, which can supply the income with a notable value. With an integrated forest system, Pérez Vela argues that a family can live well of three hectares of land. He further tells that people often come from development projects and want to implement grazing land for cattle. He asks himself, why not take advantage of what already surrounds us of resources than start with an activity that requires to cut forest and clear land. He thinks the education system in Peru is mistaken because they educate people with technology that destroys the nature.

When asked how to implement his ideas Pérez Vela answers: "I think planting trees is a situation quite easy in one way and difficult in the other. Easy because we have the soil, and the Amazon

people know about the species, but difficult to establish because one need economic stimuli." Pérez Vela expresses that the project of the tree species mahogany, in general needs an incentive payment. The plan is clear: "From the moment you plant the trees until three years, one will get incentives to take care of the trees. From three years until twenty years, one will be in a program for payment for sequestration of carbon. That means that the forest can produce economically and after twenty years the wood is ready for the market." When I ask where they will get funding, he tells that the state of Peru is contemplating realising a project of this idea and "if it will happen, it will start here in Yurimaguas." Animated Pérez Vela says:

> "we hope that in 20 years, between highland Amazonas, Nauta, San Lorenzo close to Iquitos and Condor Cainqui in the department of Amazonas, it will be planted 200 000 ha of forest. 200 000 ha will be a significant area that will interest national and international investors. From there, it will escalate. They will need roads to extract the wood and transport to commercialise the timber. Many people will enter the system like workers, families and business related people. Thus, restaurants, schools and hospitals will be a natural part of the villages, and everything paid by the wood industry."

At the investigation center, Pérez Vela investigates important contributions to a more sustainable forest management. An example shows how he works: the biggest pest attacking the ordinary chakra is, according to Pérez Vela, the leafcutter ant *Atta sexdens,* which inflicts huge damage on plants as yucca, maize, plantain, citrus fruits, mangos, oil palms, aguaje, cacao, café, mahogany, capirona (a tree species). The ants eat the leaves of the trees. According to Pérez Vela, specialists prepared an insecticide to kill the ants, but instead the population of ants increased since the insecticide also killed the predators of the ants. Pérez Vela has done research for 15 years and found a small plant that can be of help with this problem. The ants eat this plant, which make the ants attack each other until they die. As a result, the plant can make them decrease their own population.

3.3 Iquitos and surrounding villages

The findings in this area show many different testimonies and experiences that are related to serious topics: It shows a strong need for entitlement of land to resist the monopoly of land property by the big company Grupo Romero, there are examples of corruption and illegal activities as people are forced and threaten from their land. Additional, a company has paid community presidents to let

them clear huge areas of forest without asking the community. At the same time, it is argued that it is good that one takes advantage of degraded land as palm oil gives a secure income.

Both the alternatives from Perez Vela in Yurimaguas, and Luis focus on the alternative of integrated forest systems as a solution, with high quality timber integrated with food crops. Both focus on the importance of education and a security of money incentives to have enough resources to start. Another idea presented is Payment for environmental services (PES) as an alternative to palm oil. The diverse testimonies are presented more in detail below.

At the Research Institute of the Peruvian Amazon (IIAP) I met Dennis del Castillo, a researcher in the section of forest management. Del Castillo explained that "Myself or IIAP are not against palm oil, but against the consequences of palm oil". Formally, IIAP argues that oil palm cultivation should only happen in already deforested areas (IIAP, n.d.). In contrast to opinion of the institute, Del Castillo says that his 50 years experience with palm oil has become 50 years of deforestation. "It is a monopoly of land property", he continues. The richest group of men in Peru, Grupo Romero, manages the monopoly of oil palms. "Everyone knows that Grupo Romero makes politics and does lobbying at the highest level, and the laws support them. That is how the system is"—del Castillo contends (D. del Castillo, personal communication, January 2, 2014).

Del Castillo also provides some arguments used to defend palm oil production: "Palm oil is good at already degraded places," he says (personal communication, January 2, 2014). This argument is similar to that from the state that they are in favor of growing oil palm on fallow ground to take advantage where nothing is grown (MINAG, 2012). This argument contradicts the views of some local communities, as explained above by Carlos (see also the section below).

Dennis del Castillo addresses a significant discussion regarding education. He explains that other advantages of the forest are not well known, and people see oil palm production as an alternative to generate jobs. "If one asks a farmer or someone at the countryside where they would like to work, they will answer that they want a job with oil palms because it guarantees a salary", —del Castillo asserts. Consequently, he adds: "we need to look at oil palms from different angles. I, for example, am grateful to Grupo Romero for planting oil palms in deforested areas (…). We cannot neglect the fact that if it is deforested land, palm oil production is an economic alternative."

Grupo Romero has concessions for the land and continues cutting primary forest for growing oil palms, thus damaging the ecosystem (del Castillo, 2014). In addition, it becomes a more serious ecological problem when this group operates in wetland areas. In the wetlands many palm trees grow and especially the palm tree (and its fruit) known as "aguaje" (*Mauritia flexuosa*). This tree has an important economic and ecological role in the Amazon region. "Aguaje" provides jobs for local people and Loreto is the region that consumes most aguaje en Peru. In addition, aguaje has an important ecological role as it stores a significant amount of carbon under the ground (del Castillo, 2014).

Aguaje also produces a lot of organic matter and provides food resources and habitat for many wildlife species (Horn et al., 2012). According to one of my interviewees, Luis - the initiator of a cacao agroforestry project—aguaje works as a huge filter in the Amazon. Del Castillo warns against planting palm oil in wetlands. He says it is attractive to cultivate oil palms in these regions because they are flat. However, by planting oil palms in this habitat, one is destroying organic matter accumulated throughout many years. For example in the region of San Martin, they have destroyed all the wetland areas for the cultivation of oil palms, according to del Castillo (Personal communication, January 2, 2014)

In addition to negative ecological effects of palm oil production, socio-economic arguments may encourage the search for alternatives, says del Castillo, as he refers to proposals of investments in reforestation. He does not believe that these investments represent an option for small-scale farmers, though. He says that the majority of small-scale farmers do not have entitled land and will not be interested in investing in long-term tree-planting projects. Even though farmers in Loreto do not have titles of their land, del Castillo argues that Grupo Romero easily get concessions from Lima because of their investments. "This is why reforestation does not work in Peru, because land tenure is unclear. I will not plant mahogany[8] if I cannot harvest before 50 years and if I do not own my land. Maybe someone takes my land from me in 10 years," explains del Castillo. Consequently, according to him, it is primarily necessary solve land tenure in the Amazon for small, median and big investors.

[8] Mahogany is one of the most valuable tropical hardwood trees. It grows fast, live long and can reach a height of 50 m with a trunk of 3 m in diameter. Its conditions will decide how fast it grows for harvest. (Brown et al., 2003).

Continuing the discussion about possible alternatives, del Castillo explains that it depends on their location in the Amazon. According to him, it is very different if one lives close to or far from the river in case of availability and fertility. Besides, it is difficult to have a small agroforestry project fight against 'the big monster of oil palms'—as he calls it. Del Castillo claims that the only alternative that will compete with palm oil production in Peru is the payment for environmental services (PES)[9]. Nevertheless, he clarifies that this initiative will not help small farmers a lot if it continues working as it has done it until now. "The PES is not financing directly the project, where the money is needed. It is financing the bureaucracy. The process to give money to the local people to do environmental services takes 20 years and it does not reach the conservation of forests." Del Castillo argues that one needs to entitle the land first, to make the PES system work properly (on the definition of PES, see Engel et al., 2008).

Other negative social effects of palm oil production were raised during a conversation with a boat captain who referred to the social dynamics of palm oil production. He described how a community completely changes after oil palm companies recruit workers from the communities. The man is separated from his family and the woman is left alone with the children. Family life is then changed drastically. The indigenous leader, Carlos, also explains this process. He says that without the man—as the household head—the family is not protected and easily falls apart in the phenomenon of destroyed families. "It is a big risk these families take when the man has to leave the village for a long time" (Personal communication, January 9, 2014).

The alternatives to palm oil may gain support after considering the testimonies represented and other serious testimonies I gathered during the research process. These testimonies denounce hidden or unknown practices connected to palm oil production. I heard these testimonies as soon as I began my fieldwork in Peru, and I heard them again in Iquitos and in other places I visited.

For example, while interviewing Pablo—a farmer and a tourist guide—he mentioned that some people had put lots of effort in trying to buy his land. He believes this was connected with cocaine

[9] "PES is based on the beneficiary-pays rather than the polluter-pays principle, and as such is attractive in settings where ES providers are poor, marginalized landholders or powerful groups of actors." (Engel et al., 2008:663)

laboratories that—according to people I talked to—exist within Grupo Romero's plantations. Pablo himself found holes filled up with coca leaves in his land, when visiting after a long time, as it takes days to reach from the river into the forest. Pablo and other interviewees asserted that people related to palm oil industry come and look, especially for young boys, to work for them at the plantations. Pablo also explained that the road Nauta is used as an important pathway for smuggling.

Juana and Juan, a farmer-couple from a community north of Iquitos, provide another alarming testimony. They speak about a neighbour's son that was hired to work with Grupo Romero in another county, San Martin, and never came back. They got the message that he was dead, but more than a year later, he called. He could only say hello and the conversation was cut. I met Juana and Juan by chance. They had taken the peque-peque boat a whole day to get to Iquitos to talk to a lawyer. A company has built an 8 km long road through their community and has started to chop forest for preparing plantations. Juana and Juan say it is for oil palm plantations. The company that performs this project shows a document that proves that all the six communities affected by this plantation have signed the contract. Further, it expresses that the presidents in the communities have had community meetings to find out if each community allows the project. Juana and Juan tell me that the company has never had a meeting, in any of the communities. It is the presidents in each community that has falsified the contracts and—according to the couple—are getting paid from the company. The six affected communities have had meetings and are starting a movement against the company and the communal presidents. At this point, they struggle to show that the documents are false and then they will go to court. Nevertheless, Juana and Juan are not very optimistic: "We will go to trial, but the company will probably just give a lot of money to the lawyers" (Personal communication December 27, 2014).

Glenda, from Iquitos, told me that farmers are not always selling their land voluntarily. She asserted that in some cases farmers get threats from oil palm companies to force them to sell away their land. Nevertheless, she argues that the Peruvian state is hiding information regarding conflict of interests in palm oil production. A study undertaken in Colombia shows a strong relation between expansion of oil palm production and violent conflicts in the rural areas (Pinzón et al., 2009).

Although these testimonies may lack more concrete evidence to support them, I decided not to neglect them. It may not be counted as reliable sources, unless the issue will be fully investigated and already solved, thus not representing a risk for informants. However, I considered it relevant to

include the testimonies in this thesis, because they were brought up by my informants repeatedly, and obviously shed a light on their though reality. It also shows how complex the situation is. In addition to ecological consequences of palm oil production, and if it is profitable to grow or to work on a plantation there are various social and political aspects that were not expected to take into account of effects: like corruption, illegal activity and political interests. Discussing them here may also encourage further investigations that can clarify blurry events connected to palm oil production in Peru.

After some weeks in Iquitos, I decided to travel and visit some villages in the forest. I got the impression that many who live in Iquitos—also known as the Amazon city—live close to, and subsist from the forest, but they have never actually been to the forest. My visit to several villages also gave me insights about the lifestyle in those areas, together with people's connection to the "chacras" – their arable land with crops.

In the villages I came across other issues that are very detrimental to the vulnerable ecosystem in the area, for example, oil spills. Carlos, the Kukama indigenous man, took me to his home village. He would also describe the damage caused by a recent oil spill in the area.

When referring to the whole Loreto district, Carlos insists on addressing the issue of oil palm cultivation from a broad perspective. This broad perspective includes people's daily activities and the importance of nature to the survival of indigenous cultures and their traditions:

> "Oil palm is for us a monoculture crop. It destroys the primary forest and causes huge extinctions. It also dissociates people from their territory, from their land, from their forest and destroys the permanent relation with the natural environment; their spirituality with their space surrounding their habitat." (Personal communication, January 9, 2014)

The importance of the primary forest is clearly represented by the fact that farming communities in the Peruvian Amazon utilize more than 250 tree species (Montes and Weber, 1997). As I also observed in the field, the farming communities use the different tree species for medicines, construction material, soil conservation, shade, fences, energy, fibres, resins and fruits. However, this unique ecosystem with all its services, its diversity, and its valuable species, are declining in many areas due to deforestation, over-logging and forest fragmentation (Montes and Weber, 1997).

During discussions with Anders, a foreign teacher that teaches an interdisciplinary course in culture, ecology and politics, related to management of natural resources in Peru, he asks: "How can it be deforestation in this region if what is most needed is reforestation, and timber has a high price? The alternative for these deforested areas is to reforest. Timber has high price, therefore it represent a clear alternative to palm oil. Palm oil could be the most profitable in economic terms, but in the long term, in a more holistic perspective, timber may be much more profitable."

This teacher travels every year to Peru from Norway with his high school students. Anders has field experience in the region and interacts with different local indigenous groups. He further argues: If state and regional governments had a long-term agronomical vision, then they would choose hardwood production by small-scale farmers. If people do not appreciate the forest as a value in itself and use its resources in a sustainable way, local knowledge will be lost". (Personal communication, December 07, 2013) A mahogany or cedar tree is worth between 60 000 – 100 000 NOK[10] (Kolstadbråten, 2014). Anders further comments on the justification of growing oil palms on degraded land. He expresses that most often degraded land is a forest with potential to be adequate forest in a relatively short term because of seed banks stored around the degraded land. The term "degraded" is very vast because it can for instance be selection felling of tree species that economically has high value. If oil palm plantations will be the virgin forest closest neighbor instead of "degraded" land, that is worse (Personal communication, December 07, 2013).

Close to Iquitos along the river Nanay we find the village Manacamiri. During the rainy season, the transportation by boat takes 20 minutes; otherwise, one can walk over the sand bars. From the village one walks 50 minutes and reaches the centre of capacitation, Kapitari. Kaptiari has been a 20-years-project of doing integrated forest systems with plants and trees of different life cycles. The challenge has been to find how the different crops and trees can live the best way together and play on each other's qualities. The initiator, Luis, has been working hard to explore interactions of different plants and trees in their environment. He explains that building from his experience over time Luis has learned a lot. He grows cacao as the main crop for export, and integrates other species with the cacao. When asked why cacao is the main crop, he answered, "cacao produces the whole year and is a stable crop." Among his 20 hectares of cacao, a number of other plants are associated and integrated with several of other species. Luis stated that he has learned how to manage the plants in a sustainable way. He takes into consideration the complete natural environment around,

[10] 6,662- 11,1037 EUR (1 EUR=9,006 NOK, Source: www.valutakurser.no,11.12.2014)

also microorganisms. “Each plant species has its respective insects” —he asserts. Regarding the different types of plants, their function in the whole ecosystem and the resources they provide, Luis explains:

> “We have valuable palms that give antioxidants, cosmetics and natural vitamins. For instance, the aguaje palm is the biggest filter that exists in the Amazon, and the species inga can be used as natural fertilizers. These palms give us a lot and instead we are seeing oil palm as the solution? There are no justifications for that. Additionally, to grow the oil palms we are destroying the valuable forest.” (Personal communication, December 21, 2014)

In the Kapitari project of cacao and integrated agroforestry system, we took a tour (a transect walk) with the leader while he described many details and answered my questions (see Figure 3). He explains that his timber species are not good to construct furniture because there are problems with termites, humidity and microorganisms. The enthusiasm shown while carrying out his work was contagious. It became evident that there is a lot of additional work lying behind.

Figure 3: Luis shows his project and land A) Chacra with high diversity of food crops and plants (left). B) Cacao –which is his main crop for export. (Source: this author, 2013).

Moreover, regarding transferring and expanding the knowledge that Luis and others have, Luis confesses that his dream is to have a centre for learning. There he would be able to share his experiences and build a place focusing on the practical way of learning. Today, he thinks that the engineers in Iquitos do not have the right focus. They do not even know the species in the Amazon forest. Luis tells that he wants to be “independent, but organised.” He has started to share experiences in an association and motivating more people to learn and join the project in his village.

He is doing capacitation for ten families in the village. I interviewed two farmers that have started the same integrated system at their chacras, and they express a deep interest in learning how to make their chacras diverse in plants, fruits, herbs and trees. Julio (one of the farmers) recognizes that Luis has taught the villagers a lot with his project, and there are many in queue to join the project.

3.4 Road Iquitos-Nauta

In the area along the 100 km long road Iquitos-Nauta I conducted the next part of my fieldwork. The results collected in this area indicate that views towards palm oil production differ between individual farmers and also between organizations. However, the fundaments of these views also differ. On the one hand, negative views are more based on the accumulated experience of interrupted or unsuccessful projects complemented with unfulfilled promises by authorities. On the other hand, positive views are rather based on optimism or some kind of trust in local authorities. These contradictory views may also be stimulated by a lack of information and transparency regarding the origin and execution of projects, as explained through some examples below.

Along the road Iquitos-Nauta, people have their houses and agricultural land along the road. In this area, the United Nations Office on Drugs and Crime (UNODC) distributed oil palms seeds free of charge to the people who wanted (Juan, 50.) According to Juan, the leader of a local palm oil organization, this seed distribution was considered an “alternative development” project (Juan, 50). Several people planted the seeds and dedicated some hectares of their land to palm oil production. Juan, who is in his 50s, is an agricultural engineer. His view of palm oil is rather positive: “this crop can take farmers in the villages out of extreme poverty. There are no other crops that have this amount of production and with such a secure demand of the product” (Juan, 50).

Juan argues that oil palm production is a good alternative because it helps people with no studies to deal with soil and grow something. Besides—Juan adds—palm oil gives young people something to dedicate their lives to, instead of becoming motorcycle taxis or getting involved in drugs, activities that—according to Juan—are common in the area.

In contrast, other interviews I performed in this area indicated that the situation is not as positive as the one described by Juan. These interviews denounced the inexistence of economic help from local or regional government to grow oil palms —a situation that also affects Juan. As these interviewees claimed, the UN established an agreement with the regional government that later became ignored by the latter part. Now, after the farmers have planted the oil palms, they do not have an extraction plant to use their fruits. Lacking an extraction plant implies that they do not use their fruits for anything, since the fruit decomposes two days after the harvest. Consequently, these farmers are still waiting for economic support from the UN for the oil palms they maintain. Juan describes the productive condition of the planted palms: "We have 750 ha of oil palms, of which 380 ha produce fruits, 120 ha are starting to produce fruits, and 250 ha are still growing." Juan himself has cultivated 35 ha of oil palms. He changed to this new activity from his previous cattle breeding. According to him, cattle breeding are difficult to maintain if one does not have good economic resources. He remembers that the bank gave loans during a cattle boom, to have incentives to start with cattle. Besides, Juan explains that the economic instability of cattle breeding forces you to start selling your cattle in difficult moments. "Palm oil production is better (…) you may suffer three years because you will not have enough to eat. But the fourth year you will start to smile, and you will never stop smiling" —he concludes (personal communication, January 5, 2014).

Acknowledging farmers' claims, the palm oil association recently appealed to the central government, which has promised to support their activities. On the other hand, when the question of sustainability is raised Juan recognizes that possibilities of species extinction related to oil palm cultivation indeed exist. However —he argues— these possibilities do not include deforestation. He asserts that primary forests in his area have not been affected by palm oil production. Further, he states that the results of the production are "good" even though they do not use any fertilizers, pesticides or insecticides at this moment. In this connection, Juan explains that the farmers in the palm oil organization will use manure from chicken farms as fertilizers. To address the critique of palm oil as monoculture production, Juan optimistically claims: "We will not cultivate oil palms as monoculture. We will grow integrated crops and try to be a pilot project that can be used other places. My idea is to make a plantation of oil palms, cacao, sugarcane and fish ponds" (see figure 4). Regarding the unfulfilled promises of providing an extraction plant to the farmers, Juan continues optimistic: "I have a reunion with the bank [Agrobanco] tomorrow. I have big hope in the bank" (personal communication, January 5, 2014).

Figure 4: Juan shows his land. A) Hilly land with oil palms and a future fishpond (left). B) Juan showing the oil palm that has recently started to get fruits (Source: this author, 2014).

Moreover, regarding the destination of palm oil production in Peru, Juan asserts that the Peruvian oil company Petroperu needs all the production. Currently, Petroperu buys palm oil from Ecuador and Colombia and mixes these products with Peru's production. According to Juan, Petroperu has expressed that they will buy the oil from them when they get the processor plant.

Also along the Iquitos-Nauta road, I came across an association that operates in the area to protect the environment around the different basins. Its members want to gather money for obtaining concessions of land. Thereby, the association would invest in sustainable projects to prevent companies from acquiring rights to land. The final aim is to prevent these companies from degrading and depleting the forest. I met the vice president of the association, who explained that the association consists of 200 members from 40 communities along the Nauta road. They are planning to undertake three projects in the area. Two of these are agricultural projects, which will produce cocoa and macambo[11]. The ultimate goal is to reach 4,000 ha of each crop within 5 years. They want to make a lollipop of the macambo with chocolate glaze. The third is a project of conservation and tourism. These alternatives may compete against palm oil not only from an economic perspective, but also from a social one, since these projects would guarantee autonomy in these lands.

[11] Macambo is a fruit of a palm.

Moreover, along the Nauta road I also gathered inconsistent testimonies regarding the origin of palm oil projects. On one hand, the forest engineer Juan claims that the oil palm project in the area comes from the UN, with the aim of eradicating coca production. On the other hand, Martín, another farmer in the area, asserts that the regional government has made up the whole palm oil project. According to Martín, a group of professionals without job supported the political work of the regional government and created a "development project" pretending that it emanated from the UN. Martín asserts that the regional government counted on 8 millions of soles[12] to carry out the development project. However, Martín contends that the money has been spent in something different such as cars, motorbikes and yachts, and only some of it has been used to give seeds for oil palms to those who wanted. As a consequence of this project, farmers have cultivated between one and five hectares of palm oil. Later the project was interrupted with no apparent reasons. Martín thinks that they realized that the whole project was connected to politics. According to Martín and Pablo, who also has land along the road Iquitos-Nauta, the money was given to a group of professionals that helped the regional government with a political campaign. These farmers assert that the local government takes loans to execute projects, but ends up giving the money to other interests, in the favor of the big investors. These farmers explain that various favorable projects for the short and long-term exist, but there is no political willingness to make the project become real. Many people I met said the same. The area of the district where the environmental association wants to have concessions accounts for 128 000 ha. On the other hand, farmers assert that a nearby area of 40 000 ha is used to the production of coca leaves. Martín knows that the Peruvian state has projects to eradicate coca production. Similarly, the environmental association has plans to request the government to investigate, illegalize and eradicate coca plantations in this part of the country. The association and farmers in general know that this area contains good soil for any kind of production. Consequently, finding alternatives to prevent misuse of this area and implementing sustainable projects instead, has its difficulties in the international facilitation of big-scale and privatization. Therefore, it is not clear that the political will of the local authorities exist to implement sustainable projects.

Continuing my research, I decided to explore the situation in farther areas, or even other districts if possible. Thereby I had the opportunity to visit Tamshiyacu, an area that provided many other interesting findings that differ from those along the road Iquitos-Nauta. The details of this part of the research are presented in the following section.

[12] 8 000 000 soles (PEN) are approximately 2 800 000 dollar (USD) (1 PEN=0.35 USD, Source: www.coinmill.com)

3.5 Tamshiyacu

The findings in this area show huge area of forest felling to grow oil palm plantations without legal requirements. The remote community suddenly have strangers working on the plantations, and the women feel unsecure walking to their chakra as a rumour tells about sexual violations in the community. The plantation plans are spread over a huge area, something that will require comprehensive construction work of roads. The rich tropical forest is cut down and destroys complex immense ecosystems and scares away the animals hunted.

In Tamshiyacu I interviewed the Municipal Major. He explained that the income of the municipality comes mainly from state funding, and commercial activities such as fishing, agriculture-, handcraft- and art production (Personal communication, November 25, 2014). Continuing my interviews I met Christina, a member of the environmental organization Nature and Culture International (NCI), with headquarters in Iquitos. Christina told me about illegal deforestation happening in Tamshiyacu. According to Pautrat (2013) a company called Cacao del Peru Norte S.A.C provoked the deforestation that Christina mentioned. The company deforested 2,150 ha of primary forests between June and October 2013. In the last months of 2013 Cacao del Peru had deforested an area of 2,100 ha (see figure 5 for December 2013), and its plans are to reach 50 000 ha (see figure 6). In addition Pautrat (2013) reports that the company has cut forests without legal requirements: such as soil classification studies, land-use change authorizations and environmental impact assessments (EIA). In contrast, farmers and other small private owners have requested land-use change authorizations that account for more than 120 000 ha stated in the article SPDE (Pautrat, 2013).

Christina asserts that a Malaysian company that in Peru operates under different names is behind the operations of Cacao del Peru. Similarly, in an area further north of Tamshiyacu, Grupo Romero plans to clear a large area for oil palm plantations (see figure 6). By December 2013, there are 32 projects to grow oil palms in indigenous and agricultural areas. Regarding the characteristics of the fruit from oil palms, Christina explains that it needs to be used within two days, if not it will decompose. This characteristic puts additional challenges to the oil palm growers, who have to get rid of their fruit quickly after they are picked. That requires roads to reach all the area with trucks and machinery for chopping the forest and for transporting the seeds.

However, as we saw in the former chapter, the growers in the road Iquitos-Nauta have not been able to use the fruit they were encouraged to produce. As already mentioned, after six years of production, these farmers are still waiting for an extraction plant that allows them use their production.

Together with my research assistant, I met random people who cultivate land. These visits allowed me to see people at their homes while performing their daily activities. For instance, we met Maria who invited us to enter her house. Her four children, two grandchildren and a daughter-in-law inhabit Maria's home; all together create a lively atmosphere at the house. The house has a patio where ducks, chickens, dogs and pigs were playing and eating around. This family has between two to three hectares of chacras[13]. These chacras contain crops such as yucca, plantain, pineapple, chestnut trees, fruit trees with the fruit cocona, potatoes, forest potatoes and umari trees. The latter trees give fruit twice a year that can be used as butter. According to Maria, the chacra gives enough food for living. If it is a good year, she sells the nicest pineapples and yucca at the market after feeding her family and the animals. If a year gives low quality harvest, María has to do something in addition, such as selling one of the pigs.

Another woman, Esther, already harvested her one ha chakra. Besides she is preparing a second hectare to grow plantain. She grows almost the same fruits and vegetables as Maria. Esther says that her production is abundant of yucca, but this plant has a low price.

[13] Chacra = a (small) farm. Origin from the ancient Quechua language (www.oxforddictionaries.com; www.rae.es)

Figure 5: Deforested area in Tamshiyacu (C. B. Jensen, 14.12. 2013).

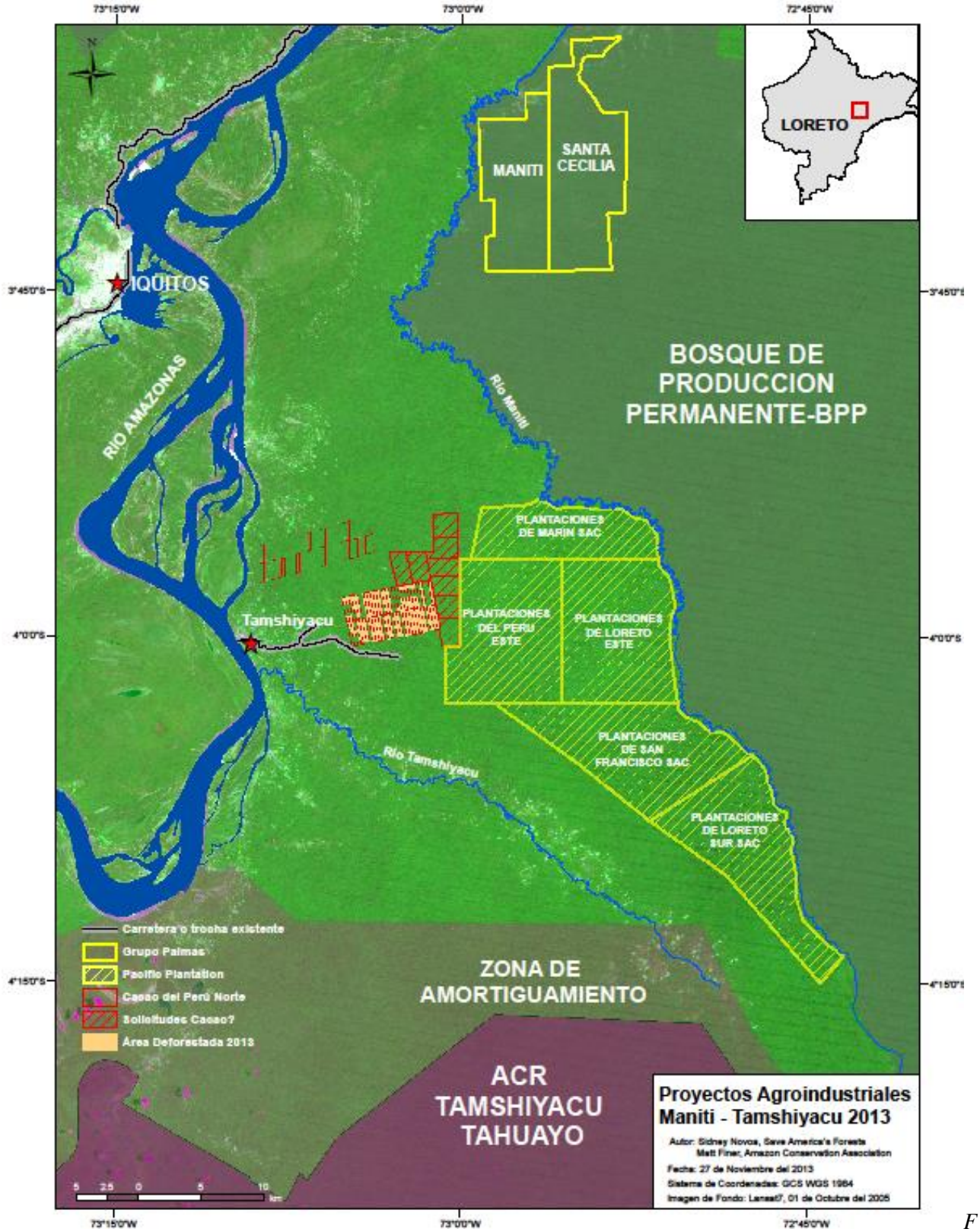

Figure 6: Map of the areas already deforested in 2013 (the light orange squares) and the areas planned for oil palms cultivation, (given applications for adjudication) are the yellow lined squares; are two different companies. The red squares given applications for adjudication to a cacao company (Pautrat, 2013).

Pineapple is also abundant in Esther's land. Similarly to María, Esther lives with her three small children alone. Regarding her economic situation, Esther claims: "I get enough for living. For example when someone ask for yucca, I sell it in sacks. I have enough for the house and enough to eat. Even though it is not much, we survive." When I asked Esther about the new project of a company that has started to cut the forest nearby, she expresses: "We are discontented with it. They are cutting the woodland, taking away the forest, a huge area they cut. Also the environment is affected. People do not think about it now, but in some time, we will feel the humidity, and feel that we have less oxygen. The plants will not produce when they use chemicals on the plantation." (Personal communication, January 7, 2014).

Moreover, Esther also refers to the change in social life, since the company suddenly brings unknown people to the village: "We have the chacra far away; we need to walk some hours [to get there]. [So] maybe they rape us [on the way there]. I will never walk calmed in my village anymore." According to Esther many people has sold their land for 5,000 soles (approx. 1750 USD). "They are desperate for a little amount of money. Even though they have enough for living. I also think the government has given land to the company, without considering that we will end up having no land" —Esther claims. Another problem according to Esther are the animals that people hunt for food in the forest. They stay scared far away thus, it is difficult to hunt. In addition, Esther explains that they do not let people get into the area occupied or deforested by the company. "We, the poor cannot do anything, only people that has a lot, can do things" —she argues.

As opposed to Esther, Maria expresses that she is happy about having the company in Tamshiyacu, since it can offer jobs for their children in the village. Even though, she told that all the workers at the plantation until now, have been taken from outside of the community. Tomás, a teacher in agriculture and livestock asserts other challenges when I ask if he sees other alternatives to palm oil production:

> "You have to motivate the young people (…) after the first years in the secondary school the youth loses interest in agriculture. They are more into fiction like television, radio and computers. It is very difficult to motivate the youth. They have their own chacras from the family, but they do not use them, they may sell them instead." (Personal communication, January 7, 2014)

Tomás told that he has a dream to develop a horticulture project. It is likely that those youngsters

who are not interested in having land coincide with those who —according to Esther— have sold their lands for cheap amounts of money. As seen from the quotes above, in Tamshiyacu different opinions about the palm oil project exist. The Major states that it is difficult to tell people what is best to do. He wonders: "If they decide to sell [their land] to companies, what can I do?"

After some time in Tamshiyacu, I decided to visit the part of the Amazon where the oil palms are more established, such as in the area of Tarapoto. This part of my research is described in the following section.

3.6 Pongo de Caynarachi – Tarapoto

The findings here show a different story from the other places as the inhabitants of Pongo de Caynarachi are members of a palm oil association which give a social and economic security as they help in the start and if something suddenly happens. They are autonomous farmers, as they own the processing plant. The palm oil project started as a development project from UNDP to generate income and eradicate the coca leaf production.

Figure 7: Pongo de Caynarachi, Tarapoto. Oil palms (to the left) and a village with oil palms cultivators (C. B. Jensen, 11.01.2014)

In this area of Tarapoto, palm oil production has been going on for some decades. Most of the area with oil palms plantations is grown as monoculture and Grupo Romero owns many of the plantations. In addition, this company controls the processor of the fruit. Moreover, thanks to a random contact given by the family with who I stayed in Iquitos, I had come across a special case of

palm oil production in Pongo de Caynarachi, a community close to Tarapoto. In this case the farmers have started an autonomous cooperative that allows them drive the fruit processor by themselves (see Figure 7). To further analyse this cooperative, I contacted an organization in Tarapoto that does capacitation for farmers. A young man from the organization joined me to Pongo de Caynarachi to study the oil palms and the autonomous cooperative (see Figure 8).

Figure 8: Outside the office JARPAL after the interview. (C.B. Jensen, 11.01.2014)

In Pongo de Caynarachi I met Salvador Rubio, who is the leader of the organisation *Jardines de palmas*[14] (JARPAL), which is the association for palm oil producers in this area. I interviewed Rubio at the offices of JARPAL (figure 8). The association started in the year 2000 with 400 members. Today there are 600 members and the association is still growing. They started the association with 600 ha of land and today this land has increased to 4000 ha. The members/farmers are the owners of the association and the membership means a social and economic security for them. The association gives its members three years of fertilizers as a loan until the palms give fruits. In terms of social security, the association loans money to its members when they get sick and need economic help. In addition, it is possible to take small loans for some months. According to Rubio, the idea to cultivate oil palms in Pongo de Caynarachi came from the United Nations. In the beginning —Rubio describes— they sent a technician to explore these areas. They wanted to evaluate if the project could be a solution for replacing the production of coca that existed in the area. Rubio, for example, was one of the farmers who produced coca before. I asked him to describe

[14] Gardens of palms.

this transition process with more details. Thus, he explained that after stopping his coca production, he switched to planting palmito (palm heart). Later he would switch again to start planting oil palms. Regarding the times when he produced coca, he claims: “It was a good pay, but you never knew what was happening. The military once came to my house (…) on another occasion terrorist groups came and beat me up.” To have a more relaxed life with family and children he chose to change to palmito. Rubio and other farmers in the area assert that USAID is the sponsor and the initiator of the project, which was labelled as “development project.”

Moreover, I wondered about possible conflict of interests between Grupo Romero and JARPAL. In this regard, Rubio explains that Grupo Romero, is not a threat to JARPAL. On the contrary —Rubio argues—Grupo Romero helps JARPAL farmers in different situations. For instance, Grupo Romero has sent technicians, provided insecticides or sent economic support to help JARPAL farmers cope with pests. Grupo Romero does not buy fruit directly from individuals that are members of the association. They only buy fruit if the association wants to sell the fruit, such as in cases when they have more fruit than the capacity of their own processor.

The situation with palm oil in Pongo de Caynarachi makes the USAID-UN project appear rather successful. Farmers claim that the area has developed considerably after having started with oil palms (see figure 9). For example, they claim that now, unlike before, children can study. One of the farmers adds that now it is possible to buy motorcycles or nicer houses. This trend of “general development” —as the farmer calls it— would have started after different companies came into town. However —the farmer emphasizes— these were not only palm oil companies. Moreover, Rubio, who clearly advocates palm oil, asserts that it provides secure income if one has more than five hectares of oil palms. According to Perez Vela, the Amazon has a huge variety of soil types, and Pongo de Caynarachi is in the fertile zone, in a small strip close to a river. He argues that farmers in acidic soils do not have the same production. While the people in Caynarachi harvest 5 tons of fruits from oil palms, other areas not even give one ton —he argues. In addition, Pérez Vela states: “with oil palms you will always have to pay because you have to fertilize. You have to manage. From the 100 per cent of utilities, how big percentage do you use for chemical inputs or for maintenance? And how much do you use in the harvest? What is the profit in the end?” (Personal communication, January 12, 2014).

Figure 9: A) Organic fertilizers used on the palmito crops and oil palms crops (left). Interview with one of the members of JARPAL (right). (C. B. Jensen, 11.01.2014)

4. DISCUSSION

A renowned scholar once told me “it is nothing new that palm oil production is not good,” before I left to Peru to carry out fieldwork. However, one may wonder, why is palm oil expanding so fast if many claim that it is not good? Furthermore, why is it happening in countries such as Peru? Peru is a developing country with one of the most diverse and valuable forest ecosystems. Yet national and local plans for removing large forest areas for growing oil palms are implemented. Besides, why would the UN finance a development project based on palm oil, regardless local households that take advantage of resources in the area? Although these kinds of questions may be difficult to answer, they influenced the focus of my research, and the way I collected and interpreted the data I gathered.

4.1 Effects of palm oil production in Peru

In this section, I compare and contrast some of the positive and negative effects that —according to local institutions and individuals in Peru— are associated with palm oil production. These effects became evident by observation or through the different interviews and conversations held during my stay in the different areas. I separate these effects in three main groups: social, ecological and economic effects. However, these three kinds of effects may overlap and interact with each other.

- Social effects

In Pongo de Caynarachi the interviewees focused on the social benefits from palm oil production, which can be explained by their autonomy over the means of production. In contrast, the situation of Tamshiyacu resembles a case of (on land grabbing see Safransky and Wolford, 2011). As in land grabbing cases, the company in Tamshiyacu has purchased or leased great extensions of agricultural land for exploiting its resources. The business has evidenced negative social effects, because most of the hired workers are outsiders. As claimed by local villagers, the arrival of considerable amount of strangers has decreased the perception of safety in the area. The case of large plantations in Yurimaguas and its surroundings are similar to those in Tamishiyacu, and also similar social effects have been detected. In the road Iquitos-Nauta the situation is more ambiguous, since views regarding palm oil production vary considerably from farmer to farmer. In this area some farmers have received seeds to plant oil palms with the purpose of making them build their livelihoods from

palm oil production. Although the project promised to provide the processors necessary to produce palm oil from the harvested fruits, the promise has not been fulfilled yet.

Palm oil production is frequently considered as having the positive social effect of improving living standards by giving access to previously inexistent opportunities, such as educational opportunities as presented in the example of Pongo de Caynarachi. This would be a result of increased profits that would enlarge the budget of public entities as well as families' income. If one assumes that a town has increased its amount of schools —together with teachers and students attending them— after palm oil arrived, one may agree that it has had a positive social effect. The building of schools would depend on public funding priorities or on the priorities of the palm oil company. Companies may also build schools and hospitals to hold a friendly image or to obtain approval for their projects and gain status in the community. As long as the quality of the schools is good and the attendance is ensured, this would improve the educational opportunities for the community. However, the positive effects that good quality schools or hospitals may introduce in a community should not be analysed independently, but holistically. Positive social effects may be diminished or cancelled if other important negative effects remain. For instance, children may abandon schools when domestic problems (such as alcoholism, prostitution, or domestic violence) persist or even increase. Therefore, building schools does not necessarily imply that children in an area will attend them. Yet even if the number of students attending schools increases, what kind of education will they get? Only technical? Or will they receive an education exclusively functional to the available job opportunities? Similarly, attending school does not necessarily motivate a student from an area that has only one labour option after other sources of prosperity have been depleted.

Moreover, the sudden increase of household income, seen as a positive economic effect due to the palm oil industry, may negatively affect families in the long term. As claimed by indigenous leaders, the increase of households' income in the area has led to an increase of social vices. Yet one may argue that this could be produced by any industry capable of raise households' income. However, not all industries require the same from the societies in which they are established. Some industries require, for example, that workers move away from their families, leaving a mother or father alone with the children —probably for long periods. These social problems become more or less critical depending on the specific community one refers to. In the big plantations established by Grupo Romero people are picked from remote small villages. As explained above, this means they abandon their family and live in solitude or at least away from a family environment. Workers in these situations could certainly be more prone to develop vices such as alcoholism, criminality or

prostitution. On the other hand, socio-economic advantages of rural areas, such as the possibility for their inhabitants to grow their own food, disappear when this possibility has become less accessible or no longer exists in the area. This effect makes families more dependent on the household head's salary and therefore more vulnerable when the salary does not arrive on time.

Although palm oil production may lead to economic development of a community, this does not necessarily correspond to social development from a holistic perspective. If the alleged economic development produces negative ecological effects, as asserted by indigenous leaders in some areas, the social development of these communities is also hindered. The direct connection of these communities to nature may allow them to perceive more clearly the actual damage caused to ecosystems in which they are immersed. Furthermore, these communities would be more capable to foresee serious ecological damage or even complete destruction of natural resources caused by palm oil production.

- Ecological effects

As presented above, the UNODC, the Ministry of Agriculture and agriculture engineers in the Road Iquitos-Nauta, claim that Peru needs palm oil production to secure an economic income. Furthermore, the UNODC has financed projects of oil palm production as aid to Peru and refers to them as development projects. The Peruvian government (see MINAG, 2012), and specialists in Pongo de Caynarachi argue oil palms should be planted in deforested areas to avoid clearing forests. More directly, the Investigation Institute of the Peruvian Amazon (IIAP) states that oil palm cultivation should exclusively be cultivated in deforested areas. However, in their report of palm oil MINAG asserts that "the huge significant meaning of palm oil nationally and internationally is the global interests of protecting the environment, a situation that motivates different countries that have the potential of growing oil palms to promote the development of plans and programs of reforestation" (MINAG, 2012, p. 9.). Nevertheless, the IIAP denounces that huge areas of valuable wetland have been used to grow oil palms. Moreover, Dammert (2013) explains that the deforested areas are not always connected, but rather fragmented, thus stimulating companies to clear the forested areas located in between. Therefore, in practice, the ecological recommendations are not being followed.

The clearing of primary forests in Tamshiyacu as described earlier, has decreased biodiversity and affected people's livelihoods in several ways. The example of Tamshiyacu reflects the somehow "aggressive" establishment of the palm oil industry in rural areas, thus abruptly changing all aspects of human and natural life. Locals claim that the striking deforestation and complete change of the environment in Tamshiyacu, was noticed just after few months. On the other hand, palm oil industry has a substantial ecological impact for its large use of fertilizers and pesticides. The amount of fertilizers utilized increases in deforested areas since these, according to Dammert (2013), are not nutritive enough for growing oil palms. In addition, in the Peruvian amazon the impact of these chemicals on the environment is even larger since the high amount of rainfall favours their transportation (Dammert, 2012).

The clearing of forests in the Peruvian Amazon is also favoured by land-acquisition dynamics. Deforested areas where the plantation of oil palms is recommended are precisely the areas inhabited by small-scale owners. The latter implies that the conversion of these deforested areas to palm oil production should also consider providing alternatives to these families. Therefore, to avoid complex processes of land acquisition, companies tend to introduce the plantations in state owned places instead. However, state owned areas are those normally covered with forests (Dammert, 2013). In this connection, a researcher in forest-governance in Indonesia, Krystof Obidzinski, introduces more factors that make forested lands more attractive to the palm oil business. One of them is the additional income from the timber that forested areas provide when cutting them to start planting oil palms. Furthermore, forested areas are less inhabited than deforested or degraded lands. This characteristic implies that forests present fewer cases of people claiming economical compensation or land rights (see Gilbert, 2012).

On the other hand, Pautrat and Segura (n.d.) discuss that during the recent years, new pressures to continue deforesting have appeared in Peru. These pressures are related to the "expansion of monocultures of introduced species for the production of biofuels." as the "principal causes of deforestation of primary tropical forests, causing grave environmental, social, and economic impacts" (p.2.). In 2008 and 2009 there was a process in Peru to open the land market of Peruvian Amazonian regions to establish biofuel monoculture crops. Regarding this, a series of regulatory reforms were conceived. It turned out in protests from the local populations and even a serious event where 33 people were killed in the region of Bagua, of northern Peru (FIDH, 2009). The MINAG (2012), argues that oil palm planting is equal to reforestation. Similarly, a confederation of five oil palm federations, CONAPAL, presented a proposal to the Peruvian Congress defining palm oil plantation as forest, to give more opportunities to grow oil palms. Pautrat and Segura (n.d.)

argue that this trend will favour land trafficking and conversion of primary forest. These authors explain that it is problematic to define oil palm plantations as forest plantation, as the characteristics of an oil palm plantation is the need of cultural practices by manipulating the environmental conditions. The conditions to be manipulated include, for instance, removing the forest cover and its biodiversity, to plant oil palms. The organization SPDE is pushing the state and other actual actors to follow the law and consider oil palm as an agriculture crop, thus preventing monoculture practices of oil palms having the status of a forest (Pautrat and Segura, n.d.).

An important driver for the increase in palm oil demand is the global political wish to expand the use of biofuel. It should be noted that the most ambitious states in biofuel production are often countries with less amount of monocultures suitable for biofuel within their territories. Thus, the pressure lies on countries like Peru that can easily grow oil palms in their tropical areas. Moreover, the carbon storage capacity in native forest versus that of palm oil plantations is a debate within the literature. However, it is remarkable that various studies that show palm oil as a better carbon storer, are all related to the palm oil industry (see, for example, Basiron, 2007). In this connection, a study performed in Peru in 2007 showed that 47 percent of carbon emissions came from deforestation (Pautrat and Segura, n.d.). Regarding the efficiency of biofuels, the US Environmental Protection Agency (EPA) in a study that focuses on the entire life cycle of palm oil production. Herein, it is asserted that palm oil fuels emit only 11-17 percent less greenhouse gas than diesel. Thus, for the EPA palm oil does not classify as a renewable fuel (Gilbert, 2012).

Closely related to the social choices and ecological effects are the economic aspects of palm oil production. As explained above, these three perspectives are strongly interconnected.

- Economic effects

Taking into consideration the economic output regardless the tremendous social and ecological inputs and resources used is questionable.

Del Castillo argues, “If one asks a farmer or someone at the countryside where they would like to work, they will answer that they want a job with oil palms because it guarantees a salary”. Contrary, both Esther in Tamshiyacu and Carlos from the Kukama people express clearly that it is enough to live from the products of the chacra – and together with all the values that the healthy environment offers, the totality has higher value then selling away land or work on a plantation. This was a clear

response to the argument of payment for environmental services and the focus on economic income. Altieri (2009) shows evidence of the high value of small-scale farming: "Although the conventional wisdom is that small family farms are backward and unproductive, research shows that small farms are much more productive than large farms if total output is considered rather than yield from a single crop." (Altieri, 2009: para. 10)

However, we saw the example of Pongo de Caynarachi where the income was fairly distirubuted from palm oil production. The members of the association had minimum a few hectares each to grow, and to get their income from. Because of common ownership of the processing plant, the members seem to have a secure income for now. Related to the success story of Pongo de Caynarachi, agriculture specialists argue that this model is not directly applicable to other places due to the special climate and favourable soil for oil palms found in this area. Thus, the case of Pongo de Caynarachi shows how important the control of own resources are, more than a successfull case of palm oil applicable to other places.

The main problem in many cases is the need to earn in the short run for basic needs and the desire to see results right away. It is difficult to suggest long-term projects even though it can be highly profitable economically and a good investment like tree plantings. As a contrast to the discussion of economic incentives, the indigenous leader asked himself, what is development and how can economic income speak all by itself? Altieri (2009) expresses how values goes beyond the economic:

> "For centuries the agriculture of developing countries were built upon local resources of land, water and other resources, as well as local varieties and indigenous knowledge. This has nurtured biologically and genetically diverse smallholder farms with robustness and a built-in resilience that has helped them to adjust to rapidly changing climates, pests and diseases. The persistence of millions of agricultural hectares under ancient, traditional management in the form of raised fields, terraces, polycultures (with a number of crops growing in the same field), agroforestry systems, etc., document a successful indigenous agricultural strategy and constitutes a tribute to the "creativity" of traditional farmers. These microcosms of traditional agriculture offer promising models for other areas because they promote biodiversity, thrive without agrochemicals, and sustain year-round yields." (Altieri, 2009: para.5)

It remains a question whether palm oil industry is capable of overcoming its negative effects.

4.2 Local alternatives to palm oil

The positive and negative effects of palm oil production presented in this thesis, and the vast literature challenging this industry, may continue requiring longer debates and further studies. The opportunities of agribusinesses such as palm oil are evident by the fact of the steady increase in the demand. However, the views of many actors who do not consider palm oil production a sustainable practice —at least in the long term— should not be neglected. The state-of-the-art suggests a need for evaluating more sustainable alternatives, but the road is long as the regional government are not showing willingness to help with new projects. An inspiration for looking towards sustainable projects can be the Cuban example. Funes et al. (2002) argues that political and social changes are needed to handle the global food system crisis and to allow the development of alternatives. He shows that the Cuban example is unique:

> "While there are many farmer-driven and community-based alternative agriculture development models throughout the world that demonstrate that the alternatives work and are economically viable, Cuba offers one of the few examples where fundamental policy shifts and serious governmental resources have supported this movement." (Funes et al., 2002: VI)

The alternatives provided during the fieldwork that will be discussed in this chapter are the agroforestry projects Manacamiri and PROSAE and PES. Other alternatives and ideas that will be mentioned are seed banks and the need of land entitlement.

The Manacamiri project shows how one subsistence farmer with the family can generate diverse food for consumption and grow crops for sale, in Don Luis` case, cacao. A study done by a Danish anthropologist, Søren Hvalkof, in the eastern part of central Peruvian Amazon, shows that "traditional indigenous production systems and livelihood has shown remarkable resilience and adaptability to modern market conditions, entering into organic coffee production for the export market." (Hvalkof, 2013, p. 15). Hvalkof has studied land use in the Peruvian Amazon and compared indigenous production systems with a non-indigenous cattle raisers production in the same area. The study is over a period of 50 years and the indigenous territory is demarcated, and entitled. The case show that since the 1950s until 1996, the forest extended with 5 percent while the indigenous population had increased with 200-300 percent. Moreover, the indigenous production system has generated income for poor families and has strengthen the participation in the national and civil society. (Hvalkof, 2013) This shows strength to the argument from the indigenous leader that in total the value of producing food for own consumption and sustainable use of the resources

pay much more to the environment then to be part of the industrial agriculture and just get a salary.

Anders, the teacher, is following the idea of the PROSAE project. He suggests having seed banks to plant trees and selling the wood. How can it be that the forest does not have a value? What about having a forest association? Are there no lessons learnt from other examples? The ideas of Jorge Miguel and Anders correspond to the statement of Weber et al. (1997), cited in Weber et al. (2001) that "farmers and loggers cut the best timber trees in their forest, without leaving high-quality trees to produce seed for natural regeneration." (p. 426). Jorge Miguel explains that one needs entitled land to make the project work. To make people invest for many years with trees it is essential that one has attachment to the land, says Dennis del Castillo.

Moreover, Jorge Miguel argues that the land will have more value, and the farmer will gain a lot if he sells it. This again means that a land that is used to be collectively managed by indigenous people have to change to an owning land stage: From public or common land to private property. Carlos, the indigenous leader wants people to have spiritual connection with the nature and see the value above the material goods. However, one of his main goals to fight for in the regional government this time, is to entitle the land of his people. There is not only the oil palm companies that either buy or get the right to a not-titled land that has been used for generations by people, but also other businesses like mining and petroleum activity. As the leader for his people, he has not meet even one subsistence farmers in the low land amazon that has titled their land.

To the alternative to PROSAE – it is naturally to ask if it is the interest of the people in the Amazon to develop the commercialization of wood. Which means to expand the villages to commercialese centers that will have hospitals, schools, and maybe develop other vices as the ones Carlos was afraid of would develop in his communities with palm oil production.

Dennis del Castillo argued that he only believe in PES as an alternative to palm oil, because he does not believe in small agroforestry projects to fight against the big monster of agribusiness. Nevertheless, he says it will not be a good alternative as it works today – it needs to be more direct, less bureaucratic and land entitlement is crucial. PES and REDD (Reducing Carbon Emissions from Deforestation and forest Degradation) is a way of putting price on the forest. It is a financial mechanism to motivate conservation of forest. A mechanism that pays organizations, governments

or land owners a compensation for the value of carbon stored in the forest, that with deforestation would have been released (Koh and Butler, 2007). With economic incentives, one believe that the behaviour can change. Koh and Butler (2007) argue that it has not gotten so far yet, that REDD can be a good competitor with palm oil. They argue that a higher economic suspension would be available if the UN recognized the REDD, thus, more effectful tool. Moreover, they demonstrate a new trend of plantation companies that have areas of concessions with forest left on the side as private natural reserves, maybe pressured from environmental organisations or the certification process of Roundtable on Sustainable Palm Oil (RSPO).

RSPO was formed in 2004, a certfication tool to encourage a more sustainable palm oil production. The association contains different stakeholders within palm oil production, also some environmnetal NGOs. During my stay and field work in Peru I did not hear anyone mention RSPO. RSPO is an alternative that requires the consumers to demand sustainable palm oil. An alternative where the responsibilities lay on the consumers may take several year. It requires to change the cultural consumptions and educational campaigns are needed. When it take several years to change the pattern, thus, it means one will have several years of the negative effect happening while waiting for the change.

Besides the need of entitled land, it seems that a crucial challenge to implement alternatives is the need to earn in the short run for basic needs and the desire to see results right away. It is difficult to suggest long-term projects even though it can be highly profitable economically and a good investment like tree plantings.

Gliessman (1992) addresses needs for a sustainable approach to development, which I will argue fit well in this case after exploring the different alternatives:

> "It is proposed that a more sustainable approach to development is needed, where agroecosystems depend on low external inputs, function more on the use of locally available and renewable resources, have benign impacts on the environment, and are based on the knowledge and culture of the local inhabitants. (...) The preservation of both biological and cultural diversity are integral to the long-term sustainable management of natural resources in the tropics" (p.681).

5. CONCLUSION

The findings presented above explore palm oil production to be socially problematic and ecologically disastrous, yet often economically beneficial in the short run. The testimonies include social problems like separated families, loss of land, disappearance of people, hidden cocaine production, corrupt decision-making and loss of safety in villages where palm oil workers come from other parts of the country. Ecological consequences of palm oil are also discussed. Among these the loss and deforestation of enormous areas of primary forest are frequent. Consequently, other ecological problems appear as a result of these deforested areas, such as soil erosion, species migration, and fewer habitats and ecological services for people's livelihoods.

In contrast, some experiences suggest that local sustainable alternatives can be long-term profitable projects, such as cocoa and timber production. These results depend on how this alternative production is managed, since cocoa production can be as problematic as that of palm oil if its production is managed in a similar way. These alternative products show that people in the Peruvian amazon have the potential to generate products for sale. However, an essential need to foster alternative production is land entitlement. This condition would allow farmers to feel ownership and find it worth thinking in longer time perspective. Even though former practices have worked well without a title of ownership, today private property and commercialisation of land make the situation a lot more vulnerable without land entitlements.

The case of palm oil production in Peru is an example found in many tropical places where external interests take advantage of the local conditions and resources at the expense of the local population.

Serious problems connecting the use of land, ecological principles, and property structures are also present in the palm oil business in Peru. The alternatives examined, such cocoa and timber agroforestry, may strengthen the position of local farmers against outsider projects that normally favour big industries like palm oil production.

Integrating forests with food production may create a valuable integrated system. Such a system deals with different life cycles and responds to needs that are more complex than monoculture crops. Additionally, an integrated system has the strength of being resilient. Therefore, developing

people's awareness of the importance of forests to ecosystems remains a challenge. The use forests as tools for production should not override the necessity preserving them. Indigenous of the Amazon area seem to have complete awareness of these holistic principles and the importance of integrated systems. However, small and large-scale producers in the area may not be capable of adopting these practices due to several reasons. Difficulties to obtain land entitlement may hinder projects that give value to integrated systems and an at the same time focus on long-term effects.

6. LIMITATIONS AND FURTHER STUDIES

6.1 Limitation

It is important to have in mind the possibility to get biased answers from the interviewees, from the different perspectives to the problem studied. That depends also how the interview is done, and it is important to present the questions in an unbiased way without giving prompts of what kind of answer you want. This could have influenced how the problematic area was stated from the interviewer, their thoughts of my intentions or maybe the trust they had in me. However, with long introduction sections in the interviews, to introduce myself and to explain the fieldwork I carried out, I felt the atmosphere relaxed. I always had a local with me, an assistant or a friend that knew well my work and my intentions, therefore, when it was a misunderstanding or something unclear the person helped to build a perception of safety. In the analysis, I used the method triangulation of data to strengthen arguments from the results.

It is a limitation to do a fieldwork in another country with a different language then the mother tongue, and with cultural codes to understand because it is easy to lose important information. Another limitation is to travel alone, because people warned me to go alone to the area of Shanusi, San Martin, where the biggest palm oil plantations to Grupo Romero is, because of conflicts in the area.

6.2 Further studies

More research is needed to see how international organisations influence local populations and areas with their decisions and projects. Furthermore, the focus on the policies and interests behind regulations of states should come to the light, which I will say is lacking in Peru.

It is a global need to investigate the consequences of food security in areas where companies buy huge areas of land. In additon, one could compare it with countries that has a policy which secure the land rights to the inhabitants of that country.

7. APPENDIX

Table A: The Interviews

Villages/city		Age	Gender	Characteristics/profession
Iquitos and Yurimaguas	Dennis del Castillo	50s	M	Forest engineer
	Carlos	50s	M	Indigenous leader
	Enrique	30s	M	Conservation in the state
	Christina	20s	F	Environmental NGO
	Anders	50s	M	Norwegian teacher in political ecology
	Juana	30s		Representative of the village
	Juan	40s	F	Husband of Juana
	Jorge Miguel	50s	M	Soil and forest engineer
	Glenda	20s	F	Environmental NGO
Road Iquitos-Nauta	Martin	40s	M	Farmer
	Leo	60s	M	Farmer
	Inuma	50s	M	Agriculture engineer
	Pablo	40s	M	Tourist guide and farmer
Tamshiyacu	Maria	50s	F	Farmer
	Esther	40s	F	Farmer
	Miguel	70s	M	Farmer
	Tomas	30s	M	Professional agronomist
	Major	50s	M	Major
Tarapoto – Pongo de Caynarachi	Romulo	30s	M	Agriculture engineer
	Salvador (Jarpal)	50s	M	Leader of the org. Jarpal
	Julio & wife	50s	M/F	Farmers
	Walter	40s	M	Farmer
	Antonio	60s	M	Farmer
Manacamiri	Luis	60s	M	Shaman and farmer
	Farmer1	50s	M	Farmer
	Farmer2	30s	M	Farmer

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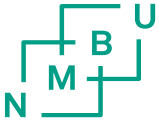

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