

The background of the slide is a photograph of a palm oil plantation. It shows several palm trees with large, green fronds. The sun is shining through the canopy, creating a bright, dappled light effect. The overall color palette is dominated by greens and yellows from the sunlight.

# Sustainable Palm oil production in Thailand

Exploring environmentally and socially sustainable pathways for palm oil production in Thailand

Marije Willems

910521-957-020

04/05/2015

MSc Thesis Environmental policy group

Supervisor: Peter Oosterveer



## CONTENTS

List of used abbreviations.....	5
Abstract .....	6
1. Introduction.....	7
1.1 Palm oil production .....	7
1.2 The process.....	8
1.3 Palm oil policies in Thailand .....	10
1.4 Impacts of palm oil production .....	12
1.4.1 Socio-economic impacts .....	12
1.4.2 Environmental impacts .....	13
2. The research.....	15
2.1 Statement of the problem .....	15
2.2 Research questions.....	15
2.3 Significance .....	16
2.4 Theoretical framework .....	16
2.4.1 Sustainable development .....	16
2.4.2 Institutions .....	17
2.4.3 Flows and networks of Palm oil .....	18
2.4.4 Operationalisation of the theoretical framework .....	19
2.5 Methodology .....	19
2.5.1 Literature study.....	19
2.5.2 Interviews.....	19
2.5.3 Data processing.....	20
3. Analysis of the sustainability initiatives .....	25
3.1 The RSPO.....	25
3.1.1 Sustainability of the RSPO.....	29

3.1.2 Further implementation in Thai oil palm production .....	31
3.2 Alternative sustainability initiatives .....	32
3.2.1 International Federation of Organic Agriculture Movements (IFOAM) .....	32
3.2.2 Rainforest Alliance .....	38
3.2.3 International Sustainability & Carbon Certification (ISCC) .....	46
3.2.4 Good Agricultural Practices (GAP) .....	52
4. Evaluation of the sustainability initiatives .....	60
4.1 Strengths and obstacles for sustainable palm oil production .....	60
4.2 Weighing the principles .....	62
4.3 The results .....	64
5. Conclusion .....	69
5.1 Conclusion.....	69
5.2 Discussion .....	70
5.2.1 Limitations and further research .....	71
5.3 Policy recommendation.....	71
References.....	73
Annex I: List of conducted interviews .....	81
Annex II: Questionnaires .....	82
1. Questionnaire for certified oil palm farmers.....	82
2. Questionnaire for non-certified oil palm farmers .....	82
3. Questionnaire for non-oil palm farmers.....	82
4. Questionnaire for community members .....	83
5. Questionnaire for certified oil palm mills.....	83
6. Questionnaire for non-certified oil palm mills .....	83
7. Questionnaire for governmental bodies .....	84
Ministry of Agriculture .....	84

Local Agriculture Office Krabi .....	85
GAP office Suratthani.....	86
8. Questionnaire for Dr. Tanong Aewsiri about GMP.....	87
9. Questionnaire for Benno Tubbesing about the ISCC.....	87
Figure 1: Oil palm supply chain .....	9
Figure 2: Flows and networks in palm oil production.....	18
Table 1: Overview principles and aspects of sustainability .....	21
Table 2: Overview of RSPO principles .....	27
Table 3: Overview of IFOAM principles.....	33
Table 4: Overview of RA principles (production) .....	39
Table 5: Overview of RA principles (processing) .....	42
Table 6: Overview of ISCC principles (production).....	47
Table 7: Overview of ISCC principles (processing) .....	48
Table 8: Overview of GAP principles .....	52
Table 9: Overview of weights given to principles by different perspectives .....	62
Table 10: Overview of the final score of the RSPO .....	64
Table 11: Overview of the final scores of the alternative initiatives .....	64
Table 12: (Continued) Overview of the final scores of the alternative initiatives .....	65
Table 13: Detailed overview of the scores of the initiatives (production and processing) .....	67
Table 14: Detailed overview of the scores of the initiatives (consumption) .....	68



## LIST OF USED ABBREVIATIONS

ACFS: Thai National Bureau of Agricultural Commodity and Food Standards

ACT: Organic Agriculture Certification Thailand

AED: Thai Agricultural Extension Department

AEDP: Alternative Energy Development Plan

ASEAN: The Association of Southeast Asian Nations

Av: Average

CB: Certifying Body

Cons: Consumers

COROS: Common Objectives and Requirements of Organic Standards

CPO: Crude Palm Oil

DOA: Thai Department of Agriculture

EFB: Empty Fruit Bunch

FFB: Fresh Fruit Bunch

FONAP: Forum nachhaltiges Palmöl

GAP: Good Agricultural Practices

GHG: Greenhouse Gas

GMO: Genetically Modified Organism

GMP: Good Manufacturing Processes

HACCP: Hazard Analysis and Critical Control Points

HCV: High Conservation Value

ICS: Internal Control System

IFOAM: International Federation of Organic Agriculture Movements

ILO: International Labour Organisation

IPM: Integrated Pest Management

ISCC: International Sustainability & Carbon Certification

MOAC: Thai Ministry of Agriculture and Cooperatives

NGO: Non-governmental organisation

PKE: Palm Kernel Extract

PKO: Palm Kernel Oil

POME: Palm Oil Mill Effluent

PPP: Plant Protection Product

Proc: Processors

Prod: Producers

RA: Rainforest Alliance

RED: Renewable Energy Directives

RSB: Roundtable on Sustainable Biofuels

RSPO: Roundtable of Sustainable Palm Oil

SAN: Sustainable Agriculture Network

WCED: World Commission on Environment and Development

## ABSTRACT

Global oil palm production is increasingly expanding due to a growing demand for food and fuel that is caused by a developing world population. This has many impacts on environmental and socio-economic issues which need to be taken into account and analysed properly. In other words there is need for making the palm oil supply chains more sustainable. An answer that is often given to this problem is certification by the RSPO, but there are also many limitations to this approach and there is still a lot of room for improving the sustainability of the supply chains. Therefore it is important to also look at alternatives to the RSPO. This thesis investigates four of these alternatives, namely IFOAM, Rainforest Alliance, ISCC and Good Agriculture Practices (GAP). These initiatives are analysed and evaluated on their performance in sustainability and possible implementation into Thai palm oil production. Furthermore the policies regarding palm oil production in Thailand are reviewed. All these findings were then used to form a policy recommendation on making palm oil production in Thailand more sustainable.

## 1. INTRODUCTION

### 1.1 PALM OIL PRODUCTION

Because of a growing world population the global food and energy security tends to become stressed as the demand for energy and agricultural products become higher. Oil palm is a crop that can be used for food, cosmetics and energy products and also has great economic significance in both domestic and international markets. Worldwide annual palm oil production has grown from 41.08 million tons in 2007 to 50.57 million tons in 2011, with Indonesia being its largest producer, followed by Malaysia and Thailand (Lungtae & Atthirawong, 2014). The current production of palm oil in Thailand is 2.250 thousand metric tons per year of which up to 76% (= 1.720 thousand metric tons) is used for its own domestic consumption (IndexMundi, 2014). There are also other oil crops that are used for the production of biodiesel such as soybean, rapeseed and sunflower. Palm oil, however, is often the most lucrative crop to use for many purposes as it is cheaper in production than many other oils, and oil palm crops give the highest yield of oil per unit compared to other vegetable oils (Tan et al, 2009).

Thailand has the potential to become a larger producer of palm oil than it currently is, as it has the same right soil and climatic conditions as Malaysia and Indonesia. Thailand's expanding palm oil production does not only contribute to more food security, but it also is a solution for the increasing domestic energy demand and its over-reliance on the import of fuel and is therefore promoted by the Thai Government together with other alternative sources of energy in order to become more self-provisioning. The promotion of biofuel energy has become a high priority in Thai policy and may create opportunities for national economic growth because it has higher hectare yields and lower costs compared to other edible vegetable oils (Gonsalves, 2006). A considerable difference between palm oil production in Indonesia, Malaysia and Thailand is the share of area under smallholders; in Indonesia and Malaysia this is respectively 44% and 41%, while in Thailand 76% of the production area is held by smallholders (World Bank & IFC, 2011). The definition for a smallholder is a farmer who is "growing oil palm, sometimes along with subsistence production of other crops, where family provides the majority of labour and the farm provides the principal source of income and where planted area of oil palm is usually below 50 hectares in size" (RSPO, 2013, p. 61). In Thailand plot size is often measured in rai<sup>1</sup>, so for smallholders a maximum of 312,5 rai is used. However, this large percentage of smallholders also has its limitations for the production of sustainable palm oil. The limitations that often occur are found in a lack of knowledge about soil, fertilizer and nutrient requirements. A

---

<sup>1</sup> 1 ha = 6,25 rai



second limitation is the present professional farm management such as keeping records, clear procedures, improvement and training and the management of labour and transportation. Furthermore there is limited financing which leads to low quality of the seedlings used and an insufficient amount of fertilization. Also, because it is a sellers' market and there is no quality pricing, there is little incentive for quality produce (Virakul, 2011).

Another difference between the countries is that Indonesia and Malaysia export their produced palm oil, while Thailand directs its production to domestic consumption and export permits for biodiesel are not issued by the government (Mukherjee & Sovacool, 2014). Even though the amount of palm oil that is exported is quite low, the export of chemical and food products that contain palm oil is a lot higher and leads to more multi-national corporations that are currently operating in Thailand (Virakul, 2011).

Even though the production of palm oil creates many opportunities for countries in Southeast Asia, it is not without negative environmental and socio-economic impacts. Environmental concerns consist of deforestation, loss in biodiversity, wildlife and ecosystems, soil erosion, impacts on climate change, use of pesticides and pollution caused by production, transport and processing. Socio-economic concerns are the livelihoods of indigenous peoples, social conflicts on access and ownership and the marginalisation of small-holders when it comes to innovations in production and management of oil palm (Oosterveer, 2014). These impacts will be further discussed in paragraph 1.3.

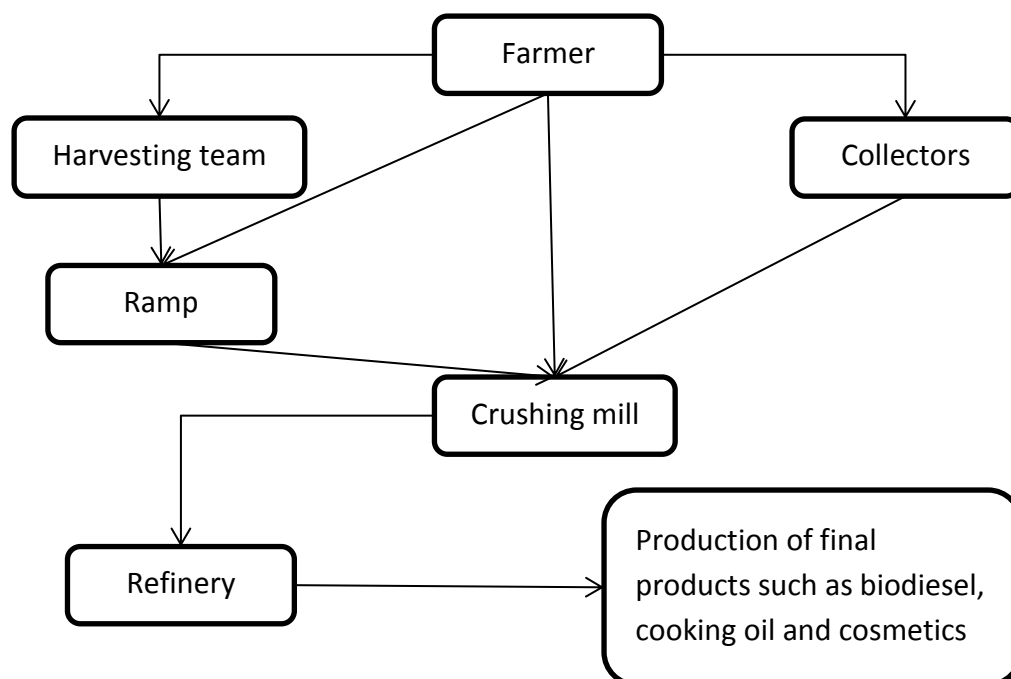
## 1.2 THE PROCESS

The production process of palm oil starts with the cultivation of the oil palm. The oil palms are grown at a nursery, which is a process that takes about 12-13 months, and then planted in the field. What is needed as input for this phase of production are farmable land, seeds, water, herbicides and fertilizer. Because the harvest of the fruits is done manually there are few machines needed for this stage. The products of this phase will be the fresh fruit bunches (FFBs) that are used in the next production stage. The fruits of the oil palm start growing after 2.5-3 years and these are ready for harvest after a total of five years. The lifespan of an oil palm is over 30 years, but because the height of the tree gets too inconvenient, the tree is often replanted after 25 years. Besides the production of FFB there are also the emissions produced by the machines used for transport, fertilizers and herbicides (Silalertruksa et al, 2012; Silalertruksa & Gheewala, 2012).

What is characteristic for Thailand and different compared to the supply chains from Malaysia and Indonesia is that the FFB produced by independent smallholders, smallholder groups or mini estates is collected by middlemen that consist of collectors and ramps. These

actors bring it to stand-alone mills or mills with plantations, where the following stage takes place<sup>1</sup>(Virakul, 2011). This stage in the production process is the production of crude palm oil (CPO). The FFB is loaded into the mill and sterilized. The empty fruit bunches (EFB) are separated from the FFB and are often used for mulching in plantation, but this can also be used as a fuel or for power generation together with palm oil mill effluent (POME). This is wastewater that comes from the palm fruit itself and water that is added during the process within the mill. POME has major environmental aspects and it is therefore important that it is treated with sustainable measures. After this separation the CPO is extracted from oil mash and separated from the decanter cake. Then the nut and the fibre are separated; the latter is used to produce electricity and steam for the palm oil mill itself. Lastly, the nuts are cracked and the shells and kernels are separated. From the kernels palm kernel oil (PKO) and palm kernel extract (PKE) are produced and the shells are partly used to fuel the boilers (Silalertruksa & Gheewala, 2012).

From the 2.250 thousand metric tons palm oil produced per year (IndexMundi, 2014), up to 45% of the produced CPO in Thailand is then transported to refineries that produce refined palm oil which is used for the production of edible and non-edible products. 35% of the produced CPO is used for the direct production of biodiesel. Around 20% of the CPO is exported (Mallamphut, 2014).



**Figure 1: Oil palm supply chain**

### 1.3 PALM OIL POLICIES IN THAILAND

As said before, a substantial part of the palm oil that is currently produced in Thailand is used for its own domestic consumption (Mukherjee & Sovacool, 2014). This differs Thai policies on palm oil from the policies that are found in other countries with a significant amount of palm oil production such as Malaysia and Indonesia, who produce for the international market: Around 66.5% of Indonesia's palm oil production (total production = 33.500 thousand metric tons) is exported while almost 87% of the Malaysian palm oil production (total production = 20.350 thousand metric tons) is exported (IndexMundi, 2014). The high amount of palm oil production used for domestic consumption in Thailand is mainly caused by the Thai policies on biofuels and palm oil production.

The Thai restrictions on export can however have a negative effect on the sustainability of palm oil: In peak season the production increases and the storage tanks will reach its maximum amount, which causes factories to close down for the period because they have no storage space left. The closing down of the factories causes unemployment for the factory workers and the farmers who do not have an actor to sell their produce to. Eventually this can lead to national shortages of oil palm. This does not only affect energy security, but also food security as the prices for cooking oil will probably also rise. Furthermore, even though India and China are two major importers of palm oil (IndexMundi, 2015), the market for sustainable palm oil is in Europe and restrictions on exports will have a negative effect on sustainability because there is almost no market for sustainable palm oil in Thailand itself<sup>2</sup>.

In the last decade, palm oil biodiesel has become increasingly more important in Thailand because of several initiatives that have been implemented by the Thai government. Its aim is to improve energy security while increasing opportunities for employment and promoting rural development. The Thai government aims on supply as well as on the demand side for palm oil (Mukherjee & Sovacool, 2014). In November 2011 a revised Alternative Energy Development Plan (AEDP) was adopted by the National Energy Policy Council which entails a strategy that focuses on increasing the domestic use of renewable energy so that 25 percent of fossil fuel use can be replaced by alternative energy by 2021 (Wianwiwat & Asafu-Adjaye, 2013). By adopting the AEDP, Thailand also wants to become less dependent on energy import. The modes of alternative energy that are focused upon are 'new energy', solar, wind, hydropower plant, bioenergy and biofuel. In order to achieve this goal of a growing demand, the supply also needs to grow and the Thai government supports this by foreseeing an increase in palm oil plantation area (Dallinger et al, 2013). The supply-side of palm oil has been encouraged by incentives like subsidised crop prices and extended low-interest loans in order to target all actors within the supply-chain. By implementing these policies, Thailand expects its petroleum import bill to be reduced with around \$675 million every year. In order to achieve the goal of a larger palm oil biodiesel production, the Thai government has

adopted a three-part plan in 2005 which mainly involves the expansion of oil-palm plantations over the next ten years (Mukherjee & Sovacool, 2014). It is important however, that the government keeps a focus on food security when producing biodiesel. When low yields occur the government should lower the biodiesel blends instead of keep manufacturing biodiesel (B100), as this leads to shortages and a rise in the oil palm price <sup>1</sup>.

The government also tries to support oil palm farmers by reducing their costs through different mechanisms. The first one is to introduce fertiliser that is more suitable for the area and which decreases the amount of fertiliser that is needed. Second they want to increase yield by introducing technologies and decreasing the amount of plantations with old palms (>20 years), as they have lower yield than younger trees. Furthermore they want to increase the quality of the FFB by showing farmers when the right harvesting time is <sup>3</sup>.

Oil palms are mainly grown in the south of Thailand, which holds more than 70% of the total oil palm plantations. The three southern provinces that have the largest concentration of plantations are Krabi, Chumporn and Surratthani (Pleanjai & Gheewala, 2009). One of the characteristics is that the government does not want to expand the total area of oil palm plantations by increasing its agricultural area, but it only wants to expand on previous crop lands. Thailand is currently trying to more than double the area of oil palm plantations from 3.500.000 rai to 7.500.000 rai. This expansion will be done by converting primarily rubber and rice plantations in Krabi. In order to get this result they want to reduce the support for rubber and rice production while increasing support for oil palm cultivation. This would give these farmers an incentive to start growing oil palms<sup>234</sup>.

In order to successfully implement sustainable standards of initiatives into Thai palm oil production it is important that these policies are taken into account and that there is a focus on the following:

- It is important to adjust the standard to the Thai situation but also to make it understandable for the farmers, because many farmers in Thailand are only able to communicate in Thai and do not always understand what contracts entail because of the difficult language that is used. This can take some time in order to get to a well translated standard<sup>4</sup> (Rist et al, 2010).
- The Thai palm oil supply chain differs from those in other countries, which is mainly due to the presence of ramps and middlemen who have great control over the sustainability of the supply chain<sup>1</sup>.
- The lack of awareness and education among farmers on what sustainable palm oil production exactly means<sup>5</sup> (Rist et al, 2010).
- Because there are many smallholders in Thailand, it is important that it is easy for them to organise themselves into groups in order get certified as a farmer group and

in that way also reduce costs. This also makes it easier for the farmer to enhance their sustainability<sup>1</sup>.

These aspects will be taken into account in the paragraphs on the implementation of the sustainability initiatives that can be found in chapter 3.

#### 1.4 IMPACTS OF PALM OIL PRODUCTION

Because of the rapid expansion of palm oil production, there are many concerns about its socio-economic and environmental effects (Oosterveer, 2014). This paragraph gives an overview of the different impacts the production of palm oil has on the global socio-economic and environmental sustainability. It has to be taken into account, however, that do not all apply to the palm oil production processes in Thailand.

##### 1.4.1 SOCIO-ECONOMIC IMPACTS

One of the socio-economic impacts palm oil production has is its direct negative effect on food security for rural and indigenous people, which occurs when the lands they depend on for their food and livelihood needs are transformed into palm oil plantations for large corporations. This is on top of the indirect negative impact on food security that is caused by the diversion of palm oil from food to bio-fuel, also known as the ‘food versus fuel’ debate. According to Kochaphum et al (2014) there is evidence that the use of palm oil for biodiesel production has a greater negative socio-economic impact when it increases. Through land-grabbing governments use their authority to convert land that is used by rural or indigenous communities to land that can be used for oil palm cultivation by private corporations. As a consequence these communities lose their right to land without proper compensation or consultation and while there is also little attention for the environmental consequences. These trends cause land conflicts in Southeast Asia, especially in those countries where palm oil plantations are rapidly expanding (Nesadurai, 2013). This problem of land-grabbing is not apparent in Thailand as it is in other palm oil producing countries (Mukherjee & Sovacool, 2014).

Another socio-economic problem that is given is that the yield of oil palm smallholders is much lower than the yield on large plantations owned by private and government corporations. An answer to this problem could be to distribute knowledge and technology to these smallholders in order for them to increase their yield (Mukherjee & Sovacool, 2014). The socio-economic conditions of rural communities can also be affected by the production of palm oil in positive ways. It can benefit rural communities through increased employment, the improvement of infrastructure, increases in land value and more income from smallholder cultivation (German et al, 2011). For smallholders to realise such benefits it is important that they organise themselves in smallholder cooperatives, because in this way

their position in the price and contractual negotiation processes improves (Rist et al, 2010). Oil palm farmers in Southeast Asia receive around a seven times greater net income than farmers who only maintain their livelihood through other kinds of farming, and oil palm farmers thereby also receive a better opportunity to improve their livelihoods. The problem with all these benefits however, is that they may strongly vary between different locations. Another characteristic that may affect the benefits of smallholders is whether they function independently or if they share production risks with other sectors, such as the private and the government sector. Functioning independently gives them more autonomy, which they lose substantially when they choose to cooperate with others. However, this cooperation makes them more resilient to oil palm price fluctuations and gives them better access to international markets (Mukherjee & Sovacool, 2014). What also needs to be taken into account regarding socio-economic impacts is the need for fair contracts or agreements between different actors. From a study in Indonesia it can be concluded that a large proportion of smallholders often does not understand the contract they signed with the corporations, and frequently they rely on verbal agreements, which makes them vulnerable for economic insecurity (Rist et al, 2010).

---

#### 1.4.2 ENVIRONMENTAL IMPACTS

One of the major environmental impacts of agriculture in general is that it contributes to tropical deforestation with many devastating consequences for the environmental sustainability. Because palm oil plantations are increasingly expanding, it can also be seen as the most increasing direct cause of deforestation (Koh & Wilcove, 2008). Deforestation by palm oil production can be caused in four different ways that are often intertwined. The first is direct deforestation by clearing forests for the expansion of oil palm plantations. Second is the use of logging of fire to replace previously degraded forests. Third is the establishment of combined economic enterprises in order to offset the plantation expansion costs. Last is indirect deforestation by improving transportation through forests and relocating other crops into the forests (Fitzherbert et al, 2008). Currently the Thai government implements a policy that at least counters direct deforestation by oil palm cultivation<sup>4</sup>. A consequence of deforestation is often land degradation that is frequently also related to desertification. Land degradation takes place when losses occur in the primary productivity in bio-reproductive systems, which in the case of agriculture means that certain crops cannot reproduce themselves any longer on that specific area (Smit et al, 2013). Currently already 33% of agricultural land in Thailand is affected by soil erosion and depletion (Dallinger et al, 2013). Oil palm cultivation however, can be a solution as oil palm plantations can be expanded to these degraded areas. In order for this to be done in a sustainable way it is important that strict land-management criteria are set up in order to prevent further deforestation (Monteiro de Carvalho, 2013).



Deforestation through the expansion of oil palm plantations also has negative effect on biodiversity. Some scholars argue that the expansion of oil palm plantations is the greatest direct threat to existence of species and ecologies and the species richness in Southeast Asia, as these are much lower on these plantations than they are in primary or secondary forests. On oil palm plantation very few forest-dwelling species can be found; when a primary forest is converted to a palm oil plantation it loses 77% of its specie richness. The conversion from logged forests to oil palm plantation causes a loss of 73% in the number of species. This suggests that oil palm plantations are no adequate habitats for many species (Koh & Wilcove, 2008; Savilaasko et al, 2014; Wilcove & Koh, 2010).

The conversion of land for oil palm for biodiesel plantations may substantially contribute to the emission of greenhouse gasses (GHGs), especially when these plantations are expanded in areas that are actually not suitable for oil palm cultivation. Several studies show that Thailand has a high potential in reducing emissions by using bioenergy instead of fossil fuels. But in order for palm oil to be environmentally sustainable regarding the production of biofuels it is important that policy measures are taken in order to expand oil palm farms further on land that is unsuitable for other kinds of farming. Only then the GHG benefits will weigh up to the costs of oil palm biodiesel production (Dallinger et al, 2013; Silalertruksa & Gheewala, 2012). Another concern with palm oil production that has to be taken into account is the use of pesticides and the possibility of pollution through the production, transport and processing of the oil palm fruits when this is done in an unsustainable way (Oosterveer, 2014).

---

<sup>1</sup> Author's meeting on January 21, 2015 with Somjai Npueng, expert on Thai oil palm production

<sup>2</sup> Author's meeting on January 14, 2015 with Mr. John Clendon, Managing Director of Univanic Palm oil

<sup>3</sup> Author's interview on January 14, 2015 with Mr. Suban, employee of the Agricultural office in Krabi

<sup>4</sup> Author's interview on December 18, 2014 with Dr. Prakarn Veerakul of the Thai Department of Agriculture

<sup>5</sup> Author's interviews on January 15, 2015 with RSPO-complying farmers

## 2. THE RESEARCH

### 2.1 STATEMENT OF THE PROBLEM

The production of palm oil has been rapidly increasing and this does not happen without consequences for environmental and socio-economic sustainability. Thailand is now the third largest producer of palm oil and will expand its production even further. This causes environmental and socio-economic concerns that need to be dealt with in order to prevent catastrophic situations. An answer that is often given to this problem is certification by the Roundtable of Sustainable Palm Oil (RSPO). However there are also many other sustainability initiatives that can be implemented in Thailand. This study investigates four of those initiatives that can be used for palm oil production or already have been implemented but may need to be expanded.

### 2.2 RESEARCH QUESTIONS

The main objective of this study was to investigate how to mitigate negative environmental and socio-economic impacts of palm oil production in Thailand by researching four different sustainability initiatives; IFOAM, Rainforest Alliance, International Sustainability and Carbon Certification (ISCC) and Good Agriculture Practices (GAP). This will be compared with how the RSPO scores on sustainability and implementation in order to see whether it is useful to implement these initiatives as an alternative to the already implemented RSPO. These initiatives have been reviewed on their performance in sustainability and implementation and how they can contribute to making palm oil production more sustainable. Therefore, the main research question for this thesis is:

*To what extent do sustainability initiatives have the ability to contribute to the reduction of negative socio-economic and environmental impacts in Thailand that are caused by palm oil production based on their performance in implementation and sustainability?*

The following questions were used in order to get a clear view on the background of the research:

1. What are the Thai policies concerning palm oil production?
2. What are the main environmental and socio-economic implications of palm oil production in Thailand?

Sub-research questions concerning the RSPO and the four alternative sustainability initiatives (IFOAM, Rainforest Alliance, ISCC and GAP):

1. What does the initiative entail?
2. How can it be implemented in palm oil production in Thailand?
3. How will it reduce the main environmental and socio-economic impacts of palm oil production? In other words: How sustainable is the initiative?

## 2.3 SIGNIFICANCE

This study is of significance because 1) the growing world population causes the demand for palm oil also to grow because it is used in the production of many products, 2) it becomes increasingly important to make use of renewable energy resources such as biofuels from palm oil and 3) palm oil needs to be produced and processed in a sustainable way. It is therefore important that the most suitable sustainability initiative is used for the expanding production of palm oil.

This study is part of larger research for environmentally sustainable and equitable palm oil (SUSPENSE project) that is done by the Interdisciplinary Research and Education Fund (INREF) of Wageningen University whose aim is promoting sustainable pathways by exploring connections between flows, networks and systems at multiple levels.

## 2.4 THEORETICAL FRAMEWORK

The theoretical framework around this research involves three different concepts; sustainable development, institutions and palm oil value chains. The overall theory that is used is the theory of flows and networks. The concept of sustainable development describes the criteria that are used for the assessment of the four different sustainability initiatives and can thus be linked to the third sub-research question. The concept of institutions defines which actors and aspects are important for this research and presents how social practices are defined through them. Palm oil value chains are taken into account because it is important not just to look at producers, but also to focus on processors and consumers and how these are connected through processes and flows. That is also why the overall theoretical framework is embedded in the theory of flows and networks. How these concepts came together is made visible in paragraph 2.5 on the methodology of this research.

---

### 2.4.1 SUSTAINABLE DEVELOPMENT

In 1987 the World Commission on Environment and Development (WCED) was formed in order to propose long-term strategies for sustainable development. Their definition of sustainable development was “meeting the needs of the present generation without compromising the ability of future generations to meet their own needs” (Quental et al, 2011, p.20) and became popular after the Brundtland Commission’s *Our Common Future* was published. Since then the issues that are concerned with sustainable development have increased and changed from broad definitions to several specific ones. Criteria that are used in this research in order to review sustainable development performance of the four

initiatives are defined by Quental et al (2011) as seven main policy principles and are not only based on the three former social, environmental and economic principles:

- Sustaining natural capital
- Sustaining life support systems
- Minimizing human impact
- Developing human capital
- Developing social capital
- Developing economy
- Developing institutions

For an initiative to be called sustainable is to take in account all of the above principles and not just score high in one of them while neglecting another as if there would be a trade-off between them. However, some aspects are more relevant for sustainable palm oil production than others and thus of greater importance. Another aspect of sustainability should be that it is found along the whole value chain, thus also in processing palm oil. In paragraph 2.5 on the methodology the application of sustainable development will be further elaborated.

---

#### 2.4.2 INSTITUTIONS

Institutions can be defined as “constellations of rules, decision-making procedures, and programs that define social practices, assign roles to the participants in such practices, and govern the interactions among the occupants of those roles” (Young et al, 1999, p.3). These rules and roles can be formal in the sense of governmental policies, but can also be informal such as social engagement patterns which in their turn can be hidden or visible. The conservative characteristic of institutions is both its weakness and its strength and institutions are therefore often robust and resistant to change. Often institutions are called organisations, but these are not synonyms, “as institutions also refer to underlying ideological values and norms” (Gupta et al, 2010, p. 460). Social practices are shaped by institutions, but institutions are also constituted and reproduced through these social practices. Over time institutions change and can be changed, but this is difficult and is done by the same agency that sustains the reproduction of the structures (Gupta et al, 2010).

Examples of formal institutions that are involved in palm oil production in Thailand are governmental bodies and its laws and policies on local, national and global level, the RSPO, NGOs, corporations, producers and processors. Informal institutions are for instance the relations between producers, processors and consumers, the ways of farming and hierarchy within society.

#### 2.4.3 FLOWS AND NETWORKS OF PALM OIL

In this society time and space are restructured through networks consisting out of new ways of transportation, information and communication technologies. In order to explain these trends of a globalising world with integrated networks and global fluids, we need to use the image of flows and uncertainty, rather than images of order and stability. Castells defines this as the *space of flows*; global flows are becoming increasingly more important than physical space. The global complexity prevents individuals from having direct influence on the direction and structuration of the movements of flows, but it also allows interventions to spur along the flows, instead of only through governments. This also means that the global and the local are bound together through a dynamic and irreversible relationship (Oosterveer, 2009).

Material and immaterial (for instance social) flows increasingly cross borders, making governance more and more transboundary and sovereign states less autonomous. This means that governance is founded through territorially and also non-territorially-based networks. An environmental issue such as the production of palm oil that has effect on biodiversity needs to be managed in a global way and also needs international organisations that deal with the problem (Bulkeley, 2005).

Sustainability certification schemes have the objective to mitigate negative ecological and socio-economic impacts in the value chain. For sustainability standard setting to be successful there is need for coverage of impacts from the whole value chain, but this is limited when it comes to the palm oil certification by the RSPO. These are the direct impacts of the value chain, but also indirect effects need to be taken into account. These are however very difficult to assess because these are more complex woven into cause-and-effect chains (von Geibler, 2013).

This theory is used as a theoretical framework for this study on palm oil production as it focuses on the linkages between social, material and conceptual dimensions of flows. It also allows one to better understand the current dynamics in environmental governance because it incorporates the growing social interconnectedness of environmental problems and the links between the global and the local. Lastly it also takes into account that the interactions

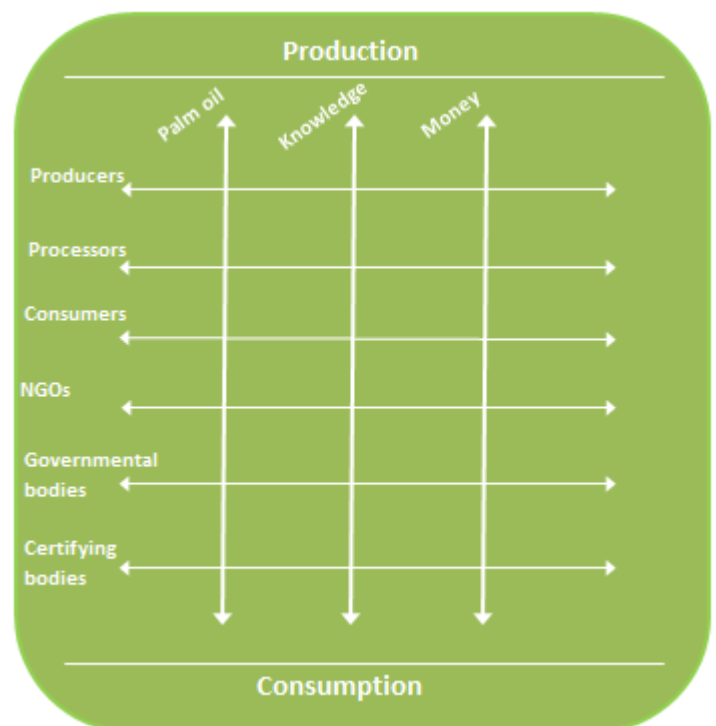


Figure 2: Flows and networks in palm oil production

and roles of actors are continuously evolving (Oosterveer, 2009). These aspects are important when looking for sustainable pathways for palm oil production because the focus for this issue needs to be on environmental, social and economic dimensions, not just one of these and the theory of flows and networks entails all of them. In figure 2 a map is drawn that shows the flow between palm oil production and consumption and the networks that are integrated within these flows. The vertical line represents the flows between production and consumption that goes both ways. The horizontal lines represent the various networks that are present within these flows. However, it has to be taken into account that Thailand primarily produces for the domestic market<sup>1</sup> and that flows of palm oil are nationally, in contrast with money and knowledge that are global flows through international support and monetary investments. Because even though palm oil on itself is not a global flow, products that contain palm oil are.

---

#### 2.4.4 OPERATIONALISATION OF THE THEORETICAL FRAMEWORK

The theories used come together through the operationalisation of the framework. First of all the sustainability initiatives are scored through the use of the principles of Quental et al (2011), which can be seen in paragraph 2.5.3. These principles are scored not only within one phase of the supply chain, but the finale scorecard incorporates all three phases of production, processing and consumption. This can be found through the theory of flows and networks. The concept of institutions is operationalised as a base for the interviews because it was important to take into account the formal and informal relations between the actors in the supply chain, but also to take into account how the different initiatives and the government operate in order to analyse the sustainability of their measures. This concept is therefore important when looking at the results and concluding on this sustainability issue.

### 2.5 METHODOLOGY

---

#### 2.5.1 LITERATURE STUDY

A literature study was conducted in order to get a good view on the background of palm oil production, policies in Thailand and also on the four initiatives. Because it was not possible to conduct an interview with IFOAM and Rainforest Alliance; their analyses are done with the use of literature that was available.

---

#### 2.5.2 INTERVIEWS

In order to get a more into depth view on palm oil production in Thailand and also to get more information on the ISCC and GAP, open interviews were conducted during this



research. In Thailand a main focus is on RSPO and GAP when it comes to certifying palm oil. In total 19 farmers have been interviewed of which five were non-oil palm farmers, five were oil palm farmers complying with a certain standard and nine were oil palm farmers who did not comply with a standard. The non-oil palm farmers were interviewed in order to get a better view on whether farmers want to convert their land to oil palm plantations and what the incentives are for doing or not doing so. Furthermore five community members were interviewed. All these actors were randomly selected within Krabi province and in communities where oil palm cultivation plays a large role.

For the processing phase three non-certified oil palm mills were interviewed and four mills that were certified. These four certified mills were SPO Agroindustry, Unity Palm Oil, Univanich Palm Oil PCL and Patum Vegetable Oil Co. These oil palm mills were selected because these are the only ones that were RSPO certified. The non-certified oil palm mills were also selected randomly in Krabi province.

An interview with officers of the Ministry of Agriculture provided information on Thai palm oil policies and also some information on GAP. Further information on GAP was gathered through an interview with the GAP office in Suratthani and an interview with an officer of the local agriculture office in Krabi, which also contributed to a better view on local policies on palm oil. Lastly there was email correspondence with Dr. Tanong Aewsiri on Good Manufacturing Practices (GMP) and email correspondence with Benno Tubbesing on the ISCC.

An overview of the interviews that were conducted and which questions were asked during these interviews can be found in the Annexes.

---

### 2.5.3 DATA PROCESSING

In order to draw the right conclusions from the collected data, a scheme was developed on how to process and evaluate this data and a multi criteria analysis is used. It is difficult to give an objective score on overall sustainability to an initiative and that is why this research does not only use the seven principles that are mentioned in the previous section; it also divides the principles into different aspects. Table 1 on the next page shows the seven sustainability principles of Quental et al (2011) and their aspects that are used for the scoring on the principle by an initiative.

All of these aspects are taken into account and are scored using percentages as described in the following paragraph. This was done for every initiative and the score depends on how they contribute to that certain aspect. Every principle was also given a different weight, because even though all principles need to be taken into account, some are more important

for overall sustainability than other principles. These weights are given from the different perspectives of producers, processors and consumers. In the end a scorecard was made in order to give a clear overview of the different initiatives. This was done for different stages along the supply chain, so for production, processing and consumption. The final scorecard can be found in chapter 4.

**Table 1: Overview principles and aspects of sustainability**

Conventional principles	Principles (Quental et al, 2011)	Aspects
Environmental	Sustaining natural capital	<ol style="list-style-type: none"> <li>1) Biodiversity</li> <li>2) Water</li> <li>3) Atmosphere</li> <li>4) Land</li> </ol>
	Sustaining life support systems	<ol style="list-style-type: none"> <li>1) Resource reproduction</li> <li>2) Identify and sustain ecosystem components</li> <li>3) Identify and sustain existing food chain</li> </ol>
	Minimizing human impacts	<ol style="list-style-type: none"> <li>1) Reduce GHG emissions</li> <li>2) Counter deforestation</li> <li>3) Avoid pollution</li> </ol>
Social	Developing human capital	<ol style="list-style-type: none"> <li>1) Human rights</li> <li>2) Equity</li> <li>3) Workers health</li> <li>4) Education</li> <li>5) Gender</li> </ol>
	Developing social capital	<ol style="list-style-type: none"> <li>1) Community</li> <li>2) Protecting culture</li> <li>3) Build networks</li> </ol>
Economic	Developing economy	<ol style="list-style-type: none"> <li>1) Develop agriculture</li> <li>2) Develop employment</li> <li>3) Develop technology</li> <li>4) Develop economy / markets</li> </ol>
	Developing institutions	<ol style="list-style-type: none"> <li>1) Develop governance</li> <li>2) Promote transparency</li> <li>3) Promote public participation</li> <li>4) Promote international cooperation</li> </ol>

Because it is not possible to evaluate the level of consumption through these principles, there are different aspects taken into account that have been scored in order to form a final conclusion. These aspects of consumption are divided as follows:

- Creating awareness for consumers
- Educating consumers
- Actively engaging consumers

These aspects are primarily based on the way the initiatives use labelling for their products in order to inform the consumer about the sustainability of it. This is because successful certification networks can through markets contribute to production and consumption patterns that are more sustainable (Schrader & Thøgersen, 2011).

The scoring of the initiatives is done by using the calculations as presented in the following paragraphs.

#### 2.5.3.1 CALCULATION OF SCORE: PRINCIPLE PER STAGE OF THE SUPPLY CHAIN

To estimate the score on the different sustainability principles, these were divided in a number of different aspects as described in the previous paragraph. These different aspects can then be scored in the following order:

- 100% - Full integration of the aspect
- 75% - Lacks one point
- 50% - Lacks more than one point
- 25% - Only integrates one point of the aspect
- 0% - Does not integrate the aspect at all

These percentages were then added together and divided by the amount of aspects of the principle, from which the following calculation flows:

$$\sum \frac{SA1 + SA2 + [...] + SAn}{\text{Number of aspects per principle}}$$

*SA = Score obtained per aspect*

#### 2.5.3.2 CALCULATION OF SCORE: OVERALL SCORE PER STAGE OF THE SUPPLY CHAIN

To calculate the overall score as a percentage the scores of all the separate principles are added together, multiplied by its weight and then divided by seven, as this is the amount of sustainability principles. This gives an overall score for the initiative on producing and processing level. Leading to the following calculation:

$$\sum \frac{w1SP1 + w2SP2 + [..] + w7SP7}{7}$$

*SP = Score obtained per principle*

*w = Weight of the principle*

The score for the consumer level will be calculated by the following calculation:

$$\sum \frac{SP1 + SP2 + SP3}{3}$$

*SP = Score obtained per principle*

#### 2.5.3.3 CALCULATION OF SCORE: FINAL SCORE PER INITIATIVE

The final score per initiative is calculated by using the following calculation wherein all previous calculations come together:

$$\sum \frac{Score\ Producing + Score\ Processing + Score\ Consuming}{3}$$

#### 2.5.3.4 IMPLEMENTATION

In order to conclude on how the initiatives might be implemented in Thai palm oil production, there was also a focus on analysing the costs of implementation. However, this analysis was not possible for all initiatives, but the possibility for implementation was evaluated in the best way that was possible in order to get a better view on this issue.

#### 2.5.3.5 TRANSPARENCY

During the scoring of the initiatives it was difficult to translate normative information into the objectivity of numbers. The scoring has therefore occurred as transparent as possible and is thoroughly described in this thesis. The final scoring was done by the author as a subjective actor in the process, however, arguments by experts on the subject were taken into account and where needed, advice was asked on the scoring.

---

<sup>1</sup> Author's interview on December 18, 2014 with Dr. Prakarn Veerakul of the Thai Department of Agriculture

### 3. ANALYSIS OF THE SUSTAINABILITY INITIATIVES

#### 3.1 THE RSPO

The Roundtable of Sustainable Palm Oil (RSPO) was created by the WWF together with other organisations in 2001 and was formally established on April 8, 2004. Its Certification System was adopted and launched in 2007. Nowadays the organisation has more than 1400 members from more than 70 countries, up to 2.57 million hectares of certified production area and produces up to 11.2 million MT per year, accounting for 16% of the global palm oil production. The countries that are the largest RSPO-certified palm oil producers are Malaysia and Indonesia, who together account for more than 90% of the RSPO certified palm oil production (RSPO, 2014a; RSPO, 2014b).

The organisation was established because there was a pressing and urgent demand for palm oil that was sustainably produced. With 'sustainable' the RSPO means reducing deforestation, preserving biodiversity and respecting rural communities and their livelihoods in oil-producing countries. The vision of the RSPO is to transform markets in such a way that sustainable palm oil becomes the norm. They want to (1) advance different aspects of sustainable palm oil products, (2) review credible global standards for sustainable palm oil along the whole supply chain, (3) monitor and evaluate the impacts of a sustainable palm oil market and (4) make sure that every stakeholder throughout the supply chain is engaged and committed to this goal, including governments and consumers (RSPO, 2012). The RSPO aims to stimulate the use and cultivation of sustainable palm oil by getting actors along the value chain to cooperate and starting dialogues among stakeholders, which are social and environmental organisations (Geibler, 2013). Oil palm growers need to commit to eight principles in order to get RSPO certified which can be found further in this paragraph. According to the RSPO these commitments also lead to benefits that are included in RSPO-membership. Examples are reputations, supply chain representation, market access, influence on RSPO policies and decisions, access to best practices and it also enhance the value of palm oil (RSPO, 2012).

Even though the RSPO has set these standards, the production of palm oil is still often seen as unsustainable and producers are difficult to persuade to commit to RSPO-standards (Nikoloyuk et al, 2010). The certification by the RSPO shows many different limitations that cause these problems. The first is the lack of direct integration of NGOs, small-scale farmers and local stakeholders. The latter has often to do with the fact that complying with RSPO-standards is too expensive for them and the premium they get from the corporations too low, of which the consequence is that the benefits do not outweigh the costs. Furthermore the standards set by the RSPO can be too unclear for the farmers. Some critique is that the RSPO does not support small-scale farmers enough and this could give a biased view on palm



oil production within the RSPO and eventually this can have a negative effect on the RSPO's mission to promote sustainability (Geibler, 2013; Laurance et al, 2010; Ruysschaert & Salles, 2014). Another limitation to the RSPO is that the principles they have set are vague and changed in order to comply with the demands set by large corporations, which makes these principles less clear and can thus be interpreted by the members in different ways (Geibler, 2013; Ruysschaert & Salles, 2014). This leads to a third limitation which is that noncompliance by RSPO members has occurred more than once as was shown through investigations by NGOs like Greenpeace (Laurance et al, 2010). Also oil palm plantations are able to get sub-areas certified which means that they are able to grow RSPO-certified palm oil on one part of their farm, while they grow conventional and unsustainable palm oil on another part of the farm. This leads to certifying plantations that do not solely grow sustainable palm oil (Geibler, 2013). An overall limitation of the RSPO is that it lacks in legitimacy by many NGOs, which has a negative consequence that the organisation does not gain broader societal acceptance and consensus. This is mainly because the RSPO wants to get a consensus with all its members and thus has to make concessions on its standards, often by making them less strict. This leads to concessions for their moral justification, which is the basis for obtaining a wider societal acceptance, which they seem to lack (Schouten & Glasbergen, 2011).

In Thailand less than 1000 oil palm farmers are certified, which accounts for 0.5% of the total amount of Thai oil palm farmers. Currently it is seen as an important certifying scheme for sustainable palm oil production<sup>1</sup>. Here the RSPO often works with a 'Book & Claim'-system and GreenPalm certificates, which generates extra income per rai<sup>ii</sup> for the farmer<sup>2</sup>. This "supply chain model provides tradable certificates for RSPO certified palm oil to the palm oil supply base" (RSPO, 2008, p.1) and this works as follows: The RSPO-certified oil palm mill gets an amount of certificates that is equivalent to the amount of sustainable CPO it produces. These certificates can be bought by an end user of the supply chain that is equivalent to its purchases from the conventional oil palm supply chain, so there is virtual purchase of certified CPO by the end user. The certified mill is then able to sell certified CPO on their current supply chain as if it were conventional CPO (RSPO, 2008). The certified mill then has the opportunity to share the received money with its supplying farmers, which is done by some Thai mills<sup>2</sup>. This way the end user does support the sustainability of the produce. However, from this model can be concluded that the support is only for the production stages of the farming and the crushing and does not take into account the following stages of the production chain including transporters and refineries. Other limitations are the levels of traceability and claim. However, the costs to implement this system are very low and this can be seen as a benefit (RSPO, 2008).

---

<sup>ii</sup> 1 Rai = 0,16 ha

In order to see whether it is feasible to use alternative sustainability initiatives in addition or as substitute for the RSPO, there is need to also evaluate the sustainability of the RSPO. In the following table the principles of the Thai national interpretation of the RSPO are found (RSPO, 2011), which are based on the general RSPO principles and criteria.

**Table 2: Overview of RSPO principles**

<b>Principles</b>	<b>Requirements</b>
1. Commitment to transparency	Oil palm farmers and mills are required to provide adequate information to other stakeholders regarding social, environmental and legal issues concerning the RSPO criteria. These include contracts, land titles, health and safety plan, documents on Integrated Pest Management (IPM) and social and environmental impact assessments.
2. Compliance with applicable laws and regulations	Local, national and indorsed international laws and regulations are taken into account. Land rights and titles can be demonstrated and are not legitimately contested by local communities. The use of land for the cultivation of oil palms does not impair legal or customary rights of other users without their free, prior and informed consent.
3. Commitment to long-term economic and financial viability	There has to be an aim to achieve economic and financial viability in the long-term which is maintained through an implemented management plan.
4. Use of appropriate best practices by growers and millers	The procedures are documented in an appropriate way and consistently implemented and monitored. Soil fertility needs to be maintained and improved where possible in order to ensure optimal and sustained yield. There needs to be a focus on the minimisation and control of erosion and degradation of soils. The quality and availability of ground and surface water needs to be maintained. Through IPM techniques diseases, pests, weeds and invasive species are effectively managed. The use of agrochemicals cannot endanger health or the environment in any way. The health and safety plan is documented, effectively communicated and implemented and all actors involved are trained appropriately.
5. Environmental responsibility and conservation of natural resources and biodiversity	All processes that have an impact on the environment are identified, including replanting, and plans need to made to mitigate negative impacts and in order to enhance continues improvement the positive impacts made need to be promoted, implemented and monitored. High Conservation Value (HCV) habitats need to be identified together with the status of present rare, threatened or endangered species that can be affected by the oil palm plantation and their conservation needs to be taken into account. Waste needs to be reduced, re-used and recycled

	<p>and disposed of in a socially and environmentally responsible manner. Energy use needs to be as efficient as possible and the use of renewable energy needs to be maximised. Use of fire for the preparation of land or waste disposal must be avoided except in specific situations as defined by ASEAN guidelines or other regional best practices. The reduction of pollution and emissions, including GHGs, need to be developed, implemented and monitored.</p>
<p>6. Responsible consideration of employees and of individuals and communities affected by growers and mills</p>	<p>Social impacts caused by the processes need to be identified in a participatory way. Negative impacts need to be mitigated and the positive impacts that are made need to be implemented and monitored in order to improve sustainability. The methods of communication and consultation between the actors involved are open and transparent. Complaints and grievances are dealt with in a mutually agreed and documented way and is accepted and implemented by all parties involved. Indigenous people, local communities and other stakeholders are able to express their view and to negotiate concerning compensation through their own representative institutions and through a system that is well documented. Legal and industry minimum pay and conditions for employees and employees of contractors are met and sufficient for a decent living wage. The rights of the employees need to be respected and they must have the ability to form and join trade unions of their choice. Children may not be exploited and are only allowed to work on family farms, under adult supervision and when it does not interfere with their education. Furthermore they are not allowed to be exposed to dangerous working conditions. Discrimination on the base of personal or group characteristics. There has to be a policy in order to protect women from sexual harassment and violence and to maintain their reproductive rights. Deals with smallholders and other local businesses are fair and transparent. Sustainable development needs to be contributed to where this is possible.</p>
<p>7. Responsible development of new plantings</p>	<p>A social and environmental impact assessment is undertaken before new plantings or operations are established. The results of soil surveys and topographic information are incorporated into the plans and operations. Plantings since November 2005 have not replaced primary forest or any area that is needed in order to maintain or enhance HCVs. Steep terrain and/or marginal and fragile soils are avoided regarding extensive planting. New plantings will not be established on the land of local peoples</p>

	without their consent. Local people are also compensated when land is bought from them or when their rights are relinquished.
8. Commitment to continuous improvement in key areas of activity	Farmers and processors need to monitor and review their activities on a regular basis and they need to develop and implement action plans that demonstrate continuous improvements in key operations.

### 3.1.1 SUSTAINABILITY OF THE RSPO

These principles are evaluated by using different aspects of sustainability of palm oil production. In the following text an overview is given on how the Thai RSPO principles (RSPO, 2011) link to the principles by Quental et al (2011). These principles are also directed on the processing of oil palm, so it can be said that these principles define the sustainability of production as well as processing.

#### *Sustaining natural capital:*

There is a large emphasis on land considering its rights and the way the soil is used, including erosion and degradation. Furthermore the quality and availability of water need to be maintained. One of the principles focuses on the environment and the conservation of biodiversity and natural resources. This principle focuses on the protection of species that are possibly affected by oil palm cultivation. There is no clear mentioning of the effect of the atmosphere, but it does include the reduction of pollution and emissions, including GHGs, which have a great impact on the status of the atmosphere.

#### *Sustaining life support systems:*

The RSPO principles do not focus on the reproduction of resources, but it does focus on the conservation of these natural resources through the use of renewable energy and the way waste is managed. It is not explicitly mentioned that ecosystem components need to be identified and sustained, but it does however emphasise on an impact assessment regarding the impacts oil palm cultivation might have on its environment. There is no focus on existing food chains and how it should be identified and sustained.

#### *Minimising human impacts:*

Through the RSPO principles a focus is put on the minimisation of human impacts in different ways. First of all they emphasise on the avoidance of pollution, which includes the pollution of land, soil and air. Emissions need to be reduced under the RSPO principles, including GHG emissions. For responsible planting November 2005 is taken as a reference point from whereon primary forests and HCV areas are not allowed to be replaced by oil palm plantations.

#### *Developing human capital:*

There is a large emphasis on developing human capital, with first of all a focus on the protection of human rights through providing fair working conditions and wages and the ability to organise themselves in unions. Equity is focused upon through the prohibition of discrimination on the base of personal or group characteristics. An important focus is put on gender and the protection of women rights. Children are allowed to work on a family farm but only when this does not interfere with their education. Education is also touched upon by how oil palm mills are required to educate farmers on sustainable oil palm cultivation in order to get RSPO certified<sup>3</sup>. Health and safety plans need to be documented and effectively implemented and the processes cannot have a negative impact on the health of the employees or the community.

#### *Developing social capital:*

The wider community is first of all protected through compliance with the applicable laws and regulations; these include formal but also customary laws. RSPO certification requires actors to allow communities and indigenous people to express their view and also to be compensated adequately when this is needed. The RSPO principles do not focus on the protection of culture and actors are not asked to contribute to this, but customary laws can be seen as part of culture and these are preserved. Networks are not mentioned within the principles of the RSPO, but the organisation has a large network of itself throughout different countries. Furthermore mills are required to source from RSPO certified farmers and also need to educate and train them, which build the networks between producers and processors.

#### *Developing economy:*

The RSPO principles promote sustainable agriculture by implementing sustainability measures, it does however not emphasise on the development of employment in the wider community. There is also no emphasis on the development of technology, except for the incorporation of appropriate IPM techniques for pest control. Markets are developed through the RSPO principles because, as said before, networks are built between producers and processors as the latter need to source from RSPO sustainable farms. It is however often too expensive for single smallholders too expensive to get themselves certified by the RSPO (Geibler, 2013).

#### *Developing institutions:*

The RSPO is a large international organisation that incorporates many different stakeholders. It can therefore be said that it promotes international cooperation. The many different stakeholders also are a good basis for the development of good governance, but the RSPO is often criticised because of the lack of integration of NGOs, smallholders and local stakeholders (Geibler, 2013). Transparency of the practices is promoted through careful and

thorough documentation of the processes that take place on the farms and in the mills. The RSPO also promotes transparency on their practices as an organisation on itself. People from the wide community are asked and allowed to express their view on the palm oil cultivation practices and through this principle the RSPO also promotes public participation.

RSPO certification also incorporates consumers into the sustainability measures. Since June 2011 the RSPO has an official trademark that can be used for supply chain certified palm oil of which at least 95% of all its palm-derived components is certified by the RSPO and when the actor has been granted with the Trademark License of the RSPO. The RSPO has set up two different kinds of labels that can be used by actors determined by the supply chain they are engaged in. The first label is 'certified' and explains that the product contains certified sustainable palm oil because it is segregated from non-certified palm oil. The second label is 'mixed' and explains that the product contributes to the production of certified sustainable palm oil because its sustainability is based on the mass balance within the production and supply chain (RSPO, 2014c). By using labels on their products, the RSPO creates awareness about sustainable palm oil use. Furthermore, the label refers to the website of the RSPO where consumers can find more information on sustainable production and where RSPO certified products can be found. In this way the RSPO is able to educate consumers. Lastly it encourages consumers to enter the debate on sustainable palm oil and it therefore engages consumers into the process of sustainable palm oil production.

---

### 3.1.2 FURTHER IMPLEMENTATION IN THAI OIL PALM PRODUCTION

As shown before, the RSPO is already implemented into Thai palm oil production, but it is important to investigate the further implementation of the initiative in this process. A first thing that has to be noted is that the RSPO allows smallholder farmers to organise themselves into groups in order to engage in the sustainability process. In 2012 the RSPO set up a Smallholder Support Fund in order to support farmers to comply with the RSPO. This is financed by setting aside 10% of the revenues that are generated by sales and 50% of the annual surplus after tax deduction. In Thailand there are currently four farmers groups that are certified by the RSPO which is a total of 682 smallholders (RSPO, 2015).

Because the RSPO is already specified for Thailand and how palm oil production is certified, it is easier for this initiative to be further implemented in Thai oil palm production than it is for other initiatives. Furthermore the initiative is also promoted through education by the mills<sup>3</sup>, which contributes to an active promotion of the RSPO and its principles. In order for RSPO to grow in Thailand, it should be promoted in wider areas so more people have knowledge about the standards and sustainable oil palm farming and it should be coordinated through a Thai office for the RSPO to make it more effective. One problem with the RSPO that needs to be dealt with, however, is that the supply of RSPO certified



palm oil is higher than its demand; even though the production of RSPO certified palm oil accounts for 15% of the global market share, its sales market share of the global production is only 7% (Potts et al, 2014).

### 3.2 ALTERNATIVE SUSTAINABILITY INITIATIVES

As shown in the paragraph above there are many limitations for the RSPO to be an effective tool in making global palm oil production more sustainable. In this paragraph four different alternative sustainability initiatives will be discussed in order to conclude which initiatives has the ability to contribute to sustainable palm oil production in Thailand. The four initiatives that are reviewed are the International Federation of Organic Agriculture Movements (IFOAM), Rainforest Alliance, ISCC and Good Agricultural Practices (GAP). The first are not yet implemented in Thailand, the GAP is. All four reviews will start with an introduction to the initiative, including a short summary of its principles that are relevant for palm oil production. Then the sustainability of the initiative will be reviewed. Lastly the initiative's possibility to be widely implemented in Thailand will be reviewed. The final scoring of the initiatives can be found in the next chapter containing the results of this research.

#### 3.2.1 INTERNATIONAL FEDERATION OF ORGANIC AGRICULTURE MOVEMENTS (IFOAM)

##### 3.2.1.1 INTRODUCTION

IFOAM is an international umbrella organisation of the global organic movement and unites stakeholders through different sectors and levels. Its vision is a global adoption of systems that are socially, economically and ecologically sound and that is based upon the principles of Organic Agriculture and wants to lead, unite and assist the organic movement in achieving these goals (IFOAM, 2014a). The organisation is engaged in promotion, standard setting and accreditation of organic certifiers worldwide and consists out of around 700 membership organisation worldwide. IFOAM's requirements thus are the base for certification bodies in certifying actors within the supply chain of a commodity. Some of these requirements are also relevant to the production of palm oil such as prohibiting the clearing of primary ecosystems, restriction of land preparation by burning, prevention of soil erosion and water depletion, control of pests and diseases by biological and cultural means and respecting human rights and social justice. IFOAM labelling requires supply chains to be traceable from plantation to the final point of sale. As the current organic market in Europe is expanding, this kind of labelling could offer clear message to customers that is also largely trusted (ProForest, 2003).

In Thailand the only IFOAM accredited certification body is ‘Organic Agriculture Certification Thailand (ACT)’ (IFOAM, 2014b). It is an independent certification organisation that was established by different actors in 1995, which is also recognised by other large certification services. It provides inspection along different stages and aspects of the value chain. The ACT is not only recognised as certifying body (CB) by the IFOAM, but they are also involved in the schemes of the European Union, Canada Organic Regime, the Swiss government and Thailand’s own national organic program (ACT, 2014).

IFOAM bases its certification on four main principles; health, ecology, fairness and care. The principle of health states that the health of people and the health of ecosystems are interlinked and can therefore not be separated. Organic agriculture contributes to enhancing and sustaining this health. The principle of ecology positions that the production needs to be based on the ecological processes in the area. The role of organic agriculture is to guard the balance of this system. The principle of fairness is based upon the notion that fairness should be ensured at all levels and to all actors, making the production and consumption socially and environmentally sound. The principle of care states that responsibility and precaution need to be taken into account when management, development and technology choices are being designed (IFOAM, 2014c).

These principles form the basis for its Common Objectives and Requirements of Organic Standards (COROS). The principles mentioned hereunder are applicable for the production of palm oil (IFOAM, 2014c).

**Table 3: Overview of IFOAM principles**

Principles	Requirements
1. Organic ecosystems	This principle is based on the believe that the quality of ecosystems benefits from organic farming. Operators should design and implement measure regarding the improvement of biodiversity and landscape quality. High Conservation Value (HCV) areas need to be protected from clearing and destruction. Farms situated on land that was considered as HCV area in the past 5 years cannot be certified. Soil erosion and loss of topsoil needs to be prevented. Nutrients, organic matter and resources need to be returned to the soil through the use of the appropriate measures. Water resources shall not be depleted or excessively exploited. The pollution and degradation of land and water needs to be prevented. Appropriate technologies need to be adopted for the farm and unpredictable ones rejected. The use of GMOs or GMO source is prohibited. Wild harvesting is only allowed in

	sustainable growing environments.
2. General requirements for crop production and animal husbandry	The whole farm needs to be converted to organic management practices, including present livestock. If this is not the case, produce from the organic and conventional parts need to be separated clearly and continuously. There needs to be commitment to organic practices which means that the practices should not switch from organic to conventional and back.
3. Crop production	The cultivated crop needs to be suitable for the land. Organically produced seed and planting material needs to be used whenever this is available, this use needs to be propagated for at least one generation. The conversion period to organic agriculture has strict guidelines to follow. There needs to be plant production diversity for instance through crop rotation, but other options are also possible. Soil-improving plants need to be planted. The fertility and biological activity of the soil needs to at least be maintained through returning microbial, plant or animal material to the soil. In order to remove pests, diseases and weeds the farmer needs to apply biological and cultural measures. The soil and products need to be protected from contamination. Renewable sources are used for the energy used for light and climate control. Plant breeders should work with organic measures and use organic sources.
4. Animal husbandry	Livestock husbandry is managed through organic principles and is based on harmonious relationships between all factors on the farm. These animals need to be born and raised under organic conditions. This principle is not relevant for palm oil production and is therefore not further elaborated.
5. Aquaculture production standards	Organic aquaculture should maintain biodiversity, health and quality of the aquatic ecosystem according to organic principles. This principle is not relevant for palm oil production and is therefore not further elaborated.
6. Processing and handling	This principle ensures the consumer with good quality and farmers with a good market without compromising their products. Organic and non-organic products should be handled separately. Products need to be kept free from pollutants and contaminants. Good manufacturing practices need to be applied for instance to prevent pests and diseases.

	Organically processed products need be made from organic ingredients. Techniques need to be used with regards to organic principles. Packaging of the products should have as little negative impact on the product and the environment as possible and packaging needs to be minimised.
7. Labelling	The products are correctly and clearly labelled as organic. A product can be labelled as organic when 95 to 100% of its ingredients are organic. It may be labelled as made with organic products when 70 to 95% of its content is organic. Products with an organic content below 75% are not allowed to use the label. All ingredients need to be listed on the package and it needs to be clear which ones are organic.
9. Social justice	It is recommended that actors should positively contribute to social and cultural aspects of the community, next to their legal obligations. These aspects could be education, research, rural development and supporting local and wider community. Human rights, including indigenous land rights, shall not be violated. Discrimination is not allowed and all actors are treated equally. There need to be fair contracts and working hours and child labour is prohibited, unless it is set under certain situations. Workers' health and safety needs to be guaranteed. Safety training needs to be provided.

Farmers can also organise themselves in groups and apply for group certification. This process works with internal control systems, which means that the group has the responsibility to control itself. This way the inspection process of the individual members is delegated to actors within the group. The third party auditor will then only do research on the well-functioning of the internal control system. This approach gives smallholders a better access to the organic markets (IFOAM, 2015).

Thai farmers can apply for certification of their organic product filling in an application form of ACT and before submitting this application, the farmer needs to make sure that he or she complies with the standards and the requirements for certification. Within 15 days after the submission of these papers the documents and its information will be checked and hereafter an invoice will be sent to the applicant which needs to be paid within 30 days. Only after payment the inspection can take place for which ACT can issue another invoice for the auditor's expenses. There will first be an initial inspection as a basis for future inspections. This inspection is followed by an annual inspection which can be supported by extraordinary inspections (ACT, 2012).

### 3.2.1.2 SUSTAINABILITY OF THE INITIATIVE

These principles can be linked to different aspects of sustainability of palm oil production. In the text below an overview is given on how the principles (IFOAM, 2014c) link to the principles by Quental et al (2011). It focuses on the whole supply chain, so it also takes into account the processing and the consumption phase.

#### *Sustaining natural capital:*

The principles of IFOAM take into account biodiversity by requiring measurements to be implemented in order to improve this aspect. IFOAM states that water and land need to be protected from pollution, degradation and excessive exploitation. The impact of production on the atmosphere is not taken into account by the principles of IFOAM. Furthermore nothing is mentioned specifically on the preservation of peat lands, which is an important topic within debates on oil palm cultivation.

#### *Sustaining life support systems:*

There is a large emphasis on resource reproduction within the principles of IFOAM; nutrients, organic matter and resources need to be returned to the soil and the use of GMOs is prohibited on the whole farm. Ecosystems are also an important factor of IFOAM's principles as it works from the conviction that organic farming improves the quality of the ecosystem's benefits. The principles do not take into account existing food chains, but they do focus on livestock that is present on the farm.

#### *Minimising human impacts:*

The IFOAM does not emphasise on the reduction of GHG emissions within the supply chain. It does put a focus on countering deforestation as areas that are of value need to be protected and preserved, but there is no further emphasis on this. Pollution is also addressed through these principles, mainly focused on the pollution of soil and water.

#### *Developing human capital:*

There is one principle that is focused on social justice and this takes into account human rights, equity and gender. It also states that workers' health needs to be ensured and that education and training needs to be given on this aspect in order to also maintain workers' safety. Child labour is prohibited, but it does not mention anything about the education of these children.

#### *Developing social capital:*

Within the principles it is recommended that farmers contribute in a positive manner to the wider community and culture, which can be improved and maintained through this principle. It does not take into account how networks among farmers or farmers and processors can

be build; however, because it is an international organisation it has the ability to link actors around the world with each other.

*Developing economy:*

The initiative contributes to developing more organic agriculture, but it does not emphasise on the development of employment. Technology is developed through supporting local research and using best practices for the farms. These technologies are all used according to organic standards. An economy and markets are developed through their international network of which farmers will become part of once a farmer has complied with the standards of IFOAM.

*Developing institutions:*

The governance structure of IFOAM is clearly presented on their website and they take members and supporters into account during the decision making process. However, the principles of IFOAM do not emphasise on developing good governance and it is a more top-down approach. The IFOAM principles promote international cooperation, as said before, because it is an international organisation that is also involved in different types of agriculture around the world. The principles also do not emphasise on public participation, but it does recommend farmers to participate and contribute to the wider community. Lastly it also promotes transparency of the supply chain because everything needs to be recorded according to the IFOAM standards, which makes it possible to trace the product along the whole supply chain. However, the organisation itself does not publish for instance minutes of meetings or events, which impairs their transparency.

The IFOAM has one principle that focuses on the processing and handling of the organic products. This makes sure that organic and conventional products are not mixed during the process and that the organic standards are applied throughout the whole process of production. The aspects of sustainability as described above can therefore also be applied to the processing phase of the supply chain.

The IFOAM puts an important emphasis on the consumption phase of the supply chain as it incorporates all the three aspects as described in chapter 2. It has a strict policy on how to label organic products or products that have organic content. This way the IFOAM creates awareness about organic agriculture. Through creating awareness the organisation gives the consumer the ability to educate itself on the matter. Lastly it engages consumers when they take the time to educate themselves via for instance internet, as everyone can join in and become a member of the organisation and there are tips mentioned on how to produce sustainably yourself and what you should look for when you want to buy organic products.

---

### 3.2.1.3 IMPLEMENTATION IN THAI PALM OIL PRODUCTION

The amount of oil palm grown according to the IFOAM principles worldwide very low compared to for instance RSPO certified palm oil; the production of organic palm oil was 37.687 MT, which is 0% of the market share of global exports compared to the RSPO which holds 20% of the market share at 8.184.201 MT. Furthermore organic palm oil production does not seem to be apparent in Thai palm oil production. Another problem that also occurs with palm oil certification by IFOAM is one that is also found with the RPO and which is that the sales are lower than the production, or in other words it can be said that the demand for IFOAM certified palm oil is too low (Potts et al, 2014).

For IFOAM to be implemented in this process there is a lot that needs to be done. First of all it needs to specify its principles for palm oil production, as there is no clear information on this that is easily found. After this process it also needs to be specified to the characteristics palm oil production in Thailand and thereby also translate it and make it is easier to understand in order to make it manageable for Thai oil palm farmers. Under IFOAM certification it is also possible for farmers to organise themselves as groups, which is necessary for Thai palm oil production.

An obstacle that also needs to be faced with IFOAM certification are the costs of the process, because the costs of organic activities are often relatively high when they are compared to conventional measures. For example, for organic agriculture the use of organic fertiliser is obligatory and its costs are exceedingly high, which makes it unfeasible for farmers and thus also economically unsustainable<sup>1</sup>. It is not possible to clearly define the costs of implementing IFOAM because this is relative to farm size (ACT, 2012).

---

## 3.2.2 RAINFOREST ALLIANCE

---

### 3.2.2.1 INTRODUCTION

The Rainforest Alliance was founded in 1986 and its aim is to protect biodiversity and sustainable livelihoods by transforming consumer behaviour, land-use and business practices. In order to achieve their goal they use training and certification and work with farmers, foresters and entrepreneurs on different levels. In order to get certified by the Rainforest Alliance the actors need to adhere to demanding standards and these actors will then be linked to one another (Rainforest Alliance, 2014a). The Rainforest Alliance is also engaged in the debate about sustainable palm oil production. Its certification acts are a powerful tool in addressing the pressing social and environmental problems that are caused by the expansion of oil palm plantations and they thereby limit the negative impacts on these areas (Rainforest Alliance, 2014b). The Rainforest Alliance's certification is based on the Sustainable Agriculture Network (SAN) standard and together with other actors of the

SAN they have played an active role in developing standards for the RSPO. They have also collaborated with leading standards on biofuel such as the International Sustainability and Carbon Certification (ISCC) and the Roundtable on Sustainable Biofuels (RSB) in order to complement the different systems as much as possible. The board of the RSB recognises the equivalence of SAN standards and therefore they have chosen that Rainforest Alliance Certified farms are also certified by the RSB (Rainforest Alliance, 2012).

Even though the Rainforest Alliance has contributed to setting the standards of the RSPO, they view themselves to have a stronger certification in key areas of palm oil production; for example the protection of ecosystems, forests and wildlife. It also has stricter standards on deforestation as one of the requirements for certification is that growers need to contribute to mitigating any destruction to the ecosystem that occurred after November 1999 and no deforestation can have occurred on that farm after November 2005. Only the latter is also a standard of the RSPO. Furthermore they offer great support for workers and their standards can be interpreted on a regional level because the standard is based on local culture, law, geography and climate (Rainforest Alliance, 2012). These are crucial criteria that are also standards of the SAN which demands that certified farmers cooperate with the development of the resident economy and infrastructure. This has the potential to have a positive influence on issues such as local resource economy and employment (Schmidt et al, 2014).

The Rainforest Alliance does not only support palm oil producers, but they also support companies that source from palm oil that is certified by the Rainforest Alliance next to giving them the right to use their green frog seal (Rainforest Alliance, 2012). The certification ensures an adequate and traceable supply and this is seen as the best practice policy across independent certification systems. Currently there are seven oil palm farmer groups and five single farmers certified and these are found in Honduras, Colombia and Guatemala which accounts for a total crop production area of 44.204 hectares. The single farmers are all large farmers and farmers within the groups hold an average area size that is also above 50 hectares and are thus per definition seen as large farmers (Rainforest Alliance, 2014a; SAN, 2015).

The principles of the SAN, and thus of the Rainforest Alliance are the following (SAN, 2014a):

**Table 4: Overview of RA principles (production)**

Principles	Requirements
1. Social and Environmental Management System	A management system has to be developed in which the procedures, programs and policies are defined regarding the use of the standards. There needs to be an evaluation of potential environmental and social impacts of future activities. Providers with high social and environmental awareness need to be selected. When the product leaves the farm all must be done to



	separate certified products from uncertified products. There needs to be a plan for energy efficiency of the farm.
2. Ecosystem conservation	First the existing ecosystem needs to be identified and the high value ecosystems that are within farm limits need to be protected. Deforestation that occurred before November 1, 2005 needs to be mitigated by reforestation, regeneration and placing a conservation area inside the farm. Farms need to respect local laws and the conservation of protected areas. The negative impact of pesticides and other agrochemicals on ecosystems and human populations near the farm has to be avoided. Areas that were originally forests need to establish and maintain agroforestry. Migration routes for wildlife need to be protected.
3. Wildlife protection	Wildlife and wildlife habitats on the farm need to be identified and this needs to be protected. Ecosystems that support the wildlife need to be protected and restored, especially if this is for threatened or endangered species. It is prohibited to hunt for wild animals on the farm, except for not protected species that are seen as pests for the crop.
4. Water conservation	A program needs to be established for the rational use of water sources and the farm has to make use of best available technology and resources in order to save water. There needs to be an inventory of the water usage and the available water sources. The water use needs to be in line with local laws. Wastewater from the production and houses needs to be treated appropriately. Wastewater that is discharged into natural water bodies needs to be verified as being harmless and this needs to be monitored correctly.
5. Fair treatment and good working conditions for workers	All actors involved (including workers, suppliers and employees) need to be treated equally. All the workers need to be provided with a fair and stable contract. Workers need to receive the legal minimum wage or higher and they need to have access to the documents about this arrangement. Minors between 12 and 14 are allowed to work part-time on the farm where this is traditionally done under strict conditions including that it shall not interfere with their education. Forced labour and harassment of any kind are prohibited. Workers have the right to organise and defend their rights when needed. Changes to the working condition need to be announced beforehand. Provided housing for farm workers needs to be dignified. The workers need to receive sufficient and safe drinking water.
6. Occupational health and safety	The health and safety of workers, residents and visitors of the farm need to be analysed and the risks need to be minimised. A medical check-up needs to be provided for workers who are working under conditions that expose them to toxic substances or require great physical labour and these need to be monitored. Agrochemicals need to be stored safely without causing harm to

	environment or people. Worker's exposure to unsafe substances needs to be minimised and they need to be protected against certain environmental conditions of which storms, lightning and sunlight are examples.
7. Community relations	Farm activities that might possibly have an impact on community resources need to be identified and evaluated. The farm needs to help raise awareness for environmental issues and needs to collaborate with and support local research in their area that is related to the standard. Disputes between landowners and communities need to be avoided and the communities' land rights need to be safeguarded.
8. Integrated crop management	There needs to be an integrated pest-management program that is suitable for the ecological principles and pests need to be monitored and controlled preferably with biological controls. Synthetic pesticides are only allowed when the biological controls become too expensive. Application or mixing of substances for pest control that risk humans or the environment is prohibited. GMOs are prohibited on the farm. Fire used in order to control pests or diseases are only permitted if it is the option that is less harmful for the environment compared to other measures. This must be approved by competent authorities.
9. Soil management and conservation	There has to be program regarding soil or crop fertilisation that is based on the characteristics of the soil. A priority is given to organic fertiliser that consists of farm residues
10. Integrated waste management	GHG emissions need to be reduced and carbon dioxide sequestration needs to be increased through the use of best management practices for farm activities.

Group certification is possible within the SAN standards and relies on reliability and delegation, as it is the group administrator's responsibility to make sure that every member is well trained and producing according to the SAN standards. An external auditor will evaluate the group administrator and will take some samples from group members, but it will not review the compliance of each group member (SAN, 2013a).

Individual farmers and group administrators can apply themselves for certification by SAN or the Rainforest Alliance through their website. In order to qualify for the certification, they need to submit to audits that are conducted by SAN authorized auditors. They need to comply with each of the applicable standards with a minimum score of 50% and for the minimum overall score they need to comply with at least 80% of the principles. This way they can score low on certain standards, but high on other standards which gives them an average score that is higher than 80%. For group administrators it is required that they gradually increase their minimum overall score from the first audit onward and at the

second audit there needs to be at least an overall minimum score of 85% and 90% at the third audit. The term of the certificate is three years and year one is started with a certification audit in order to evaluate the compliance of the farm with the applicable standards. Thereafter are two annual audits at the beginning of year two and year three. These are the three regular audits. There are also three irregular audits that are not planned beforehand and occur when verification, research or non-programmed audits are needed. These can be done by the certification body at any time, just as they can conduct an on-site inspection if this is needed. The costs for these activities are for the client, except the costs for research and non-programmed audit. Certification of the farm is cancelled when the organisation does not comply with the requirements during an audit or when the CB is obstructed in its work (SAN, 2013b). It is however not clear what the costs are for complying with the standard and receiving certification for one's farm.

The Rainforest Alliance has also set up principles that consider the processors in the supply chain through a Chain of Custody Standard; these companies are the actors that transform the certified farm produce. It is however unclear whether the Rainforest Alliance requires oil palm mills to participate in the education of farmers and increasing their knowledge on sustainable farming like it is with the RSPO. The standard around processing contains the four principles as shown in the table below (SAN, 2014b).

**Table 5: Overview of RA principles (processing)**

Principles	Requirements
1. Chain of custody management system	All planning, procedures and monitoring needs to be documented. Personnel involved need to be trained and have knowledge. Applicable laws shall not be violated. Internal inspection procedures need to be implemented in order to ensure the compliance with the standard. All documents regarding this system need to be kept for at least three years. Outsourced services need to sign an agreement that includes the right of the CB and the company to conduct audits
2. Traceability	The products that are sourced from certified farms need to be traceable through the whole supply chain of the processor and needs to be distinguished from non-certified produce. This all needs to be well documented as inputs and outputs.
3. Use of the trademarks of the rainforest alliance	The seal of Rainforest Alliance Certification can only be used when the company operates in agreement with the rules as they are defined by the Rainforest Alliance and they must have the documentation to prove it.

4. Management systems for multi-site operators	This principle only applies to companies that have more than one site and want to apply for the standard and the company decides which sites are included in the certification.
--	---

Products that are certified can use the Rainforest Alliance Certified seal without a further qualifying statement when their products contain at least 90% certified produce. Products need to have at least 30% certified content and between 30% and 90% it needs to be specified on the packaging how much is certified (SAN, 2014b). For a sourcing company to get certified it needs to register for the 'Marketplace' which is a portal for traceability and the Rainforest Alliance trademark. After registering an audit will be conducted within six months and the certification has to take place within twelve months. When the audit results are positive the certification will be handed over to the company which has the obligation to maintain its systems and continue with the compliance (Rainforest Alliance, 2015).

### 3.2.2.2 SUSTAINABILITY OF THE INITIATIVE

Through these principles different points of sustainability are being touched upon. The largest part of the principles also takes into account food safety. In the text below and overview is given on how the principles (SAN, 2014a) link to the principles by Quental et al (2011).

#### *Sustaining natural capital:*

One of the main aims of the Rainforest Alliance is to protect biodiversity, thus it can be said there is a strong emphasis on this aspect. There is one principle that specifically focuses on water and how it should be used, including the incorporation of best available technologies and how wastewater should be managed. A strong emphasis is also placed on soil management and conservation within its own principle, but there is nothing mentioned on peat lands and as mentioned before this is an important issue within the oil palm cultivation debates. The atmosphere is taken into account through the principle of integrated waste management as it states that GHG emissions need to be reduced and carbon dioxide sequestration increased.

#### *Sustaining life support systems:*

There seems to be no emphasis on the reproduction of resources within the principles of the Rainforest Alliance. There are however strong focuses on existing ecosystems and also on food chains and wildlife as these need to be identified and protected according to the standards.

#### *Minimising human impacts:*

The principles of the Rainforest Alliance are very strict when it comes to countering deforestation as it takes November 1, 2005 as its reference point, which is earlier than most initiatives state in their principles. Through the principle of integrated waste management GHG emissions are being reduced. Avoiding pollution is mentioned in the principles on ecosystem conservation and takes into account the negative impact pesticides and other agrochemicals might have on ecosystems and human populations.

#### *Developing human capital:*

The Rainforest Alliance puts an emphasis on equity of all actors involved and respecting their human rights through fair and stable contracts and the ability to organise themselves. The initiative however does not place a special focus on gender equality. Workers' health is established through the provision of good housing, sufficient safe hydration, medical check-ups and protection from unsafe substances. Forced labour is prohibited and minors between 12 and 14 are only allowed to work if this does not interfere with their education, there is however not a strong emphasis on education.

#### *Developing social capital:*

The principles focus on community relations within one of their principles that states that possible impacts on the community need to be identified and evaluated. The farmers also need to contribute to the community through raising awareness for environmental issues and support local research. Disputes on land ownership need to be avoided. Protecting culture is not specifically mentioned within the principles, but can partly be incorporated into protecting community's resources. The principles do not focus on establishing and maintaining networks, but the Rainforest Alliance itself has a large international network as it is involved in different sectors around the world.

#### *Developing economy:*

Sustainable agriculture is promoted and developed through the use of these principles. It does not emphasise on developing employment for the community. The standards do not focus specifically on developing technologies that are relevant for sustainable production, but it does however state that local research regarding their production needs to be supported. Economy and markets can be established for the farmers through the international network of the Rainforest Alliance, but nothing is specifically mentioned on this matter.

#### *Developing institutions:*

Transparency is promoted through the strict record keeping that is needed in order to get certified by the Rainforest Alliance. However, the transparency of the organisation itself is not taken into account and records on this are difficult, if not impossible, to find. Public

participation is touched upon through the principle on community relations that emphasises on creating awareness with the wider public community. As said before, the Rainforest Alliance has a large international network which also promotes the increase of international cooperation. From the available information it is not clear how the governance of the Rainforest Alliance is structured and what their approach is on this.

Through the transparency principles a transparent and sustainable supply chain can be established. This also ensures that products can be traced throughout the whole supply chain. The principles that are set up for producers within in the supply chain also assert for the processors such as millers in the case of palm oil production.

The Rainforest Alliance puts an important emphasis on labelling their products and thus incorporates the consumers into their practices. By using a label for their produce it creates awareness with their consumer, which is also educates the consumers because it states that the amount needs to be specified when only 30 to 90% of the content is certified. On their website there is a lot of information available for consumers on sustainable production in all different kinds of sectors. Through the provision of information and offering ways to get involved with Rainforest Alliance, consumers can also engage themselves in sustainable agriculture.

### 3.2.2.3 IMPLEMENTATION IN THAI PALM OIL PRODUCTION

The Rainforest Alliance is still in the early stages of certifying sustainable palm oil supply chains (Potts et al, 2014). As mentioned before, Rainforest Alliance already certified palm oil production in Honduras, Colombia and Guatemala with a total crop production area of 44.204 hectares. These certificates are issued to single farmers as well as farmer groups; but these are probably large farmers (SAN, 2015). The Rainforest Alliance also engages in the integration of small producers into sustainable supply chains in West Africa and in Papua New Guinea and the Solomon Islands the initiative helps a company to prepare itself for certification. Furthermore it helps Unilever to source through sustainable palm oil supply chains in Southeast Asia. However, Rainforest Alliance is not yet implemented in Thailand.

Because the initiative has not yet been implemented in Thailand, it is necessary that its standards are translated into Thai language in order to overcome the language barrier and to avoid difficult use of language in order to make it understandable for the Thai farmers. Furthermore it needs to be specified to the unique Thai supply chain by including middlemen and ramps. Another obstacle to overcome is creating awareness and brand awareness for the organisation. Rainforest Alliance already issues certificates to groups, which is important for implementation in Thailand. It is however unclear what the costs are for getting farms

certified by the Rainforest Alliance. What is also unclear is what the actual demand and supply of Rainforest Alliance certified palm oil is, because if there is almost no market for it, it will be difficult to implement this scheme further into Thailand.

---

### 3.2.3 INTERNATIONAL SUSTAINABILITY & CARBON CERTIFICATION (ISCC)

---

#### 3.2.3.1 INTRODUCTION

The International Sustainability & Carbon Certification (ISCC) is certification system that is based in Germany and can be applied to sustainability and greenhouse gas (GHG) emissions and got its first official state recognition in 2010 by the German authorities. The certification system complies with the Renewable Energy Directives (RED) of the European Union (EU). Recently the ISCC PLUS has been developed which also takes into account the production of biomass that is not used for biofuel, but also food, feed and other (technical/chemical) bioenergy applications (ISCC, 2015a). This makes the certification independent from the end use of the product and might make the initiative interesting for sustainable palm oil production in Thailand. The ISCC has set up a certification framework that covers the whole supply chain, from producer to consumer, regarding social, economic and environmental sustainability and with a special emphasis on GHG emissions<sup>4</sup>. The ISCC organisation takes into account all stakeholders and parties that are interested in the process and anyone who is involved in it can become a member of the association (ISCC, 2011).

The first step for companies to certify themselves with ISCC is to contact a certification body that is cooperating with the ISCC, which are currently over thirty certification bodies. After registration an independent third party auditor who is trained by the ISCC will conduct an audit at the company and when the company complies with all the requirements, the certification body will issue a certificate. These certificates are also published at the website of the ISCC, including those certificates that are withdrawn or expired. Certification of products is currently not visible for consumers, because it is often difficult to conduct this for products such as biofuel and chemicals. For other areas such as food, feed and chemicals that can be certified under ISCC PLUS, the organisation is busy working together with its stakeholders in order to develop and introduce a certification label<sup>4</sup>.

In the following table the sustainability requirements according to the ISCC PLUS regulations are explained. The requirements are categorised as 'major musts' and 'minor musts'; in order to get certified by the ISCC a company needs to comply with all the major musts and with at least 60% of the minor musts (ISCC, 2014a).

**Table 6: Overview of ISCC principles (production)**

<b>Principle</b>	<b>Requirement</b>
1. Biomass shall not be produced on land with high biodiversity value or high carbon stock. HCV areas shall be protected	Production is not allowed if the land belonged to forest land, peat land, land to serve the purpose of nature protection or land for the protection of endangered ecosystems or species in or after January 2008. Biomass may not be produced on grassland that is highly biodiverse. It may not be produced on land with high carbon stock including wetlands and forested areas.
2. Biomass shall be produced in an environmentally responsible way. This includes the protection of soil, water and air and the application of GAP	An environmental impact assessment needs to be conducted before activities that can be harmful are done. Seeds need to be sourced from recognised producers. Natural water courses need to be re-established or maintained. Soil needs to be conserved and degradation of it needs to be avoided. Organic matter needs to be analysed and preserved. Both formal and customary water rights needs to be respected. Water usage needs to be reduced and water quality maintained and improved through applying GAP. Appropriate fertilizer is used that does not contaminate the resources. Integrated Pest Management (IPM) is applied and Plant Protection Products (PPPs) are used, stored and recorded in an appropriate way. There need to be adequate provisions for waste disposal.
3. Safe working conditions through training and education, use of protective clothing and proper and timely assistance in the event of accidents	There needs to be a written policy on health, safety and hygiene and procedures on risk assessment, there also needs to be training given on these aspects. Protective clothing is provided when needed. The farm needs to provide a safe and healthy working environment.
4. Biomass production shall not violate human rights, labour rights or land rights. It shall promote responsible labour conditions and workers' health, safety and welfare and shall be based on responsible community relations	These criteria are internationally recognised by the International Labour Organisation (ILO). Good social practices need to be implemented and need to comply with equality principles. There is no discrimination that impairs or denies equality in opportunities, conditions or treatment. There is no forced labour on the farm and employees are treated with respect and dignity. Workers have the right to organise themselves. All impacts on the surrounding communities, areas and users are analysed and compensated for in a sufficient way. There needs to be two-way communication between the workers and the employers. All children on the farm have access to primary education. Employees should be offered a fair legal contract and all employees need to be recorded. Biomass production does not



	impair food security.
5. Biomass production shall take place in compliance with all applicable regional and national laws and shall follow relevant international treaties	The land needs to be used legitimately and traditional land rights need to be secured. Applicable regional and national laws and ratified international treaties are complied with.
6. Good management practices shall be implemented	Each unit of production needs to be well recorded and these records need be kept up to date. Subcontractors also need to fully comply with the ISCC standards and provide the needed documentation and information on this matter.

Other actors downstream of the supply chain can also get their produce certified by the ISCC. In order to do so they have to comply with the requirements for traceability that are established for these actors. This document describes first the minimum requirements that are needed for the management systems; these are described in the table below (ISCC, 2014b).

**Table 7: Overview of ISCC principles (processing)**

<b>Principle</b>	<b>Requirement</b>
1. Responsibility and authority	The management of the company is committed and takes responsibility for its actions. It is also responsible and has the authority regarding the traceability of the produce.
2. Procedures	All procedures of the company are documented in writing and include the material flow, the organisational structure and responsibility and the procedures on traceability.
3. Reporting and documentation	A reporting system has to be established and maintained on every part of the supply chain.
4. Resource management	Employees need to be competent based on their training, education, skills and experience. A training plan needs to be implemented and a record needs to be kept of this training. The infrastructure and technical facilities that are needed shall be identified, provided and maintained by the organisation.
5. Internal and external audits	There need to be yearly internal audits that cover all aspects of the certification. An external audit will control the company's compliance.
6. Confidentiality	All information, including documentation, is treated as confidential information and shall not be distributed to third parties.

A second part of the document describes the requirements on traceability and information for sustainable materials. This part describes in detail how it must be guaranteed that the whole supply chain from the farmer to the specific processor is entirely certified by the ISCC and can thus be defined as ISCC PURE. This part also describes into detail what needs to be documented (ISCC, 2014b).

Within the ISCC certification scheme farmers who produce the same products and are situated near each other can organise themselves into farmer groups in order to get group certification. This way a large part of the inspections that are needed for ISCC compliance is conducted through internal control systems (ICSs). The farmer group needs to set up a central office that can take care of the group management and that is able to conduct the necessary internal audits (ISCC, 2012).

---

### 3.2.3.2 SUSTAINABILITY OF THE INITIATIVE

The principles as described above can be linked to the sustainability principles by Quental et al (2011). In this paragraph the ISCC principles (ISCC, 2014a; ISCC, 2014b) are analysed by using these principles.

#### *Sustaining natural capital:*

Biodiversity is protected through the principles of the ISCC as it is prohibited to produce biomass on grasslands that are highly biodiverse. Through the principle on environmentally responsible biomass production the protection of water and land are also taken into account. It does not emphasis specifically on the protection of the atmosphere but the principles do mention that carbon stocks need to be protected. Furthermore GHG emissions need to be reduced and both these measures contribute to protecting the atmosphere.

#### *Sustaining life support systems:*

There is not specific emphasis on resource reproduction, but the principles do mention that resources and organic matter need to be analysed and preserved. Furthermore it takes into account the protection of ecosystems, but it does not emphasise on food chains on or around the farms.

#### *Minimising human impacts:*

There is a large emphasis on reducing GHG emissions and increasing the world's carbon stock; the ISCC has its own separate document on the requirements for GHG emissions and its calculation. The ISCC also focuses on countering deforestation and takes January 2008 as its reference point. Pollution and contamination of resources needs to be avoided through applying GAP, using appropriate fertilisers and applying IPM.

#### *Developing human capital:*

The ISCC focuses on the protection of human rights. When it comes to water and land rights it does not only take into account formal rights, but also the customary ones that take into account for instance indigenous people. Their criteria are based on the internationally recognised ILO standards which include equity, gender and appropriate education for children. Workers' health is protected through a strict policy, risk assessment and compulsory trainings on safety.

#### *Developing social capital:*

Communities need to be taken into account through impact assessments and possible damage needs to be sufficiently compensated, but community is not positively supported through the standards. This is also the case for the protection of local culture as this is not included in the principles. Furthermore it does not mention the building of networks, but the ISCC is an international framework with a global network.

#### *Developing economy:*

Through the principles of the ISCC sustainable agriculture is developed as it promotes the use of best practices. The principles do not mention anything on the development of employment, neither does it specifically emphasise on the development of technologies. It is not clear whether the ISCC standards contribute to developing economy or markets, however, ISCC processing companies are stimulated to source from farmers who are also ISCC certified, which creates market opportunities for these farmers.

#### *Developing institutions:*

The ISCC promotes transparency throughout the supply chain by setting standards on record keeping for the actors. It also contributes to this aspect through publishing reports on their achievements and the certifications they issued, including those that were withdrawn. The ISCC does not emphasise on promoting public participation as it only takes into account sufficient compensation for the wider community. International cooperation is stimulated through ISCC certification because it is an international organisation that works in different sectors around the world. The ISCC has a clear governance structure that can be found on their website. It promotes decision making through incorporating its many stakeholders.

Transparency and traceability are key words within the supply chain when it comes to ISCC certification. It is important that everything is well recorded in order to make all the practices as transparent as possible. The sustainability principles also apply throughout the whole production process and also include the distribution process.

Consumers are not taken into account through the ISCC certification. However, there are plans to create a label for ISCC PLUS certified products. For biofuels it is difficult to make sustainability visible for the consumers<sup>4</sup>. Furthermore, it provides information for consumers on the website through for example small videos about their standard. This way it tries to educate consumers, but when the consumer does not know the initiative he or she will not go to this website for more information.

### 3.2.3.3 IMPLEMENTATION IN THAI PALM OIL PRODUCTION

As stated before, the ISCC is not yet implemented in Thai palm oil production, but it is already involved in palm oil production in other countries, such as Singapore, Indonesia and Spain (ISCC, 2015b) and it would be prepared to engage in this process in Thailand. The organisation believes that certification is the right step towards ensuring sustainability within the palm oil market and to differentiate products within it. However, in order to reach this goal all stakeholders need to be involved and a transformation of the market is required. In order to also engage other actors in the supply chain the ISCC works together with other organisations such as FONAP, whose aim is to boost the proportion of sustainable palm oil on the Swiss, Austrian and German markets<sup>4</sup>.

Currently there is already a technical committee that focuses upon sustainable supply chains within Southeast Asia who meet annually to discuss relevant topics. However, in order to implement the ISCC standards in Thailand it is necessary that these are translated into Thai and non-difficult language, otherwise it will be impossible for many farmers to understand the principles. This is the same obstacle as with the other initiatives that have not yet been implemented. Furthermore it needs to be adapted to the set-up of the Thai supply chain and farmers need to get more familiar with the initiative and obtain more information about sustainable palm oil production. The ISCC does offer smallholders to organise themselves into groups to obtain group certification, which is very important for Thai smallholders<sup>5</sup>.

The costs for ISCC certification depend on the farm that tries to get certified. These costs can include those that are needed to change the activities on the farm to more sustainable ones; for instance investment for chemical storages, protection equipment or housing. Other costs are found in the costs for the external certification body that charge fees for conducting audits and the issuing of the certificate. This is also linked to the size of the farm and its complexity and readiness to be certified. Furthermore there are costs of the certification system which also vary depending on the size and structure of the company and includes a one-time registration fee which is at least €50,- and a certificate fee which is also at least €50,- per issued certificate<sup>4</sup>.

### 3.2.4 GOOD AGRICULTURAL PRACTICES (GAP)

#### 3.2.4.1 INTRODUCTION

Through the use of Good Agricultural Practices (GAP) the production of palm oil is done as effectively as possible while making use of environmental, social and economic resources in a sustainable way. Its main objectives are (1) to ensure safety and quality of the produce, (2) modifying supply chain governance, (3) improve resource use, health and working conditions and (4) to create new market opportunities for farmers and exporters in developing countries. In this way the production and consumption can benefit from the program. GAP also has some challenges as for instance the increase in production costs and it does not always reap the potential environmental and social benefits (FAO, 2008).

The Thai National Bureau of Agricultural Commodity and Food Standards (ACFS) and the Ministry of Agriculture and Cooperatives (MOAC) have set up a list of eight principles that consists its national GAP, these are derived from the ASEAN GAP. These principles are then implemented by local governments and it can thus be said that it is a top-down approach. Through GAP certification the government not only tries to make palm oil production more sustainable, but also tries to increase the yield of the crop. The GAP certification is not a private standard and is only promoted by the government<sup>6</sup>. These eight principles are the following (ACFS, 2010):

**Table 8: Overview of GAP principles**

Principle	Requirements
1. Water source	The farmer needs to make sure that the water source used for the plantation is safe, free from pollution of dangerous substances. Examples of these substances are residues of pesticides, heavy metals and pathogenic microorganisms. Water samples are tested in government laboratory multiple times during the stage of setting up the production system. Furthermore, the water source cannot be environmentally destructed.
2. Planting area	The oil palm planting areas are in compliance with regulations and laws regarding the issues. There shall be no hazardous substance in the soil that can lead to the contamination of the produce. Soil samples need to be taken when the plot is located near an industrial area. These samples are sent to a governmental laboratory.
3. Pesticides	If the farmer uses pesticides, they need to be used in accordance with regulations set up by the Department of Agriculture (DOA) and it needs to be registered. The amount of pesticides used is appropriate for the type of pest and is done under the right conditions, taking into account environmental and human safety.



4. Pre-harvest quality	The seed or seedlings need to be of appropriate quality, the design for the planting's lining and spacing needs to be appropriate to the variety and area and the oil palm plantation needs to be managed properly. Pests need to be controlled by surveying them and applying appropriate measures to eliminate them and this needs to be recorded. The farmer needs to have the right knowledge on this issue. The (chemical) fertilizer that is used needs to be chosen from a list of fertilizers that is registered with the DOA or the MOAC. The amount used should cohere with the development stadium of the plant. In the case of replanting a plot the farmer needs to operate according to the right measures. Waste needs to be separated. Furthermore, a list of tools and equipment in storage needs to be provided.
5. Harvest and post-harvest handlings	The oil palm bunches that are harvested need to be mature and all loose fruits need to be collected from the field plot. The oil palm bunches cannot be contaminated during and after this process
6. Transportation	Contamination of the oil palm bunches has to be avoided through proper hygiene and the oil palm bunches should not be damaged during the transport. The transport from the farm to the collection centre (ramp) or mill needs to be done within 24 hours
7. Personal health	Appropriate health care and welfare needs to be provided for the farm's workers. Examples are a health check-up and adequate housing facilities.
8. Record keeping	A detailed record needs to be kept for at least two years on the following issues: oil palm variety sources, pest survey and used pesticides, production inputs (including fertilizers and pesticides), the application of fertilizer and the harvesting and transportation of the produce. The record keeping will contribute to the traceability and transparency of the production

Farmers have two channels to apply for GAP certification. The first is through the Agricultural Extension Department (AED) and the second is through the GAP office that is based in Suratthani. One of the responsibilities of the AED is to promote the production of sustainable palm oil by visiting farmers. After they applied for the certification, the DOA office will set up an auditing team for that specific farm. This team consists of at least two auditors. If the auditing team visits small farms (<10 rai), then the auditing team needs to do two farms p. person p. day. So, in a team of two auditors has to visit at least four small farms p. day. For large farms (11-20 rai) this is 1 farm p. person p. day. After the first audit the team will record all their findings and report this, thereafter a new auditing team will re-audit; this is called the technical audit. All data will be put into a computer database. The decision about whether the farm will be certified will be made during the monthly meetings of the committee and after the meeting these decisions will be announced. If farmers do not

pass the test, they have the opportunity to improve their farm and re-apply for the certification. Those who do pass the test will get a certification for a period of three years. Within these three years they will get audited every year and after this period they have to re-apply, but it will be easier for them to get the new certification because they already adhere to the GAP standards<sup>7</sup>.

The government supports farmers who want to apply for GAP certification; the amount is however depending on the government's available budget and is thus not fixed. During this research the amounts mentioned were 800 ฿<sup>iii</sup> for the first audit and 500 ฿ for the following audits. When the farmer re-applies for the certification after three years, the farmer needs to pay 800 ฿ for the audit<sup>6</sup>.

GAP only focuses on the production phase of the supply chain and not on processing of the products or the consumption of it. Good Manufacturing Processes (GMP) are focused on the processing phase of the supply chain. This is a standard that was made mandatory in 2001 for Thai processors of products that for human consumption such as food, drugs, drink, cosmetics and packaging, along the Hazard Analysis and Critical Control Points (HACCP) standards. When it comes to the production of palm oil, it is thus only applicable to the production of edible palm oil. It can be seen as a guideline and practice for environmental issues and food production and its standards include (1) establishment, (2) equipment, (3) facilities, (4) control of operation, (5) personal hygiene and (6) maintenance and sanitation. GMP is more focused on the food safety aspect of production than it is on the sustainability of it<sup>8</sup>.

#### 3.2.4.2 SUSTAINABILITY OF THE INITIATIVE

Through these principles different points of sustainability are being touched upon. The largest part of the principles also takes into account food safety. In the text below and overview is given on how the GAP principles (ACFS, 2010) link to the principles by Quental et al (2011). The GAP only focuses on the production phase of the palm oil supply chain and it is therefore not possible to also analyse what the impact of GAP could be within the other phases of the supply chain.

##### *Sustaining natural capital:*

The principles of oil palm GAP take into account the issue of water and soil and that pollution of these should be avoided in order to prevent contamination of the produce. It

---

<sup>iii</sup> 1 ฿ = approximately 0.029 € (12-04-2015)



can be said that the main priority seems to be to ensure food safety; however, it also has a positive effect on environmental management. It does not take into account further sustainability of water and soil such as planting on peat lands and reducing water use. What also does not seem to be taken into account is the biodiversity on the plantation. It does not mention that biodiversity needs to be protected and maintained. Next to water and soil it does not take into account the impact on the atmosphere.

*Sustaining life support systems:*

Ecosystems are mentioned in the GAP principles for oil palm in the section about pests; the farmers need to take appropriate measures regarding pest control while considering the impacts they cause on the environment and ecosystems. This is however only one segment on how to protect ecosystems in the process of oil palm cultivation. It does not take ecosystems further into account, such as the protection of wildlife. Moreover it does not take into account existing food chains on the farm. The input, and thus also the resources, for the production need to be recorded and applied appropriately; it can be said that it also has an emphasis on resources used. From the recording one must be able to trace the source of the input and whether it is handled sustainably.

*Minimizing human impacts:*

What is notable is that in the principles it is mentioned that agricultural equipment and tools need to be registered, but nothing is mentioned about the standards for the emissions of these tools which can contribute to climate change. There is however an important emphasis on the use of hazardous substances in order to prevent pollution of soil and water. This can be related to the initiative's main focus on food safety. It also takes into account the steps that need to be taken in order to replant responsibly which contributes to minimizing human impact of the production. Which also contributes to implementing this principle is that the government prohibits direct deforestation on public land.

*Developing human capital:*

Regarding human rights it is mentioned that the land is purchased in a legal manner and it does not diminish the rights of others. Human capital is also being developed through GAP principles because one focuses on personal health and welfare, including appropriate health care for workers and adequate housing facilities, first aid and water supply. It does however not mention anything on equity, wealth, gender and further protection of human rights for workers. The government supports farmers by giving them trainings and educate them about the best practices<sup>1</sup>. The lessons learned from this education are often shared in informal meetings with workers and other community members<sup>6</sup>. However, there is nothing further mentioned on for instance primary education of young children.

#### *Developing social capital:*

There is nothing mentioned in the agricultural standards on the developing of social capital. There is no definition or declaration on the building and guarding of solidarity, community or culture. As said before; there is informal knowledge sharing within the community<sup>6</sup>. Community members have more and better access to shared information if the interactive ties within the social community are closer (Hung et al, 2014). Because a large part of the promotion of the GAP as a standard is based on knowledge sharing, this is an important aspect for the initiative. Lastly, there is no emphasis on the building of networks within this initiative.

#### *Developing economy:*

The GAP initiative is very focused on the development of economy: Agriculture is stimulated together with the use of appropriate technologies in order to increase yield. The oil yield from GAP certified FFB is often higher than conventional yield; 18% of oil compared to 16-17%. It is however only focused on the production and thus does not incorporate consumption by using certification seals for instance. Employment may be enlarged by hiring more auditors, as there are not enough auditors to cover all the auditing<sup>16</sup>. There are opportunities for the initiative to build a market for GAP palm oil of which one they already try to use, which is trying to gain more control over the ramps in order for them to source GAP products<sup>6</sup>. This is however a very difficult task.

#### *Developing institutions:*

Through the recording of all activities on the plantations the transparency of the practices is being improved, however, the government as implementing organisation is itself not that much transparent about its practices. GAP is a top-down approach which does not promote good governance, and a bottom-up approach would empower the farmers more. Moreover, it is established by the national government, which may bring forth a biased approach. It is not clear what the effect of GAP is on democracy or public participation, but it is not mentioned within the principles or the strategy. GAP is a national standard that is then implemented by local governments. It is derived from international standards such as the ASEAN GAP, but there is no cooperation on international level.

#### **3.2.4.3 FURTHER IMPLEMENTATION IN THAI PALM OIL PRODUCTION**

In Thailand GAP was developed in 2010 for palm oil production by the MOAC and implementation is on a voluntary basis (Dallinger, 2011). In 2013 the GAP standards were rewritten in order to improve the standards and develop them further regarding sustainable production. Currently around 800 oil palm farmers have GAP certification in Thailand; this is only 0.4% of the total amount of oil palm farmers. Currently there are not many reasons for an oil palm farmer to adhere to GAP standards. One of the social benefits from GAP

certification is the informal sharing of knowledge. The certified farmers will get information from the DEA on how to make their practices more sustainable and this information is then often shared with the rest of the society in an informal setting <sup>6</sup>.

The most apparent benefit is the certification itself, because most farmers take pride in their work and want to show that their farm is good enough for it. This pride often drives other farmers in the community to also apply for the standards, because they do not want to “lose face” <sup>6</sup>. The concept of “face” is part of Thai culture and social practices and is related to one's ego; a loss of face is an expression for experiencing embarrassment and should thus be avoided. The definition of face can be related to the approval of others within a society because one conforms to the norms of Thai society (Ukosakul, 2005).

Oil palm GAP in Thailand currently has no farmer groups that are certified. There are, however, groups that are trying to comply with the standards, but problems often occur with the internal control systems (ICSs) and the administration of the farm practices. Therefore groups that try to apply for GAP often do not pass the test and the lessons learned from this issue are used by the government to improve the system for group certification in order to make it more accessible, as it is with the GAP group certification for banana and mango farmer groups <sup>6</sup>.

In the near future the government hopes to increase the GAP certification among oil palm farmers by increasing palm oil associations' control over the ramps and mills when it comes to sourcing. The government wants that GAP certification becomes a minimum condition for the FFB that they purchase from the farmers and thereby pressure the farmers to switch from conventional cultivation methods to GAP certified methods, because it will then be harder for them to sell their conventional produced FFB. They try to stimulate the ramps and mills in taking these measures by promoting the benefits from GAP certified oil palms which are higher quality and higher oil yields. The government also tries to promote GAP certification by supporting it financially and with education, so there are not many costs for getting GAP certified. Another issue they use for promoting GAP is that it is a first step to getting RSPO certified and farmers will get a higher price for certified produce <sup>16</sup>.

As said before, the GAP standards have already been applied to Thai oil palm production and because it is specified for Thailand as a country it should be suitable to be further implemented. However, to implement GAP further in Thailand there are some limitations that need to be taken into account. The first thing that needs to be taken into account is that the initiative needs to be promoted more and information about the certification needs to be more distributed. Many oil palm farmers are unaware of the GAP certification process and have not yet been introduced to the initiative, even though they are interested in applying these standards <sup>26</sup>. This makes them unaware of the importance of sustainability

measures and deprives them of the education on improving their farm management. The lack of knowledge is also increased by the shortage of certified auditors, which furthermore also increases the inability to audit all farms appropriately. The DOA carries the responsibility concerning the auditors of the initiative <sup>16</sup>.

---

<sup>1</sup> Author's interview on December 18, 2014 with Dr. Prakarn Veerakul of the Thai Department of Agriculture

<sup>2</sup> Author's interview on January 15, 2015 with RSPO-complying farmers

<sup>3</sup> Author's meeting on January 14, 2015 with Mr. John Clendon, Managing Director of Univanic Palm oil

<sup>4</sup> Author's email correspondence with Benno Tubbesing

<sup>5</sup> Author's meeting on January 21, 2015 with Somjai Nupuang, expert on Thai oil palm production

<sup>6</sup> Author's interview on January 9, 2015 with an officer of the GAP office in Suratthani

<sup>7</sup> Author's interview on January 14, 2015 with Mr. Suban, officer of the Agricultural office in Krabi

<sup>8</sup> Author's email correspondence with Dr. Tanong Aewsiri

#### 4. EVALUATION OF THE SUSTAINABILITY INITIATIVES

This chapter describes how the initiatives are evaluated, which can be derived from the interviews during the fieldwork and from literature studies and moreover from the analysis done in the previous chapter. First an overview will be given on Thailand's strengths and obstacles for making palm oil production more sustainable. Thereafter the initiatives are scored using the methods as defined in the first chapter of this thesis. These results are placed in a table which gives a good overview of the scores. For drawing a conclusion on this thesis it is also important to take into the extent to which it can be implemented in Thailand. This already has been explained in the previous chapter and will be incorporated into the conclusion. The overall results will form the basis for the conclusion of this thesis which can be found in the next chapter.

##### 4.1 STRENGTHS AND OBSTACLES FOR SUSTAINABLE PALM OIL PRODUCTION

A first remark that needs to be made is that the situation in Thailand regarding palm oil production differs from other palm oil producing countries and it is therefore important that this is recognised while drawing conclusions on this research. As mentioned before, another thing that is distinctive for Thai palm oil production is the share of smallholders among the producers. In 2011 the area managed by smallholders was 76% and this keeps expanding as the government stimulates smallholders instead of large farmers <sup>1</sup>(World Bank & IFC, 2011). This brings benefits as well as limitations (Virakul, 2011). One of the important limitations is the lack of knowledge on producing sustainable oil palms. Farmers are often unaware of sustainability measures and how they can apply these. It is difficult for the government to distribute their knowledge to so many farmers <sup>1</sup>. Furthermore, many non-oil palm farmers are interested to convert their land to oil palm cultivation and it is important to inform them about sustainable production so they can start with these measures from the beginning onwards <sup>2</sup>. A large sum of these limitations can probably be countered by promoting farmer groups. A first benefit from this is that the costs will go down. An example is that the smallholders' costs for producing 1kg of FFB are around 3,50 ฿, while for large farmers this is only 2,90 ฿. Through farmer groups they are able to buy bulk products that are cheaper. Another benefit from farmer groups is the knowledge sharing within the group <sup>34</sup>. Even though the smallholder groups are often stronger than single smallholders, there are also some limitations to these formations. This is caused primarily because they have to develop an internal control system and through that system they have to share their costs and power<sup>4</sup>.

Another limitation that occurs in Thailand regarding implementing certification schemes is that there is a need for formal agreements and administration when it comes to complying

with certain standards. This is often a problem for farmers because this is costly and thereby also time consuming; people need to be hired for the administration or farmers need to reduce their time farming in order to get the administration done themselves<sup>5</sup>. For initiatives to be implemented into Thailand, the standard needs to be translated into easy to understand Thai language in order for farmers to fully understand these and also for them to be aware of what they are engaging themselves in<sup>4</sup>.

Another interesting and important characteristic of Thai palm oil production is that there are other actors in the supply chain that can have a great influence on the sustainability of the production. These actors serve as middlemen between farmers and mills (Virakul, 2011). Middlemen are needed because it would otherwise be more difficult for the smallholders to get their produce to the mills. These middlemen can be divided in three groups which are the collectors, the private ramps and the cooperative ramps. The collectors are the people who collect the FFB from the farms and bring this to the mills. Ramps are the places where the FFB is collected before it is transported to the mills. This collection can either be done by the ramp itself or through a harvesting team. These middlemen are of great influence because when they decide to manage their activities in an unsustainable way, this means that the following sections in the supply chain automatically also become less sustainable. The problem with these middlemen is that they often operate under informal agreements and ignore sustainability standards. The FFB that is produced at certified farms often moves directly to a certified mill instead of using these middlemen; these actors can therefore be found in uncertified palm oil supply chains. It is an important point to take into account when looking for initiatives in order to make Thai palm oil production more sustainable<sup>6</sup>.

Currently only RSPO and GAP are involved in making oil palm production more sustainable in Thailand. Their focus is that GAP is a good first step in order to get RSPO certification which is seen as the goal for producers and processors of palm oil. The government's involvement is important for the introduction of GAP among farmers and support farmers through trainings and financial support<sup>4</sup>. This is not the only way that Thai policies are important for making the production more sustainable. It might be important to reconsider the country's export policies as these might hamper the sustainability of the supply chain. This is because the main market for sustainable palm oil can be found in Europe and when sustainable Thai palm oil cannot be exported to these countries there is little demand for sustainable palm oil, because domestic consumers care more about lower prices. Opening up to the European market might enhance sustainability, however, India and China are two major importers of palm oil but often do not care that much about the sustainability of the product (Tan et al, 2009; IndexMundi, 2015) Furthermore, the export policies might contribute to the price fluctuations that occur when stocks are getting to high and factories need to temporarily close down. This also has a negative effect on the livelihoods of farmers and millers<sup>78</sup>.

A last characteristic of Thai oil palm production that needs to be mentioned is that the competition among the farmers is very high and this can contribute to making the supply chain more sustainable. Because of this competitive suppliers market the farmers will keep improving themselves, because when one of the farmers applies sustainability measures, other farmers will have to follow in order to compete with this leading farmer <sup>7</sup>. What also contributes to this is that within Thai culture and social practices people try to avoid the loss of “face” (Ukosakul, 2005). Farmers are proud of their work and want to show that their farm is equally as good as other farms, so an uncertified farmer will most likely follow when other farmers become certified <sup>3</sup>.

#### 4.2 WEIGHING THE PRINCIPLES

Because producers, processors and consumers all evaluate sustainability and its principles in different ways, the table shows the different weights for the principles from the different perspectives. In this way the scoring of the initiatives is as transparent as is possible. There are different ways to divide the points and the weights would be more accurate if this was based on fieldwork regarding these different views and perspectives, but this was unfortunately not possible for this MSc thesis and therefore it was chosen to base the weights on available literature. Furthermore there has been no differentiation within the three different categories (e.g. location or commodity) because it was not possible to derive this from existing literature.

Only the producing and processing phase are weighed and the score of the consumption is the same for all the three perspectives. The weights are given by the author by dividing twenty points among the principles and are divided as set out in the table that can be found hereunder.

**Table 9: Overview of weights given to principles by different perspectives**

Principles	Producer	Processor	Consumer
Sustaining natural capital	2	1	2
Sustaining life support systems	2	1	3
Minimising human impact	1	2	4
Developing human capital	4	3	3
Developing social capital	3	1	2
Developing economy	5	7	4
Developing institutions	3	5	2

The main focus of producers is on developing economy, because income plays an important role for maintaining their livelihoods. Often they will choose to use measures that are cheaper or for example subsidised by the government. That is why developing economy is

given five points of the twenty that were divided. Another important principle for producers when it comes to sustainable agriculture is developing human capital and thus protecting human rights, health and proper education, hence the four points for this principle. Three points are given to both developing social capital and developing institutions because these contribute to the improvement of the economic and social principles that are important for the farmers. Less emphasis is on the environmental principles with two points for sustaining natural capital and life support systems because these might influence the farmers' livelihood and only one point for minimising human impact because this has less impact on their livelihoods (Hazell & Wood, 2008). Through this division of weights it can be said that developing economy is five times more important for a farmer than it is to minimise the human impact of their practices. This is mostly because the farmers pay the most attention to their own livelihoods and how they can improve these.

Just as producers, processors are driven by players downstream the supply chain such as consumers who demand more sustainable produce. However, without this pressure processors will mainly focus on the economic principles in order to secure their income. Developing economy is given seven points because this includes markets which generate income for the processors, but these markets, when pressured by demand, will eventually also lead to making processors more sustainable in order to play in a competitive market. Furthermore, five points are given to developing institutions because these enhance their livelihood and the ability to gain more income. Governmental institutions are also of great influence on the practices of the processors (Giunipero et al, 2012). What also is of great influence is the attitude the top management, its governance structure, has towards making the supply chain more sustainable. Three points are given for developing human capital because workers are needed to establish the production. In order to produce safe food it is important that pollution is prevented and that is also why minimising human impact is given two points. The other aspects are only given one point because processors often do not take these into account without the pressure of downstream players (Ageron et al, 2012). Developing economy is seven times more important than sustaining natural capital and life support systems and developing social capital, because these do not seem to influence the revenue of the processors directly.

Consumers are of great influence on the sustainability of the supply chain and markets because they can demand a certain level of sustainability from the supplier. Furthermore they have a different perception than upstream players in the supply chain about sustainable production. The weights consumers would give to the different aspects of sustainability are more equally divided than with producers and processors, as they often find that all aspects of sustainability need to be taken into account. Because price is still of influence on consumer behaviour, this aspect has been given four points. Four points are also given to minimising human impact because these aspects are topics which people are



often aware of and might influence themselves also. Three points are given to sustaining life support systems and developing human capital because these are also subjects that are largely discussed within societies. The remaining points are divided among the other three principles giving them all two points, because these are evaluated as equally important (Gilg et al, 2005; Vermeir & Verbeke, 2006).

#### 4.3 THE RESULTS

Using these weights, the scoring of the principles and the formulas as described in chapter 2, a calculation can be done on the sustainability of the initiatives. The results can be found in the following tables which show the results per phase of the supply chain and also viewed from the different perspectives because these would score the four initiatives in such ways that the final results of the scoring differ from each other. From these different perspectives an average scoring is derived in order to give a clear view. The scoring of the aspects can be found at the end of this chapter.

**Table 10: Overview of the final score of the RSPO**

		RSPO			
➔ Perspectives		Prod	Proc	Cons	Av
Phases of supply chain	Production	77%	78%	78%	<b>78%</b>
	Processing	77%	78%	78%	<b>78%</b>
	Consumption	100%	100%	100%	<b>100%</b>
	<b>Overall</b>	<b>85%</b>	<b>85%</b>	<b>85%</b>	<b>85%</b>

**Table 11: Overview of the final scores of the alternative initiatives**

		IFOAM				RA			
➔ Perspectives		Prod	Proc	Cons	Av	Prod	Proc	Cons	Av
Phases of supply chain	Production	69%	67%	67%	<b>68%</b>	67%	67%	70%	<b>68%</b>
	Processing	69%	67%	67%	<b>68%</b>	67%	67%	70%	<b>68%</b>
	Consumption	100%	100%	100%	<b>100%</b>	100%	100%	100%	<b>100%</b>
	Overall	<b>79%</b>	<b>78%</b>	<b>78%</b>	<b>78%</b>	<b>78%</b>	<b>78%</b>	<b>81%</b>	<b>79%</b>

**Table 12: (Continued) Overview of the final scores of the alternative initiatives**

	→ Perspectives	ISCC				GAP			
		Prod	Proc	Cons	Av	Prod	Proc	Cons	Av
Phases of supply chain	Production	65%	66%	70%	<b>68%</b>	38%	44%	44%	<b>42%</b>
	Processing	65%	66%	70%	<b>68%</b>	0%	0%	0%	<b>0%</b>
	Consumption	17%	17%	17%	<b>17%</b>	0%	0%	0%	<b>0%</b>
	<b>Overall</b>	<b>49%</b>	<b>50%</b>	<b>52%</b>	<b>50%</b>	<b>13%</b>	<b>15%</b>	<b>15%</b>	<b>14%</b>

When looking at the overall scores per perspective and also looking at the overall average score of the initiatives it shows that the RSPO by far has the highest score of all the initiatives. From the alternative sustainability initiatives Rainforest Alliance has the highest score. ISCC scores as high as IFOAM and also almost as high as Rainforest Alliance when looking only at the production and processing phases of the supply chain, but because consumers are (not yet) incorporated into the certification scheme, the initiative's overall score is much lower. The GAP is only focused on the production process within the supply chain and consequently it has the lowest overall score. Also, the scores given to the production phase of GAP certified supply chains show that the initiative is not very positively evaluated.

The overall average score of the Rainforest Alliance is one percent higher than the overall score of the IFOAM, even though the average outcomes of the different stages are the same. This is because there are no numbers shown behind the commas, which influences the overall average score that are shown in these tables.

Furthermore what can be said about these results is that there is not a lot of differentiation between the overall scores given by the different perspectives on the initiatives and thus that the weights given do not have a lot of influence on the final scores of the initiatives. The differences within phases however are larger and these differences between the perspectives can possibly be explained through analysing the different principles and initiatives. The RSPO does not always score higher per principles than the other initiatives, however, it does score higher on most of them and especially those that receive more weight from the different perspectives. About IFOAM producers are most positive compared to the other actor groups; presumably this is caused by its large emphasis on developing human capital and its relatively large emphasis on developing economy, which is also of great importance to producers. In the scoring of the Rainforest Alliance and the ISCC the consumers are the most positive. This is probably caused by the relatively high scores of the

Rainforest Alliance and the ISCC regarding minimising human impact and developing human capital, which is also seen as important aspects of sustainable development by the consumers. The difference on how producers view GAP certification and how processors and consumers view the initiative is relatively large. This can be caused by the lack of emphasis on the social aspects of sustainability; developing human and social capital, which are more important aspects with producers than they are with processors and consumers.

---

<sup>1</sup> Author's interviews on January 14-15, 2015 with uncertified oil palm farmers

<sup>2</sup> Author's interviews on January 14-15, 2015 with non-oil palm farmers

<sup>3</sup> Author's interview on January 14, 2015 with Mr. Suban, officer of the Agricultural office in Krabi

<sup>4</sup> Author's interview on December 18, 2014 with Dr. Prakarn Veerakul of the Thai Department of Agriculture

<sup>5</sup> Author's interviews on January 14-15, 2015 with certified oil palm farmers

<sup>6</sup> Author's meeting on January 21, 2015 with Somjai Nupuang, expert on Thai oil palm production

<sup>7</sup> Author's meeting on January 14, 2015 with Mr. John Clendon, Managing Director of Univanic Palm oil

<sup>8</sup> Author's interviews on January 14-15, 2015 with community members

**Table 13: Detailed overview of the scores of the initiatives (production and processing)**

		Weights				RSPO		IFOAM		RA		ISCC		GAP	
		Prod	Proc	Cons		Prod	Proc	Prod	Proc	Prod	Proc	Prod	Proc	Prod	Proc
Environmental	Sustaining natural capital	2	1	2	Biodiversity	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%
					Water	100%	100%	100%	100%	100%	100%	100%	100%	50%	0%
					Atmosphere	75%	75%	0%	0%	100%	100%	75%	75%	0%	0%
					Land	100%	100%	75%	75%	75%	75%	100%	100%	50%	0%
					<b>SCORE</b>	<b>94%</b>	<b>94%</b>	<b>69%</b>	<b>69%</b>	<b>94%</b>	<b>94%</b>	<b>94%</b>	<b>94%</b>	<b>25%</b>	<b>0%</b>
	Sustaining life support systems	2	1	3	Resource reproduction	50%	50%	100%	100%	0%	0%	25%	25%	50%	0%
					Ecosystems	50%	50%	100%	100%	100%	100%	100%	100%	75%	0%
					Food chains	0%	0%	25%	25%	100%	100%	0%	0%	0%	0%
					<b>SCORE</b>	<b>33%</b>	<b>33%</b>	<b>75%</b>	<b>75%</b>	<b>67%</b>	<b>67%</b>	<b>42%</b>	<b>42%</b>	<b>42%</b>	<b>0%</b>
	Minimising human impacts	1	2	4	GHG	100%	100%	0%	0%	75%	75%	100%	100%	0%	0%
					Deforestation	100%	100%	75%	75%	100%	100%	100%	100%	100%	0%
					Pollution	100%	100%	75%	75%	75%	75%	100%	100%	100%	0%
					<b>SCORE</b>	<b>100%</b>	<b>100%</b>	<b>50%</b>	<b>50%</b>	<b>83%</b>	<b>83%</b>	<b>100%</b>	<b>100%</b>	<b>67%</b>	<b>0%</b>
Social	Developing human capital	4	3	3	Human rights	100%	100%	100%	100%	100%	100%	100%	100%	75%	0%
					Equity	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%
					Workers' health	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%
					Education	100%	100%	50%	50%	75%	75%	100%	100%	75%	0%
					Gender	100%	100%	100%	100%	0%	0%	100%	100%	0%	0%
					<b>SCORE</b>	<b>100%</b>	<b>100%</b>	<b>90%</b>	<b>90%</b>	<b>75%</b>	<b>75%</b>	<b>100%</b>	<b>100%</b>	<b>50%</b>	<b>0%</b>
	Developing social capital	3	1	2	Community	100%	100%	75%	75%	100%	100%	75%	75%	0%	0%
					Protecting culture	25%	25%	75%	75%	25%	25%	50%	50%	0%	0%
					Build networks	100%	100%	25%	25%	25%	25%	0%	0%	0%	0%
					<b>SCORE</b>	<b>75%</b>	<b>75%</b>	<b>58%</b>	<b>58%</b>	<b>50%</b>	<b>50%</b>	<b>42%</b>	<b>42%</b>	<b>0%</b>	<b>0%</b>

Economic	Developing economy	5	7	4	Agriculture	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%
					Employment	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%
					Technology	25%	25%	75%	75%	50%	50%	0%	0%	100%	0%
					Economy / markets	100%	100%	100%	100%	75%	75%	50%	50%	25%	0%
					<b>SCORE</b>	<b>56%</b>	<b>56%</b>	<b>69%</b>	<b>69%</b>	<b>56%</b>	<b>56%</b>	<b>38%</b>	<b>38%</b>	<b>63%</b>	<b>0%</b>
	Developing institutions	3	5	2	Governance	75%	75%	50%	50%	50%	50%	100%	100%	25%	0%
					Transparency	100%	100%	75%	75%	75%	75%	100%	100%	50%	0%
					Public participation	100%	100%	0%	0%	50%	50%	0%	0%	0%	0%
					International cooperation	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%
					<b>SCORE</b>	<b>94%</b>	<b>94%</b>	<b>56%</b>	<b>56%</b>	<b>69%</b>	<b>69%</b>	<b>75%</b>	<b>75%</b>	<b>19%</b>	<b>0%</b>
		20	20	20											

**Table 14: Detailed overview of the scores of the initiatives (consumption)**

	RSPO	IFOAM	RA	ISCC	GAP
Creating awareness	100%	100%	100%	0%	0%
Educating	100%	100%	100%	50%	0%
Engaging	100%	100%	100%	0%	0%
	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>17%</b>	<b>0%</b>

## 5. CONCLUSION

### 5.1 CONCLUSION

It can be stated that palm oil production and the associated supply chains are very complex, especially when it comes to making these more sustainable. Because of the large impact the increasing palm oil production has on environmental and socio-economic sustainability it is important to analyse these chains in detail and to improve its sustainability where this is possible. Thailand is currently the third largest producer of palm oil and keeps on growing, it is therefore important to focus on making the supply chain more sustainable as a basis for sustainable growth (Lungtae & Atthirawong, 2014). Every country is different and the supply chain in Thailand is unique because of its use of middlemen and ramps, which are of great influence on the sustainability of palm oil supply chain<sup>1</sup> (Gonsalves, 2006). Currently the focus for sustainable palm oil production in Thailand is on certification by the RSPO, which is the largest player in sustainable palm oil production worldwide. However, it is also important to search for suitable alternatives that can contribute to a more sustainable palm oil production in Thailand and perhaps also globally.

Because the RSPO is already implemented in Thailand it is easier for the initiative to expand the amount of certified production within this country, because there is already a basis for this initiative. Furthermore it seems that the RSPO still scores higher than the alternative initiatives that have been investigated. Also even though some alternative initiatives score high on sustainability measures, the obstacle to implement them in another country such as Thailand is that it always has to be specified and translated for this country and made easily to be understood for farmers, which can take a lot of time<sup>2</sup>. GAP, just as RSPO, is already implemented into Thai palm oil production, however, this initiative only focuses on the first phase of the supply chain and it is important to look at all the actors along the supply chain in order to enhance sustainability and get new insights on this issue. The national agricultural office already defined GAP as a good first step towards RSPO certification<sup>1</sup> and that is exactly what it is because it raises awareness with the farmers on sustainable farming, its principles are easier to implement than those of other initiatives and it is relatively cheap. It must however not be the end goal towards sustainability because it only incorporates the production phase and it does not have a high score either when only looking at this phase.

The other three initiatives are not (yet) implemented in Thailand, which makes it important to also look at how these initiatives can be introduced to Thai palm oil production. Of these initiatives the Rainforest Alliance scores the highest regarding the principles of sustainability with IFOAM as a close second. The Rainforest Alliance already certified seven oil palm farmer groups and five single farmers in Latin America, however, these are all large farmers and it is important for Thailand to focus on smallholders (SAN, 2015). The ISCC is also already involved with oil palm farmers for example in Malaysia and its average overall score is just as

high on production and processing as IFOAM's is. However, it does not incorporate the consumer side of the supply chain, which impairs the sustainability of the initiative as a whole. It has to be taken into account that the initiative is currently developing a label for its products<sup>3</sup> which would improve the overall score of the ISCC. Furthermore it is also interested to get involved in Thai palm oil production. The last initiative, IFOAM, also scores high on sustainability, but it is not yet really involved in palm oil production, only a minimal amount of palm oil is produced under organic standards (Potts et al, 2014). It is unclear what the costs are for actors to get certified by IFOAM, but it is clear that the costs for complying with the standards are relatively high, because everything needs to be organic. For example the use of fertiliser: Oil palm production needs a certain amount of nutrients and this would mean that a lot of fertiliser needs to be applied when it is organic and this would lead to higher costs for the farmer<sup>1</sup>.

Concluding on to what extent the initiatives can contribute to making palm oil production more sustainable based on their sustainability performance and the ability to be implemented in Thailand, it must be said that the initiatives specifically need to adapt to the Thai production process and policies in order to be implemented in the right way. GAP offers a first step towards sustainability and is easily implemented, but does not score high on sustainability. IFOAM does score high, but is presumably the most difficult to implement due to its high costs and strict standards. The ISCC lacks in incorporating the consumer side of the supply chain, but when this problem is overcome it does have the ability to be well implemented in Thailand as it is already successful in the certification of sustainable palm oil supply chains elsewhere. The Rainforest Alliance scores highest and is already involved in palm oil production, these are however large farmers instead of smallholders. The Rainforest Alliance and the ISCC have the most potential in becoming implemented in Thai palm oil production, but it is necessary to take into account the costs of these actions. Furthermore, the RSPO should not be dropped and there still needs to be a focus on this organisation. The RSPO scores relatively high compared with the other initiatives, but there is of course always room for improvement. As shown in paragraph 3.1 there is a lot of criticism on the RSPO and one of those is the lack of legitimacy, therefore it is important that the RSPO focuses on improving the organisation itself.

## 5.2 DISCUSSION

This research was based on fieldwork as well as on literature and is specifically focused on Thailand. Therefore it might not be possible to translate all of the outcomes to a wider area. However, the evaluation of the sustainability initiatives that have not yet been implemented in Thailand is done in general and can be used as a basis for further research. This thesis contributes to research on Thai palm oil production because it expands the horizon by looking past RSPO certification. What needs to be taken into account is that the weights

given to the sustainability principles by the different perspectives are also based on literature and the author's own opinion, which might influence the final results. However, this was done as transparent and objective as possible.

What also needs to be discussed is that the principles that are described in this thesis are all derived from principles that are set up by the initiatives itself. To conclude on only these principles without an actual evaluation of these principles in practice could be very treacherous because theory and practice are not always in line with each other and this could possibly affect the actual sustainability of the initiative. Furthermore, what also needs to be taken into account is whether certification is the answer to making palm oil production more sustainable or whether there are other ways to reach this goal.

### 5.2.1 LIMITATIONS AND FURTHER RESEARCH

In order to get a better view on the sustainability of the initiatives regarding palm oil production, an impact assessment has to be done of the implementation of these initiatives in the field. This was unfortunately impossible during this MSc thesis, but can be interesting for further research. These impact assessments could be supported by a research for the actual costs that are associated with the implementation of the initiatives, because the means to get to this information were often not available. Another aspect of the research which could be looked into further by conducting fieldwork is how different actors would give importance to the various principles of sustainability, so the weights can be divided more clearly. What also would be interesting for further research is to compare how these initiatives perform compared with the RSPO itself, because this organisation has not been taken into account in this research, but is of course a large player in the sustainable palm oil market.

### 5.3 POLICY RECOMMENDATION

Based on the findings and the conclusions a policy recommendation can be made. A few aspects need to be taken into account to do this. The first is the lack of education and information among actors along the supply chain. Furthermore needs to be taken into account the unique situation in Thailand including its policies, the high amount of smallholders and the use of ramps and middlemen. Education on sustainable farming and processing needs to be given in order to raise awareness and engage actors. They need to be aware of the benefits of sustainable farming and learn about the measures they can take themselves in order to get more sustainable. From here on farmers can get more familiar with sustainability initiatives. The Thai government is already involved in this process but they lack employees to put this into practice. The RSPO certified mills are also already engaging in educating farmers and this is very actively done because one of the



requirements of the RSPO is for mills to educate and train farmers on sustainability. This also enlarges the amount of farmers they can source their oil palm from<sup>4</sup>. This is a good example on how to improve education of sustainable oil palm cultivation and with this issue there are a lot of opportunities for improvement.

Another thing that needs to be taken into account is the amount of smallholders, which is very large in Thailand compared to other palm oil producing countries. As said before, it is necessary for farmers to be able to organise themselves into groups in order to reduce costs and share knowledge. This would also reduce the pressure on administration, as this is often also seen as an obstacle for farmers to certify themselves. The problem with administration is caused by the many informal agreements actors have that need to be formalised and this is often a problem. In order to get certified as a group, the group needs a stable Internal Control System (ICS), which presumably needs some support from other organisations in order for it to last and be set up in a sustainable way. The middlemen and ramps often impair sustainability because they have a lot of control over the supply chain. These actors are needed because it is often expensive for a smallholder to bring its produce to the mill and so middlemen do the work for them. However, through farmer groups these middlemen can be surpassed because the farmers can then work together and collect its own produce to bring to the mill. The RSPO certified mills also often surpass the middlemen because they often source from plantations on their land or they collect the FFB themselves<sup>1</sup>.

When a stable supply chain is established within Thailand, this can form the basis for sustainability initiatives to be implemented. GAP can be a first step to get farmers more acquainted and from here sustainability can be further developed. Whichever initiative is implemented, it needs to be taken into account that it still needs to be specified for Thailand and that it can be a long process before these initiatives are fully and adequately implemented in order to make palm oil production more sustainable. However, the RSPO is already implemented in Thailand and scores high on the sustainability principles. It would be good step to implement RSPO certification further into Thailand, but before this is done it is necessary that the RSPO looks at ways on how to improve their shortcomings. One way of doing so is by comparing it with other initiatives.

---

<sup>1</sup> Author's meeting on January 21, 2015 with Somjai Npueng, expert on Thai oil palm production

<sup>2</sup> Author's interview on December 18, 2014 with Dr. Prakarn Veerakul of the Thai Department of Agriculture

<sup>3</sup> Author's email correspondence with Benno Tubbesing

<sup>4</sup> Author's meeting on January 14, 2015 with Mr. John Clendon, Managing Director of Univanic Palm oil

## REFERENCES

- ACT, Organic Agriculture Certification Thailand (2012) *Generic Manual for ACT Organic Certification*. Retrieved from [http://www.actorganic-cert.or.th/sites/default/files/223mn\\_generic.pdf](http://www.actorganic-cert.or.th/sites/default/files/223mn_generic.pdf) on 09-04-2015
- ACT, Organic Agriculture Certification Thailand (2014a) *About ACT*. Retrieved from <http://www.actorganic-cert.or.th/en/about> on 12-9-2014
- ACT, Organic Agriculture Certification Thailand (2014b) *Home*. Retrieved from <http://www.actorganic-cert.or.th/en> on 2-12-2014
- Ageron, B., Gunasekaran, A., & Spalanzani, A. (2012). Sustainable supply management: An empirical study. *International Journal of Production Economics*, 140(1), 168-182.
- Bulkeley, H. (2005). Reconfiguring environmental governance: towards a politics of scales and networks. *Political geography*, 24(8), 875-902.
- Dallinger, J. (2011). *Oil palm development in Thailand: economic, social and environmental considerations*. In: Oil Palm Expansion in South East Asia: Trends and Implications for Local Communities and Indigenous Peoples.
- Dallinger, J., Saswattecha, K., Sinsuphan, P., Dörnbrack, A. S., Center, E. E., & de Bassenges-Station, C. (2013). *Policy Assessment and Recommendations on Sustainable Bioenergy in Thailand*. Retrieved from [http://energycenter.epfl.ch/files/content/sites/energy-center/files/projets/Bioenergy%20Team/13-11-21%20Report\\_BioenergyThailand\\_EPFL\\_final.pdf](http://energycenter.epfl.ch/files/content/sites/energy-center/files/projets/Bioenergy%20Team/13-11-21%20Report_BioenergyThailand_EPFL_final.pdf) on 10-04-2015
- FAO (2008) Good Agricultural Practices. Retrieved from <http://www.fao.org/prods/gap/> on 12-9-2014
- Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., Brühl, C. A., Donald, P. F., & Phalan, B. (2008). How will oil palm expansion affect biodiversity?. *Trends in ecology & evolution*, 23(10), 538-545.
- Geibler, J. von (2013). Market-based governance for sustainability in value chains: conditions for successful standard setting in the palm oil sector. *Journal of Cleaner Production*, 56, 39-53.

German, L., Schoneveld, G. C., & Pacheco, P. (2011). The social and environmental impacts of biofuel feedstock cultivation: evidence from multi-site research in the forest frontier. *Ecology and Society*, 16(3), 24.

Gilg, A., Barr, S., & Ford, N. (2005). Green consumption or sustainable lifestyles? Identifying the sustainable consumer. *Futures*, 37(6), 481-504.

Giunipero, L. C., Hooker, R. E., & Denslow, D. (2012). Purchasing and supply management sustainability: Drivers and barriers. *Journal of Purchasing and Supply Management*, 18(4), 258-269.

Gonsalves, J.B. (2006) *An Assessment of the Biofuels Industry in Thailand*. United Nations Conference on Trade and Development, Geneva.

Gupta, J., Termeer, C., Klostermann, J., Meijerink, S., van den Brink, M., Jong, P., Nooteboom, S. & Bergsma, E. (2010). The adaptive capacity wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy*, 13(6), 459-471.

Hazell, P., & Wood, S. (2008). Drivers of change in global agriculture. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1491), 495-515.

Hung, S. W., Chen, P. C., & Chung, C. F. (2014). Gaining or losing? The social capital perspective on supply chain members' knowledge sharing of green practices. *Technology Analysis & Strategic Management*, 26(2), 189-206.

IFOAM (2014a) *Strategic Plan*. Retrieved from [http://www.ifoam.org/sites/default/files/strategic\\_plan\\_2011\\_web.pdf](http://www.ifoam.org/sites/default/files/strategic_plan_2011_web.pdf) on 7-8-2014

IFOAM (2014b) *IFOAM Accredited certification bodies*. Retrieved from <http://www.ifoam.org/en/ifoam-accredited-certification-bodies> on 12-9-2014

IFOAM (2014c) *The IFOAM NORMS for Organics Production and Processing*. Retrieved from [http://www.ifoam.bio/sites/default/files/ifoam\\_norms\\_version\\_july\\_2014.pdf](http://www.ifoam.bio/sites/default/files/ifoam_norms_version_july_2014.pdf) on 22-1-2015

IFOAM (2015) *Internal Control Systems (ICS) for group certification*. Retrieved from <http://www.ifoam.bio/en/internal-control-systems-ics-group-certification> on 01-04-2015

Indexmundi (2014) *Agricultural production, supply and distribution*. Retrieved from <http://www.indexmundi.com/agriculture/> on 22-9-2014

- IndexMundi (2015) *Palm Oil imports by Country in 1000 MT*. Retrieved from <http://www.indexmundi.com/agriculture/?commodity=palm-oil&graph=imports> on 26-04-2015
- ISCC (2011) *System basics for the certification of sustainable biomass and bioenergy*. Retrieved from [http://www.iscc-system.org/uploads/media/ISCC\\_EU\\_201\\_System\\_Basics\\_2.3\\_01.pdf](http://www.iscc-system.org/uploads/media/ISCC_EU_201_System_Basics_2.3_01.pdf) on 01-04-2015
- ISCC (2012) *Group Certification*. Retrieved from [http://www.iscc-system.org/uploads/media/ISCC\\_EU\\_256\\_Group\\_Certification\\_2.3\\_10.pdf](http://www.iscc-system.org/uploads/media/ISCC_EU_256_Group_Certification_2.3_10.pdf) on 07-04-2015
- ISCC (2014a) *Sustainability requirements for the production of Biomass*. Retrieved from [http://www.iscc-system.org/uploads/media/ISCC\\_EU\\_202\\_Sustainability\\_Requirements-Requirements\\_for\\_theProduction\\_of\\_Biomasse\\_2.3.pdf](http://www.iscc-system.org/uploads/media/ISCC_EU_202_Sustainability_Requirements-Requirements_for_theProduction_of_Biomasse_2.3.pdf) on 07-04-2015
- ISCC (2014b) *Requirements for Traceability*. Retrieved from [http://www.iscc-system.org/uploads/media/ISCC\\_EU\\_203\\_Requirements\\_for\\_Traceability\\_2.3.pdf](http://www.iscc-system.org/uploads/media/ISCC_EU_203_Requirements_for_Traceability_2.3.pdf) on 07-04-2015
- ISCC (2015a) *About ISCC*. Retrieved from <http://www.iscc-system.org/en/iscc-system/about-iscc/> on 01-04-2015
- ISCC (2015b) *Valid Certificates*. Retrieved from <http://www.iscc-system.org/en/certificate-holders/valid-certificates/> on 22-04-2015
- Kochaphum, C., Gheewala, S. H., & Vinitnantharat, S. (2013). Does biodiesel demand affect palm oil prices in Thailand?. *Energy for Sustainable Development*, 17(6), 658-670.
- Koh, L. P., & Wilcove, D. S. (2008). Is oil palm agriculture really destroying tropical biodiversity?. *Conservation letters*, 1(2), 60-64.
- Laurance, W. F., Koh, L. P., Butler, R., Sodhi, N. S., Bradshaw, C. J., Neidel, J. D., Consunji, H. & Mateo Vega, J. (2010). Improving the performance of the roundtable on sustainable palm oil for nature conservation. *Conservation Biology*, 24(2), 377-381.
- Lungtae, S., & Atthirawong, W. (2014). Development and Retaining Model of Long Term Relationship Between Buyers and Sellers in Supply Chain of Palm Oil Industry in Thailand: A Seller's Perspective. *Research Journal of Business Management*, 8(4), 300-318.

Mallamphut, A. (2014) *Overview of Thailand Palm oil Industry*. Presented at the Asia Palm Oil Conference 2014.

Monteiro de Carvalho, C. (2013). Palm oil expansion on degraded land for biodiesel production: a case study in Pará state, Brazil. *Biofuels*, 4(5), 485-492.

Mukherjee, I. & Sovacool, B.K. (2014) Palm oil-based biofuels and sustainability in southeast Asia: A review of Indonesia, Malaysia and Thailand. *Renewable and Sustainable Energy Reviews*, 37, 1-12

National Bureau of Agricultural Commodity and Food Standards (ACFS) (2010) Good Agricultural Practices for Oil Palm. *Royal Gazette*, Vol. 127, Section 147D

Nesadurai, H. E. (2013). Food security, the palm oil–land conflict nexus, and sustainability: a governance role for a private multi-stakeholder regime like the RSPO? *The Pacific Review*, 26(5), 505-529.

Nikoloyuk, J., Burns, T. R., & de Man, R. (2010). The promise and limitations of partnered governance: The case of sustainable palm oil. *Corporate Governance*, 10(1), 59-72.

Oosterveer, P. (2009) Governing Environmental Flows: Ecological Modernization in Technonatural Time/Spaces. In D. F. White and C. Wilbert (eds) *Technonatures; Environments, Technologies, Spaces, and Places in the Twenty-first Century*. Waterloo; Wilfried Laurier University Press: 35-62

Oosterveer, P. (2014). Promoting sustainable palm oil: viewed from a global networks and flows perspective. *Journal of Cleaner Production*.  
<http://dx.doi.org/10.1016/j.jclepro.2014.01.019>

Pleanjai, S., & Gheewala, S. H. (2009). Full chain energy analysis of biodiesel production from palm oil in Thailand. *Applied Energy*, 86, S209-S214.

Potts, J., Lynch, M., Wilkings, A., Huppé, G., Cunningham, M., & Voora, V. (2014). *The State of Sustainability Initiatives Review 2014: Standards and the Green Economy*. International Institute for Sustainable Development and London and the International Institute for Environment and Development.

ProForest (2003) *Defining sustainability in oil palm production: an analysis of existing sustainable agriculture and oil palm initiatives*. Oxford, United Kingdom.

Quental, N., Lourenço, J. M., & da Silva, F. N. (2011). Sustainable development policy: goals, targets and political cycles. *Sustainable Development*, 19(1), 15-29.

Rainforest Alliance (2012) *Rainforest Alliance Certified Palm Oil FAQ*. Retrieved from <http://www.rainforest-alliance.org/publications/palm-oil-faq> on 30-10-2014

Rainforest Alliance (2014) *Sustainable Agriculture Network / Rainforest Alliance certification: Chain-of-Custody*. Retrieved from <http://www.rainforest-alliance.org/agriculture/certification/coc> on 20-01-2015

Rainforest Alliance (2014a) *About us*. Retrieved from <http://www.rainforest-alliance.org/about> on 7-8-2014

Rainforest Alliance (2014b) *The Rainforest Alliance and Palm Oil*. Retrieved from <http://www.rainforest-alliance.org/work/agriculture/palm-oil> on 7-8-2014

Rainforest Alliance (2015) *Sustainable Palm Oil. Responsible Production and Sourcing*. Retrieved from [http://www.rainforest-alliance.org/sites/default/files/publication/pdf/palmoil\\_brochure\\_150224\\_singles.pdf](http://www.rainforest-alliance.org/sites/default/files/publication/pdf/palmoil_brochure_150224_singles.pdf) on 26-04-2015

Rist, L., Feintrenie, L., & Levang, P. (2010). The livelihood impacts of oil palm: smallholders in Indonesia. *Biodiversity and Conservation*, 19(4), 1009-1024.

RSPO (2008) *Book and Claim*. Retrieved from [http://www.rspo.org/file/fact\\_sheet\\_-\\_book\\_and\\_claim\\_240908%5B1%5D.pdf](http://www.rspo.org/file/fact_sheet_-_book_and_claim_240908%5B1%5D.pdf) on 21-01-2015

RSPO (2011) *Roundtable on Sustainable Palm Oil (RSPO) Principles and Criteria for Thailand (TH-NI). Indicators and Guidance for the Thai RSPO Establishment*. Thai National Interpretation Working Group on Indicators and Guidance. June 7, 2011.

RSPO (2012) *Roundtable on Sustainable Palm Oil – Factsheet*. Retrieved from [http://www.rspo.org/file/RSPO\\_factsheet\\_120705\\_25july.pdf](http://www.rspo.org/file/RSPO_factsheet_120705_25july.pdf) on 21-01-2015

RSPO (2013) *Principles and Criteria for the production of sustainable palm oil*. Retrieved from <http://www.rspo.org/publications/download/224fa0187afb4b7> on 21-01-2015.

RSPO (2014a) *Who is RSPO*. Retrieved from [http://www.rspo.org/en/who\\_is\\_rspo](http://www.rspo.org/en/who_is_rspo) on 12-9-2014

RSPO (2014b) *Market Data*. Retrieved from [http://www.rspo.org/en/Market Data - As at 31st August 2014](http://www.rspo.org/en/Market_Data_-_As_at_31st_August_2014) on 01-10-2014

RSPO (2014c) *RSPO Trademark Usage and Guidelines*. Retrieved from <http://www.rspo.org/resources/supplementary-materials/communications> on 01-05-2015

RSPO (2015) *RSPO Smallholders Support Fund (RSSF)*. Retrieved from <http://www.rspo.org/certification/smallholders> on 01-05-2015

Ruysschaert, D., & Salles, D. (2014). Towards global voluntary standards: Questioning the effectiveness in attaining conservation goals: The case of the Roundtable on Sustainable Palm Oil (RSPO). *Ecological Economics*, 107, 438-446.

Savilaakso, S., Garcia, C., Garcia-Ulloa, J., Ghazoul, J., Groom, M., Guariguata, M. R., Laumonier, Y., Nasi, R., Petrokofsky, G., Snaddon, J. & Zrust, M. (2014). Systematic review of effects on biodiversity from oil palm production. *Environmental Evidence*, 3(1), 1-21.

Schmidt, M., Hansmann, B., & Dewitz, P. (2014). *The Role of Sustainability Standards in the Energetic Use of Palm Oil Plantation Residues: Case Study of Cameroon*. In Voluntary Standard Systems (pp. 211-227). Springer Berlin Heidelberg.

Schouten, G., & Glasbergen, P. (2011). Creating legitimacy in global private governance: The case of the Roundtable on Sustainable Palm Oil. *Ecological economics*, 70(11), 1891-1899.

Schrader, U., & Thøgersen, J. (2011). Putting sustainable consumption into practice. *Journal of consumer policy*, 34(1), 3-8.

Silalertruksa, T., & Gheewala, S. H. (2012). Environmental sustainability assessment of palm biodiesel production in Thailand. *Energy*, 43(1), 306-314.

Silalertruksa, T., Bonnet, S., & Gheewala, S. H. (2012). Life cycle costing and externalities of palm oil biodiesel in Thailand. *Journal of Cleaner Production*, 28, 225-232.

Smit, H. H., Meijaard, E., van der Laan, C., Mantel, S., Budiman, A., & Verweij, P. (2013). Breaking the link between environmental degradation and oil palm expansion: a method for enabling sustainable oil palm expansion. *PloS one*, 8(9), e68610.

Sustainable Agriculture Network (2013a) *General Interpretation Guide – Group certification Standards*. Retrieved from

[http://www.san.ag/biblioteca/docs/SAN\\_GIG\\_Group\\_Certification\\_Standard\\_March\\_2013.pdf](http://www.san.ag/biblioteca/docs/SAN_GIG_Group_Certification_Standard_March_2013.pdf) on 31-03-2015

Sustainable Agriculture Network (2013b) *Farm and Group Administrator Certification policy*. Retrieved from [http://www.san.ag/biblioteca/docs/SAN-P-5-1.2\\_Certification\\_Policy.pdf](http://www.san.ag/biblioteca/docs/SAN-P-5-1.2_Certification_Policy.pdf) on 20-01-2015

Sustainable Agriculture Network (2014a) General Interpretation guide – Sustainable agriculture standard. Retrieved from [http://www.san.ag/biblioteca/docs/SAN-G-20-2\\_Agriculture\\_Standard\\_Guide.pdf](http://www.san.ag/biblioteca/docs/SAN-G-20-2_Agriculture_Standard_Guide.pdf) on 20-01-2015

Sustainable Agriculture Network (2014b) Chain of custody standard. Retrieved from <http://www.rainforest-alliance.org/sites/default/files/uploads/3/SAN-S-5-2-SAN-RA-Chain-of-Custody-Standard.pdf> on 20-01-2015

Sustainable Agriculture Network (2015) *List of certified farms and operations*. Retrieved from <http://san.ag/web/wp-content/uploads/2015/02/List-of-certified-farms-and-operations-January-31st-2015.pdf> on 08-04-2015

Tan, K. T., Lee, K. T., Mohamed, A. R., & Bhatia, S. (2009). Palm oil: addressing issues and towards sustainable development. *Renewable and Sustainable Energy Reviews*, 13(2), 420-427.

Ukosakul, M. (2005). The significance of 'face' and politeness in social interaction as revealed through Thai 'face' idioms. *Broadening the horizon of linguistic politeness*, 139, 117.

Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer "attitude-behavioral intention" gap. *Journal of Agricultural and Environmental Ethics*, 19(2), 169-194.

Virakul, P. (2011) *The National Interpretation Working Group: RSPO in Thailand – Challenges for prosperity of smallholders*. Retrieved from [http://www.thaipalmoil.com/paper2011/DR.%20PRAKARN\\_CHAIRMAN%20THAI%20RSPO.pdf](http://www.thaipalmoil.com/paper2011/DR.%20PRAKARN_CHAIRMAN%20THAI%20RSPO.pdf) on 5-1-2015

von Geibler, J. (2013). Market-based governance for sustainability in value chains: conditions for successful standard setting in the palm oil sector. *Journal of Cleaner Production*, 56, 39-53



Wianwiwat, S., & Asafu-Adjaye, J. (2013). Is there a role for biofuels in promoting energy self-sufficiency and security? A CGE analysis of biofuel policy in Thailand. *Energy Policy*, 55, 543-555.

Wilcove, D. S., & Koh, L. P. (2010). Addressing the threats to biodiversity from oil-palm agriculture. *Biodiversity and Conservation*, 19(4), 999-1007

World Bank & IFC (2011) *The World Bank Group and IFC Strategy for Engagement in the Palm Oil Sector*. The World Bank and IFC, Washington

Young, O. R., Agrawal, A., King, L. A., Sand, P. H., Underdal, A., & Wasson, M. (1999). *Institutional dimensions of global environmental change*. Science Plan. Bonn: IHDP.

## ANNEX I: LIST OF CONDUCTED INTERVIEWS

Actor(s)	Specifics	Amount of interviews
Certified oil palm farmer	-	5
Non-certified oil palm farmer	-	9
Non-oil palm farmer	-	5
Community members	-	5
Certified oil palm mills	SPO Agroindustry	1
	Unity Palm Oil	1
	Univanich Palm Oil PCL	1
	Patum Vegetable Oil Co.	1
Non-certified oil palm mills	-	3
Government	Ministry of Agriculture	1
	Local Agriculture office Krabi	1
	GAP office Suratthani	1
Dr. Tanong Aewsiri (Walailak University)	Email correspondence about GMP	1
Benno Tubbesing (ISCC)	Email correspondence about ISCC	1

## ANNEX II: QUESTIONNAIRES

### 1. QUESTIONNAIRE FOR CERTIFIED OIL PALM FARMERS

- To which standards/certifying bodies do you comply?
  - Why these?
- What sustainability measures do you take?
- What was the former land use of this area?
  - How did you convert it to oil palm plantation?
- What is the plot size?
- What are your personal benefits for complying with a standard?
- What are the wider benefits (environmental, economic and social) for complying with a standard?
- What are your personal costs for complying with a standard?
- Has your livelihood improved since you switched to oil palm cultivation?
- Are you content with the arrangements? On a scale from 1 – 10
  - What could be further improved?

### 2. QUESTIONNAIRE FOR NON-CERTIFIED OIL PALM FARMERS

- What is the plot size?
- What was the former land use of this area?
  - How did you convert it to oil palm plantation?
- Why don't you comply with standards?
- Do you use sustainability measures?
  - Why and what kind of measures?
  - Or why not?
- Do you want to comply to a standard in the future?
  - Which one? And why?
  - Or why not?

### 3. QUESTIONNAIRE FOR NON-OIL PALM FARMERS

- What is the plot size?
- What kind of crops do you grow?
  - Are you certified?
  - Do you take sustainability measures?
    - Why and which one?
    - Why not?

- Former land?
  - How did you convert it to current plantation?
- Why don't you grow palm oil?
- Are you planning on converting your land to palm oil?
  - Why not?
  - Why and are you going to use sustainability measures?
    - Are you going to comply and if so, to which standards?

#### 4. QUESTIONNAIRE FOR COMMUNITY MEMBERS

- What is your occupation?
- Do you make use of palm oil?
  - Where do you use it for?
- Have you noticed any changes that involve palm oil production?
  - Price changes?
  - Deforestation?
  - Change in land rights?
- Is there a difference for you between sustainable and unsustainable palm oil and does it influence your consumer behavior?

#### 5. QUESTIONNAIRE FOR CERTIFIED OIL PALM MILLS

- What is the size/capacity of the factory?
- To which standards/certifying bodies do you comply?
  - Why these?
  - What sustainability measures do you take (environmental, economic and social)?
- What are your personal/company benefits for complying with a standard?
- What are the wider benefits (environmental, economic and social) for complying with a standard?
- What are your personal/company costs for complying with a standard?
- Has your livelihood/Have the profits improved since you switched to oil palm processing?
- Are you content with the arrangements? On a scale from 1 – 10
  - What could be further improved?

#### 6. QUESTIONNAIRE FOR NON-CERTIFIED OIL PALM MILLS

- What is the size/capacity of the factory?
- Why don't you comply with sustainability standards?

- Do you use sustainability measures?
  - Why and what kind of measures?
  - Or why not?
- Do you want to comply with a standard in the future?
  - Which one? And why?
  - Or why not?

## 7. QUESTIONNAIRE FOR GOVERNMENTAL BODIES

### MINISTRY OF AGRICULTURE

- How is the Thai government involved in making palm oil production more sustainable and what are the policies?
  - Alternative Energy Development Plan (AEDP)?
    - What are the goals?
    - How has it been implemented?
    - Has it been successful for making palm oil more sustainable?
  - Implementing Good Agriculture Practices (GAP) / Can you say that GAP is used in the AEDP?
    - What are the goals? What is its view on palm oil production?
    - Has it been successful in making palm oil more sustainable?
      - How many complying?
      - What standards?
      - How has it been implemented?
    - Do you know how the certification process takes place with
      - Production?
      - Processing?
    - What are the benefits from compliance? (Social, economic, environmental)
    - What are the costs (opportunity, implementation, transaction)?
    - What are the limitations of GAP? What can be improved?
    - How can the initiative be further implemented in palm oil in Thailand?
  - Are there interactions with Organic Agriculture Certification Thailand (ACT)?  
Based on the information online
    - In what way is the government involved with ACT?
    - Is ACT involved with palm oil production and has the ACT been successful in making palm oil more sustainable?
      - How many complying?
      - What standards?

- How has it been implemented?
- Do you know how the certification process takes place with
  - Production?
  - Processing?
- What are the benefits from compliance? (Social, economic, environmental)
- What are the costs (opportunity, implementation, transaction)?
- What are the limitations of ACT? What can be improved?
- How can the initiative be further implemented in palm oil in Thailand?
- Are there any NGOs involved in policy making on Thai sustainable palm oil?
  - If so:
    - Which ones?
    - How does this cooperation work?
  - If not:
    - Why not?
    - Will NGOs be involved in the future? Which ones?
- Is there a strong cooperation between local/national/global governments?
  - How is the cooperation between local and national governments?
  - How is the cooperation between national and global governments?
    - Which other countries are involved in making Thai palm oil production more sustainable?
    - Does the interaction with other countries have a stimulating effect on making palm oil production more sustainable?
- What are future developments for policies regarding palm oil production in Thailand?

---

#### LOCAL AGRICULTURE OFFICE KRABI

- How is the local Thai government involved in making palm oil production more sustainable and what are the policies?
  - What are the goals?
  - How has it been implemented?
  - Has it been successful for making palm oil more sustainable?
  - How have national GAP policies been transferred to local policies?
    - What are the goals? What is its view on palm oil production?
    - Has it been successful in making palm oil more sustainable?
      - How many complying?
      - What standards?
      - How has it been implemented?

- What are the benefits from compliance? (Social, economic, environmental)
- What are the costs (opportunity, implementation, transaction)?
- What are the limitations of GAP? What can be improved?
- How can the initiative be further implemented in palm oil in the local community?
- Is there a strong cooperation between local/national/global governments?
  - How is the cooperation between local and national governments?
- What are future developments for policies regarding palm oil production in this area?

---

#### GAP OFFICE SURATTHANI

- Can you tell me about what GAP stands for as an initiative?
  - What is its view on sustainable palm oil production and what are its standards?
  - Is there a form of certification in Thailand?
- What would you say would be the
  - Personal benefits for the farmer on social and economic level?
  - And are there benefits for the wider community level?
  - And what are the costs? (Opportunity, implementation, transaction)
  - What are the limitations?
- It is a voluntary standard, but how are farmers stimulated to apply this initiative and use its sustainability measures?
  - How do they apply for GAP(-certification)?
  - Are there many farmers who use these standards?
  - How can it be further implemented in Thailand?
- Is it correct that the Agricultural Commodity and Food Standards (ACFS) is the accreditation body for this initiative?
  - And if so, how does that work?
- Is the GAP seen as a final form of producing sustainable palm oil? Or would you say that it is one of the first steps (to RSPO)? *Information from previous interview*
- Can you tell me a bit more about the group certification and the internal control system?
- There is also Good Manufacturing Practices (GMP); what are the standards on this? Can you tell me more about this initiative?

#### 8. QUESTIONNAIRE FOR DR. TANONG AEWSIRI ABOUT GMP

- Can you tell me about what GMP stands for as an initiative?
  - What is its view on sustainable palm oil production and what are its standards?
  - How is it linked to GAP?
- What would you say would be the
  - Personal benefits for the farmer on social and economic level?
  - And are there benefits for the wider community level?
  - And what are the costs? (Opportunity, implementation, transaction)
  - What are the limitations?
- How are manufacturers stimulated to apply this initiative and use its sustainability measures?
  - How do they apply for GMP(-certification)?
  - Are there many manufacturers who use these standards?
  - How can it be further implemented in Thailand?
- Is the GMP seen as a final form of producing sustainable palm oil? Or would you say that it is one of the first steps (to RSPO) as it is for GAP?

#### 9. QUESTIONNAIRE FOR BENNO TUBBESING ABOUT THE ISCC

- What is the view of the ISCC on palm oil production? In other words; what does the initiative think about the current issues that are linked to the production of palm oil?
- What are the standards of the ISCC and how do they apply to palm oil production?
- How does the certification process take place? Is this certification visible for consumers, for instance by using a label? If so, is this effective in raising awareness for the consumer?
- What are the environmental, social and economic benefits from compliance with the ISCC for producers, processors (mills and refineries) and the community?
  - Which aspects or principles do you think are key factors for improving sustainability?
- What are the estimated costs for actors to comply with the ISCC?
- What are the future plans of the ISCC regarding palm oil production?
- In how far is the ISCC involved in sustainable palm oil production in Thailand?
  - How can it further be implemented?
  - What do you see as strengths and limitations of making palm oil production more sustainable?