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The EU Renewable Energy Directive 2009/28/EC and its Sustainability Criteria
- *An Effective Approach to Alleviate Climate Change?*

The Case of Indonesian Palm Oil

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Abstract: *This work aims at examining in how far the sustainability criteria imposed by the EU Renewable Energy Directive (RED) 2009/28/EC represent a way to operationalize the concept of sustainability and thereby to put green accounting into practice. Against this theoretical background a descriptive analysis elaborates on the effect and various practical implications of the RED's sustainability criteria regarding the specific case of Indonesian palm oil. In a further step, the conclusions drawn from the Indonesian problem context will be categorized as weaknesses, strengths, opportunities and threats according to the empirical-analytical SWOT-Analysis. Building on these results, relevant normative policy recommendations regarding future EU Bioenergy policy-making will be finally deduced.*

Declaration

I declare on oath that I authored the following paper independently and without assistance and that I only used the resources indicated in the paper.

All extracts that have been copied from publications analogously or literally, are marked as such.

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Abbreviations & Acronyms

AICCAN	Aggregate Indicator of the Change, during the Current year, in the economic Assets of the Nation
BSO	Biomass Sustainability Ordinance
BWI	Business Watch Indonesia
EIA	Environmental Impact Assessment
EKC	Environmental-Kuznets-Curve
EU	European Union
DLUC	Direct Land-Use Change(s)
EC	European Community
FQD	Fuel Quality Directive
GATT	General Agreement on Tariffs and Trade
GHG	Greenhouse Gas(es)
GDP	Gross Domestic Product
geGDP	Green Economy Gross Domestic Product
HCFV	High Conservation Value Forest(s)
IFEU	Institute for Applied Ecology
ILUC	Indirect Land-Use Change(s)
ISCC	International Sustainability and Carbon Certification
MEP	Managed Engineered POME Digester
NAMEA	National Accounts Matrix including Environmental Accounts
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
POME	Palm Oil Mill Effluent
RED	Renewable Energy Directive
RSB	Roundtable on Sustainable Biofuels
RSPO	Roundtable for Sustainable Palm Oil
RTFO	Renewable Transport Fuels Obligation
RTRS	Round Table for Responsible Soy
SNA	System of National Accounts
SWOT	Strengths, Weaknesses, Opportunities, Threats
TIMNAS BBN	Tim Nasional Pengembangan Bahan Bakar Nabati
USDA	United States Department of Agriculture
UN	United Nations
WTO	World Trade Organization

1. Introduction

"How much sustainable palm oil is actually out there in the world at the moment?"
"Today there is pretty well nothing"
Gavin Neath, Unilever, April 2008 (Greenpeace, 2008, p.21)

The debate on the sustainability of palm oil for the energetic use as "biofuel" [1] is a topical issue of high controversy and emotionality that is currently contributing to a new politicization of the discussion on climate change. Within the context of climate change alleviation the palm oil industry represents an important economic sector, even though it is based on the (over-) exploitation of natural resources (Dera, 2009). At present, the palm oil sector is experiencing an unprecedented boom, which has a positive effect on the economic growth in developing and newly industrialized countries. Here, the global production and exports are mainly dominated by Indonesia, while a lion's share of imports by countries from the north is held by the European Union (EU) (OVID, 2010). Nevertheless, this development is in first place not due to an economic demand, but the effect of a political decision by the EU that is led by the intention to counter climate change and to guarantee energy safety (Schott, 2008). Therefore, the EU plays a leading role regarding the extension of the utilization of bioenergy[2].

With its new Renewable Energy Directive (RED) 2009/28/EC the EU-Member States have committed themselves to achieve a 20% share of renewable energy in Europe's final energy consumption by 2020. In this context biofuels represent a decisive means to realize this aim within the transport sector. In order to ensure that these policy objectives do not create counterproductive outcomes (e.g. ecologically unsustainable practices) the RED introduced sustainability criteria. Those shall guarantee that only sustainably produced biofuels and bioliquids are counted towards the EU 2020-target (Piket, 2009). However, considering the highly problematic impact of this elaborated and promising policy-measure on the context of Indonesian palm oil, this immediately raises doubts whether and in how far biofuels and the EU's RED strategy to alleviate climate change can be regarded as sustainable and effective.

Before the theoretical base of the thesis and the implications of the EU's RED and sustainability criteria for the case of Indonesian Palm Oil will be elaborated in detail, this chapter will at first outline the research object and methodology. Then, Chapter 2 will introduce the theory and rationale of green accounting and will connect it with the relevant concepts of sustainability. Further, it will show to what extent inter-country environmental load displacement is taking place between the EU and Indonesia and how this fits into the context of green accounting. Then, the chapter will link theory to practice by highlighting the RED's sustainability criteria as

[1] According to the RED, biofuels mean liquid or gaseous fuels for transport produced from biomass (Directive 2009/28/EC)
[2] Bioenergy describes the energetic use of biomass and stands for an ecological energy source. It represents one of the five pillars of renewable energies. While all alternative energy sources can be applied in the field of electricity and heating, up to now biofuels are solely applied within the transport sector (OVID, Glossar).

a suitable means to operationalize the concept of sustainability and thereby to apply green accounting theory to a concrete policy case. Building on the theoretical considerations of Chapter 2, the third Chapter will examine the impact and practical implications of the RED and its criteria regarding the specific case of Indonesian palm oil. Since the problem of the promotion of biofuels represents more of a cross-cutting issue than a single and easy definable policy area, the chapter will analyze these implications by considering different dimensions, levels and actors that are crucial for the production of sustainable palm oil in Indonesia. Acknowledging the special relevance of single economic operators in terms of realizing the demand for sustainable palm oil in a bottom-up process, the chapter will also place a focus upon the study of the exemplary case of the Agribusiness *Cargill*. With reference to the impact analysis of Chapter 3, Chapter 4 draws relevant conclusions by highlighting the strengths, weaknesses, opportunities and threats (SWOT-Analysis) of the EU strategy and criteria within the context of Indonesian palm oil. In a final step, Chapter 5 will outline various policy recommendations for future EU Bioenergy policy-making that can be deduced from the analysis.

1.1 Object of Research and Research Question

The object of this research is the EU's RED, in a wider sense, and the directive's sustainability criteria in a narrow sense. Within this context the guiding research question is:
To what extent do the RED and its sustainability criteria represent an effective approach and means to contribute to the alleviation of climate change regarding the specific case of Indonesian palm oil?

This question will be answered based on the principle of impact assessment since this has the potential to evaluate policy measures which have just been implemented at an earlier point in time.

The analysis is based on addressing the following sub-questions:

(1) What is green accounting and how is it linked with the concepts of sustainability? (Section 2.1)
(2) How do the RED's sustainability criteria represent a way of putting green accounting into practice? (Section 2.2 and 2.3)
(3) What are the positive or negative implications of the RED and its sustainability criteria for the case of Indonesian palm oil and what chances or difficulties does the Indonesian problem context provide? (Chapter 3)
(4) Considering the example of Cargill, in how far does a single economic operator manage to alleviate climate change? (Section 3.4)
(5) What are the strengths, weaknesses, opportunities and threats of the RED and its criteria regarding the rationale of climate change alleviation? (Chapter 4)

(6) What could future EU bioenergy policy look like (Chapter 5)?

1.2 Theoretical Approach and Research Method

The theoretical approach of this thesis is based on the theory of green accounting, its links to the concepts of sustainability (e.g. weak vs. strong sustainability) and its policy application through the RED and the directive's sustainability criteria within the context of Indonesian palm oil. Against the background of the central research question and the respective sub-questions a descriptive impact analysis shall be conducted that takes the cross-cutting nature of the promotion of biofuels into special consideration. Therefore, the analysis is organized by different dimensions that give room for bringing up the specific issues prevailing on a specific level or regarding a concrete actor and institution: Accordingly, the analysis focuses equally on (1) the national Indonesian context and political framework, (2) the sectoral level of the palm oil industry and the role of the RSPO, (3) the palm oil supply chain liabilities of the economic operator *Cargill*, and (4) the social and ecological issues involved onsite.

In order to structure the conclusions that can be drawn from this impact analysis an empirical-analytical SWOT-analysis shall be applied: The acronym stands for s*trengths*, *weaknesses*, *opportunities* and *threats.* While the first two aspects represent the *internal analysis*, the last two aspects deal with the *external analysis* (Schneider et al., 2007). Originally this analysis is used as a tool for strategic management or formative evaluations of programs, but its application can similarly be extended to any decision-making situation. On this account, the SWOT-Analysis is also suitable within the framework of a policy-analysis and the evaluation of the effectiveness of the RED and its criteria. With regard to the object of this research, the *internal analysis* will highlight the positive and negative implications for the case of Indonesian palm oil that arise from the EU's RED and its criteria. Meanwhile, the *external analysis* will examine the opportunities and threats that are specifically inherent to the Indonesian problem context. The outcome of this analyses is then organized in a typical SWOT-Matrix, which enables the analyst to overlook which aspects of the matrix may be combined (i.e. S-O, S-W, S-T, W-T) in order to develop normative policy recommendations as a final result (Schneider et al., 2007).

2. Green Accounting and its Policy Application

2.1 Green Accounting and Sustainability

With regard to the concept of `sustainability´ and `sustainable development´ there is vast agreement: environment and economy interact and this calls for environmental and socioeconomic policies. Scratching, however, on the surface opens a Pandora's Box of opposing means to operationalize the vague notion of sustainability. This notion is the subject of a heated debate among environmentalists and environmental economics on the most suitable indicators

and policies. In this respect, greening national accounts has the potential to cool down the debate by translating environmental concerns into economic variables (Bartelmus, 1999). However, this quickly leads to the question of which concept of sustainability shall be applied, which again bears different consequences for environmental policy-making.

Basically, two general concepts can be distinguished: *weak sustainability* (also called economic sustainability) and *strong sustainability* (also called ecological sustainability). The two concepts are opposed to each other as they provide different understanding regarding the general substitutability between the environment and the economy or between "natural capital" and "manufactured capital". While there is consent in the debate regarding the idea that sustainability is linked with the existence of liabilities with regard to future generations, there is great dissent which understanding of inter-generation fairness shall be applied. In this regard, both concepts have different assumptions and constitutional elements that relate to the following aspects: the possibility and acceptance of a substitution of different capital stocks[3], the relationship between utility and consumption, the handling of the issue of discounting, the possibilities of compensation for environmental damage, the explanatory power of the Environmental-Kuznets-Curve, and the role of technological progress (Sachverständigenrat für Umweltfragen [SRU], 2002).

The central idea of weak sustainability is that all forms of capital can be each other's substitutes irrespective of how the stock of capital is composed. As a consequence, the concept allows for the degradation or depletion of natural resources, so long as such a process is compensated by increases in the stocks of other forms of capital (Organisation for Economic Co-operation and Development [OECD], 2005). On the contrary, the concept of strong sustainability postulates the existence of clear limitations regarding the substitutability between stocks of capital. In this respect, particularly natural capital is regarded as non-substitutable. This is due to the assumption that the comprehensive ecological system inherits a reproductive function that is essential for the continuity of the economic system. Therefore, the economic system may only act within the boundaries of nature's reproductive capacity (SRU, 2002).

The main difference between the two concepts is that weak sustainability presumes a relationship of complementarity between manufactured and natural capital. This relationship implies that if these two types of capital are necessary to produce certain goods, the total utility cannot be increased by a one-sided rise of one capital stock at the expense of the other (SRU, 2002). That is depending on which concept of sustainability is being applied, different results or conclusions arise. Accordingly, from a viewpoint of weak sustainability Western industrialized countries already today find themselves on a sustainable path, whereas a strong sustainability-perspective would lead to a completely different assessment (SRU, 1994).

[3] Usually the following capital stocks are distinguished: 1. Manufactured capital, 2. Natural capital, 3. Cultivated capital, 4. Social capital, 5. Human capital, and 6. Knowledge capital (SRU, 2002).

The general idea of green accounting - that nations integrate the economic role of the environment into their income accounts - is neither a quick sell nor a quick process but has evolved since the 1960s. One of the first countries that established environmental accounts was Norway, by collecting data on energy sources, fisheries, forests etc. in the late 1970s. A few resource-dependent countries soon followed in order to measure the depreciation of their natural assets and to adjust their Gross Domestic Product (GDP) environmentally (Hecht, 1999). Thereby, a major impetus for these countries' interest was provided by the 1989 green accounting study "Wasting assets: Natural Resources in the National Income Accounts", in which Robert Repetto and his colleagues from the World Resources Institute drew attention to the potential divergence between gross and net measures of national income in Indonesia (Repetto, 1989). They convincingly showed that as soon as the net measures were adjusted for the depletion of important forms of natural capital, a substantial portion of Indonesia's rapid economic growth during the 1970s and 1980s was simply the "unsustainable `cashing in´ of the country's natural wealth" (Vincent, 2000, p. 13). When the concept of economic growth as a positive indicator of society's well-being was increasingly criticized, the worldwide System of National Accounts (SNA) for calculating GDP and long-term economic growth was extended in order to take full account of the depletion of natural resources and the deterioration of environmental functions. Moreover, a focus was placed upon expanding the national accounts to include environmental data sets to enable joint economic and environmental analysis. These adjustments have been supported as well by the United Nations (UN) and the EU (O`Connor, Streuer & Tamborra, 2001).

Greened National Accounting can be grouped under three main approaches which are often interlinked: Expanded National Accounts (e.g. NAMEA[4]), Satellite Accounts, and Adjusted Aggregates. All of these approaches have in common that they provide policy-makers with well-structured information on the environment and its interaction with the economy so that environmental goals and consequences can be incorporated into the policy process. National and Satellite Accounts can be in physical or monetary units or both. The only difference between them is that Satellite Accounts are kept separate from conventional National Accounts. Meanwhile, Aggregate Accounts directly integrate monetised environmental components into the SNA (O`Connor, Streuer & Tamborra, 2001). With regard to Aggregate Accounts there are two concepts of environmentally adjusted GDP for the national economy: The first type focuses on accounting conventions through a change in the system boundary which is an enlargement of the scope of national accounting to include a specific set of environmental assets. This construction is called `Aggregate Indicator of the Change, during the Current year, in the economic Assets of the Nation´ (AICCAN). The second indicator type, called `greened

[4] The system of the National Accounts Matrix including Environmental Accounts (NAMEA) has been developed by the Dutch Statistical Office and intends to directly expand national accounts with environmental information (O' Connor, 2000).

economy GDP´ (geGDP) foresees the adjustment of the economy itself in terms of a new pattern of production processes, levels of production and consumption activity, technologies etc. that respect certain environmental performance standards. In order to outline that both measurement concepts are complementary, the `Monetization Frontier´ has been introduced. It represents the methodological demarcation between the domains where the concepts of weak and strong sustainability are respectively applied. This is based on the different role natural capital can play for the achievement of sustainability. Here the ACCIAN type would be located on the weak sustainability side of the Monetization Frontier, where monetary measures of net asset change assess the contribution of natural resources and assets to the production of commercially priced goods and services (e.g. trees into wood products). This approach would be applicable regarding issues of quantified natural resource depletion such as forests. At the same time, the geGDP type rests on the strong sustainability side of the Monetization Frontier, where the importance of natural capital systems is being assessed in non-monetary terms. It provides an indicator of forecasts for maintaining economic development while guaranteeing the maintenance of environmental functions of natural capital in situ. This approach would be rather useful for issues involving high uncertainties and quantification difficulties (e.g. fisheries). With respect to complex problems like climate change, biodiversity and land cover change, experts are still divided which approach, if at all, could be useful (O' Connor, 2000).

2.2 The EU-Indonesian Trade Relation – an Ecological Unequal Exchange

Against the background of the overall research question regarding the effectiveness of the RED and its sustainability criteria the related question is in how far this policy helps to guarantee sustainability for the case of Indonesian palm oil. If the policy and its criteria will prove to have a positive impact or bear at least the potential, it will mark a milestone in the field of climate change alleviation and the achievement of sustainability and its operationalization on the international level. However, if the policy fails to do so, the implementation of the sustainability criteria[5] brings no added value to the current composition of the trade relationship between the EU and Indonesia. In that case, the trade in palm oil would merely contribute to the increase of sustainability within the EU at the expense of environmental quality and sustainability in Indonesia (Ekins, 1997).

Up to now, there is no indicator concept in green accounting that fully considers the openness of an economy and thereby the possibility of inter-country environmental load displacement. Examples are the direct or indirect inter-country environmental dependencies for primary energy, agricultural land and/or photosynthesis potential, or greenhouse gas (GHG) emissions. What makes such an indicator concept so significant is that the integration of inter-country dimensions of ecological goods and services would considerably influence the estimation results

[5] The RED and its criteria will be outlined in more detail in section 2.3.

of policy indicators such as AICCAN and geGDP centering on the national economic territory only.

With regard to inter-country environmental load displacement, the theory distinguishes between `environmental damages caused´ and `environmental damages borne´, as well as if these load displacements are taking place up- or downstream[6] (O' Connor, 2000). In terms of the European palm oil imports from Indonesia, it can be assumed for theoretical considerations that the increasing demand for palm oil from the EU indirectly causes an upstream environmental damage in Indonesia. This damage refers to environmental losses or decreases in environmental quality involved with the cultivation, harvest, and processing of palm oil in Indonesia. Having this interdependency in mind, applying the assumptions of either environmental economists or ecological economics leads to different assessments of whether free trade, economic growth, and the environment are positively or negatively correlated. In this respect, the World Trade Organization (WTO), that represents a neo-classical environmental economics position, holds the view that free trade promotes sustainable development as long as the right supportive policies are in place. Meanwhile, ecological economists criticize that this position presumes a positive relationship between a) free trade and economic growth and b) economic growth and environmental quality too easily. Regarding the former relationship, ecologists claim that GDP is a misleading indicator of real welfare, if economic growth is built on the depletion of natural capital (Muradian & Martinez-Alier, 2001). With respect to the latter relationship, they reject the presumption of the Environmental-Kuznets-Curve (EKC) that presumes that as income increases, environmental degradation rises up to a certain point, after which environmental quality then improves (Mäler & Vincent, 2005). According to Stern et al. (1994) and Suri and Chapman (1988) the EKC is the result of international specialization[7] in free trade, which produces environmental improvements and sustainable economic growth in the `North´ and quick illusory economic growth but environmental deterioration and unsustainable development in the long term, in the `South´ (Tussie, 1999). Here, Porter (1999) goes so far as to predict that this development might lead to a polarization of international environmental conditions in the world. Like the EU, developed countries usually fear the dumping of ecological standards through trade with developing countries – although actually the reverse way is the case in most trade relationships – which is why it imposes non-tariff trade barriers based on environmental considerations. Should the EU criteria and the RED fail to reach their goal (i.e. should the criteria and their sustainability scheme contain relevant loop holes that miss the target of environmental sustainability in Indonesia), the international trade of palm oil between Indonesia

[6] Upstream impacts are environmental damages that occur in one country due to the production of goods or services which are exported to another country, whereas downstream impacts are damages occurring in one country which are directly caused by another country (O' Connor, 2000).

[7] Here international specialization means that poor countries attract the environmentally harmful production while richer countries specialize in clean environmentally friendly production, without altering the consumption patterns (Stern et al., 1994; Suri and Chapman, 1988).

and the EU could result in an unequal ecological exchange (Martinez-Alier & O' Connor, 1996; Hornborg, 1998). This unequal exchange would be based on increasing environmental load displacement from the EU to Indonesia which is in the end based on environmental-cost shifting from the importing to the exporting country (Muridian & Martinez-Alier, 2001).

2.3 The RED's Sustainability Criteria as Practical Example for Green Accounting

The EU's renewable energy policy is a cornerstone in the overall EU policy of reducing carbon emissions and represents a key element within the framework of the EU's climate change and energy objectives. In this framework, the EU's Directive 2009/28/EC, legislated in June 2009, on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, represents an essential component to achieve the EU's 20-20-agenda.

With respect to the promotion of biofuels the EU pursues three overall goals: Firstly, it seeks to fulfill the climate change commitments of the Kyoto Protocol and its follow-up agreements. Secondly, it tries to reduce the dependency on mineral oil imports. Thirdly, it attempts to strengthen the agricultural sector. Accordingly, the promotion of biofuels has a climate, energy as well as an agriculture policy background. However, within this threefold constellation of political objectives regarding sustainability, energy safety, and competitiveness, the climate protection-objective is of special relevance (Dera, 2009).

The work and negotiations concerning the creation of the RED were succeeded and accompanied by multiple initiatives on different levels that in some aspects made crucial contributions towards the shape and content of the sustainability criteria, the sustainability scheme as well as the underlying methodology to account for GHG emissions. In this respect, the Dutch Cramer Criteria that have been developed by the so called Cramer Commission[8] had a significant influence. They concerned the themes GHG emissions, competition with food crops, biodiversity, the environment, prosperity, and welfare, of which many have been adopted by the European Commission (Biopact Team, 2007). Related initiatives that occurred in other countries were the UK's Renewable Transport Fuels obligation (RTFO), the Swedish and Brazil Sustainable Ethanol Initiative, the Metastandards established by ECOFYS, and the German Biomass Sustainability Ordinance (BSO). Especially the methodology for calculating GHG emissions laid down in the German BSO served as an important model and orientation for the methodological part of the RED (Institute for Applied Ecology [IFEU], 2009). Moreover, the BSO introduced the first state-approved certification system for sustainability and GHG emissions in the world – the International Sustainability and Carbon Certification scheme

[8] The title of this project group refers to its chair Jacqueline Cramer, who was the Dutch Minister of Housing, Spatial Planning and the Environment at that time (Biopact Team, 2007).

(ISCC). Furthermore, a number of international platforms have been established focusing on specific sectors and cultures such as the Round Table for Responsible Soy (RTRS), the Roundtable on Sustainable Biofuels (RSB), and the Roundtable on Sustainable Palm Oil (RSPO) (Diesenreiter & Kranzl, 2009).

In contrast to its predecessors (e.g. the so called Biofuels Directive 2003/30/EC[9]), the RED establishes a more rigorous and more solid common legislative framework, because it sets legally binding targets for 2020 for each Member State for all renewable energies (Piket, 2009). Its primary goal is to achieve a 20% share of renewable energy in Europe's final energy consumption by 2020 (Article 3 (1)). Here, it defines national mandatory targets of how much each Member States has to contribute to this share (Annex I). In addition, an extra binding target of 10% renewable energy for 2020 is set for the transport sector, which is the same for every Member State (Article 3 (4)). Due to the reason that this special 10% target will be widely covered by biofuels, the directive sets sustainability criteria for biofuels and bioliquids, which are identical in the Fuel Quality Directive 2009/30/EC[10] and basically refer to the protection of land with high ecological value, greenhouse gas emission savings, and the socio-economic impact (Article 17 (2-5, 7). In order to guarantee compliance with these criteria, the RED introduces a sustainability scheme for biofuels (in transport) and bioliquids (for electricity and heating/cooling). With the implementation of the sustainability criteria, the EU tries to anticipate the growing criticism regarding the use and the promotion of biofuels that have already brought about serious ecological and social consequences. Therefore, the newly introduced criteria and the sustainability scheme shall ensure that the biogenic raw material used for biofuels is produced in an ecologically sustainable way and that disproportionate side effects occurring in the course of increased energy crops cultivation in the producer countries are partially limited. In doing so, the sustainability criteria represent a way of implementing green accounting into practice since they include indicators that account for GHG emissions and thereby establish an ecological footprint of biofuels. They acknowledge the fact that bioenergy – although it bears the potential to reduce GHG emissions – is not necessarily carbon-neutral. Due to this understanding, the criteria's indicators account for the GHG emissions released along the supply chain of biofuels from biomass and they attempt to avoid as far as possible the negative side effects (e.g. deforestation, the degradation of other conservation land, land conversion etc.) that have massively occurred in the course of the cultivation of biomass in the past and that have continuously offset the benefits for reduced emissions (United Nations [UN],

[9] Although a crucial first step, Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport merely laid down the EU's commitment to the promotion of the usage of biofuels (Article 1) and introduced certain non-binding reference values of biofuel shares in transportation that served as a guideline for member states to set their biofuel targets (Article 3(1)).

[10] This Directive states that fuel suppliers must gradually and over the whole life cycle reduce the greenhouse gas emissions of their supplied fuels, towards an eventual target of 6% reduction in 2020. Here, biofuels form an essential means of this reduction (FQD, 2009).

2008). Thereby, the criteria bear the essential potential of green accounting to motivate the development of more sustainable patterns of production processes, while at the same time providing EU policy-makers with relevant information on the production of biomass for biofuels and its environmental implications.
Further, it is important to mention that the criteria are the same in all EU Member States and equally apply to EU produced and imported biofuels. To set an incentive, only biofuels that comply with the criteria may be counted towards the national targets and are eligible for financial support (Article 17 (1)).

The content and the application of the criteria are as following: Article 17(2) of the directive stipulates that a minimum GHG emission saving from the use of biofuels must be 35% (as compared to the use of fossil fuels, which they shall replace). From 2017 onwards this percentage will rise up to 50 %, and from 2018 up to 60% for new installations (Article 17 (2)). With regard to environmental sustainability, the criteria specify that raw materials for biofuels may not be retrieved from land that had one of the following statuses in 2008 and no longer has that status: primary forest, protected area, highly biodiverse grass land, areas with high stocks of carbon, and protected peatlands (Article 17 (3-5)). Regarding social and economic sustainability, the directive does not set any must-criteria. It merely requests the European Commission to assess the impact of the EU's biofuel policy on the availability of foodstuffs at affordable prices every two years, especially for people living in developing countries, as well as on land rights. It shall also assess whether producer countries have ratified relevant international labor conventions. The Commission may propose corrective action, particularly if there is evidence that biofuels have a significant impact on food prices (Article 17 (7)).

To ensure compliance with the environmentally sustainability criteria, Article 18 of the RED requires economic operators to apply a mass balance method. This system allows consignments of raw material or biofuel possessing different sustainability characteristics to be mixed, provided that the information about these characteristics and sizes of consignments remain assigned to the mixture at all stages of the supply chain. At the end of the chain, the sum of all consignments taken from the mixture needs to possess the same sustainability characteristics and quantities as the sum of all consignments added to the mixture. Finally, the economic operators need to arrange for an adequate standard of independent auditing of the information submitted. With respect to imports from third countries the directive requests the EU to seek bilateral or multilateral agreements to guarantee compliance with the criteria (Article 18 (4)).

In order to calculate the GHG impact of biofuels and bioliquids Article 19 of the RED refers to Annex V, which provides the default values of 22 biofuel production pathways that may be used. For all other production pathways the economic operators make their own calculations according to the same methodology. Thereby, disaggregated values may be used for some factors such as for the transportation of biofuels. Finally, the result of the calculation presents

the total GHG emissions that have been released in the course of cultivation, processing and transportation of biofuels. It is important that default values are only valid if no land use change has taken place for the cultivation of the raw material. This refers to areas outside the EU or those inside, which are mentioned in one of the lists provided by Member States in March 2010. The GHG emissions from cultivation of agricultural raw materials from these areas are typically lower than or equal to the emissions reported in part D of Annex V. Since this calculation methodology only refers to direct land use change, Article 19(6) requires the Commission to submit a report on how to deal with indirect land use change by December 2010.

Having in mind the theoretical considerations of Section 2.1, it has to be asked to what extent the RED's sustainability criteria entail either a strong or a weak concept of sustainability. In this regard, the author suggests that the criteria basically apply the strong concept due to the argument that they attempt to protect areas of high biodiversity and high carbon stocks against the cultivation of biomass for biofuels and bioliquids and are thereby keeping important ecological functions intact. Nevertheless, the criteria apply the concept in a less stringent way since they allow certain areas of natural capital to be admissible for cultivation of biomass. By contrast, strong sustainability in its narrowest sense categorically rejects the substitutability of natural capital. Therefore, the RED's criteria could be seen as applying a partial substitutability and a partial complementarity of real and natural capital. Accordingly, substitution is permitted, as long as the essential substance of natural capital – the so called "critical" natural capital – or its function is not endangered. Thereby, the criteria establish a dividing line that sorts "dispensable" natural capital out from the "necessary" one that inherits elementary ecological functions from an anthropocentric point of view (SRU, 2002).

3. The Case of Indonesian Palm Oil

A central assumption underlying the analysis of this chapter is that the case of Indonesian palm oil represents a complex cross-cutting issue that encompasses different levels of action which are again the platform of a diverse range of actors with multiple interests. The promotion of biofuels in view of global climate change shows very well the contradictory and intertwined character of current measures and policies. The considerations regarding the case of Indonesian palm oil are based on the notion that global climate change, international trade and the local production of palm oil as well as the EU climate change policy are closely linked and interrelated with each other.

3.2 The Political Framework in Indonesia

`Palm oil serves as locomotive of economic growth´ Susilo Bambang Yudhoyono, President of Indonesia (cited according to Klute, 2007a)

As a direct reaction to the rising demand of the EU and the increased price for biomass on the global market, producer countries like Indonesia seize the opportunity and establish ambitious programs for the promotion of biomass. In order to anticipate the increased demand for palm oil as a renewable resource for biofuels, the Indonesian government plans to extend the country's current palm oil production of ca. 22 million tons (Verband der Ölsaatenverarbeitenden Industrie in Deutschland [OVID], 2010) to 40 million tons by 2020 which equals a land use of 20 million hectares (Zakiyah, 2008). Already today Indonesia is the world's biggest palm oil producer, holding a share of 47% of the global palm oil production, and is also export leader with ca. 17 Million tons from a 36 million tons total of export quantity (OVID, 2010). At the same time, Indonesia is the world's third biggest emittent of GHG, of which 85% are being released through forest and peat fires that accompany the extension of the palm oil production (Dera, 2009). Regardless of this issue, Indonesia, which enjoys a clear adavantage in terms of surface area, has outperformed its immediate neighbour and strongest competitor in palm oil production Malaysia years ago[11]. In view of the fact that palm oil represents such a highly attractive agricultural product, the Indonesian government included the palm oil sector in the list of the country's priority sectors (Business Watch Indonesia [BWI], 2007). Currently, ca. 10% of the world's palm oil production flow into the production of bioenergy, while the largest part is still used for food, feed and chemical applications (Karotki, 2010). Among the global palm oil buyers, the EU is one of the most important importers of Indonesian palm oil, directly after India and China. At present, 4.4 million tons of crude or refined plam oil are exported to the EU, from which a 5%-share is used for biofuels. A little higher amount of palm oil is used for combined heat and power plants, while the lion's share is still being applied in food and chemical industry (OVID, 2010). From a European perspective, Indonesian palm oil represents the more cost-efficient alternative to domestically produced biomass for bioenergy. Due to an absence of sufficient EU internal production area, the EU itself may contribute only to a limited extent to its ambitious climate protection objectives: The mandatory 10% target for the transport sector equates to approximately 15,7 million tons of plant oil per year, of which 6 million tons are absorbed by the EU internal market. This again leaves a volume of 9 million tons open for imports (Pye, 2008). Next to the promising demand coming from the EU, a further important driver of the expansion of Indonesian palm oil production is the country's own energy deficit

[11] With a production quantity of 15 million tons Indonesia for the first time exceeded the Malay production of 14, 8 million tons in year 2006 and became the biggest palm oil producer in the world (United States Department of Agriculture [USDA], 2006). Today, Malaysia holds 39% of the world's palm oil production. Together Indonesia and Malaysia make up for 86% of the total production (OVID, 2010).

and its growing dependency on mineral oil imports[12]. As a consequence, the Indonesian government invests in palm oil production for biofuels as alternative to mineral oil. Therefore, biodiesel from palm oil shall make up 20% of the total fuel quanitity by the year 2020 (Dera, 2009). In this context, the EU plays an important role since it represents a lucrative key market for palm oil that offers the possibility to make domestic Indonesian energy supply more cost-efficient. In addition to an expansion of plantations for palm oil, the Indonesian government further plans to construct several biodiesel plants in order to extend the inland value chain (USDA, 2008).

The most important legal basis for the development of the biodiesel sector is set out in the Presidential Instruction (*instruksi presiden)* no. 1/2006 regarding the "Provision and Utilisation of Biofuels as Alternative Fuel", the Presidential Decree (*peraturan presiden*) no. 5/2006 regarding guidelines for the national energy programme on the safety of domestic energy supply, the Presidential Decree no. 10/2006 on the foundation of a National Team for the Development of Biofuels (Tim Nasional Pengembangan Bahan Bakar Nabati [TIMNAS BBN]), as well as the Government Order (*peraturan pemerintah*) no. 1/2007 on income tax reliefs for investments in specific sectors (BWI, 2007). All in all, this policy package resulted in a rapidly growing palm oil sector, generated by several incentives such as the target to increase the biofuels share in the national energy mix by 5% by 2025 (Legowo, 2007). With this package the government expects to create 3.5 million jobs, to increase regional minimum wages of farmers and plantage workers, as well as to extend the cultivation area for oil palms and to finally decrease the use of fossil fuels by 10%. Furthermore, there are a number of explicit palm oil specific mesures to increase the productivity of the palm oil sector: One measure of major concern is the abolishment of the moratorium by the Ministry of Agriculture on 16th February 2009, which was introduced in December 2007 and aimed at preventing the forest clearance of peatland for the creation of palm oil plantations[13] (Departemen Pertanian Republik Indonesia, 2009).

The overview above showed that the promotion of biofuels represents a lucrative chance for the Indonesian government to tackle a number of domestic political issues at once. In addition to wanting to achieve the goals of energy safety, exports revenues, and jobs, the government also highlights environmental aspects such as the potential of GHG emissions reduction. To realize such reductions the Government states to use only unproductive waste land for the cultivation of palm oil. However, it is unlikely that Indonesia can reach this aim since the ambitious palm oil production expansion plans cannot be realized without establishing 18 million hectares of new

[12] Since the domestic production has become incapable of covering the energy demand of the internal market, Indonesia has become a net-importer. Compared to the 1990s, oil extraction has declined by one third; accordingly today Indonesia imports 30% of its diesel (Klute, 2007a).

[13] However, this abolishment is inconsistent with the internal strategy of the Ministry of Agriculture, which foresees to stop the conversion of peatland into oil palm plantations. Moreover, the measure has not been agreed with the Commission for Climate Change and the Minister for Environment (Simamora, 2009).

plantations. As regards fire clearance, the political will in Indonesia to stop this practice is almost non-existent: For instance, the ASEAN Agreement 2003 against illegal fire clearance has still not been ratified by Indonesia (Schad et al., 2007). In order to mollify critical voices regarding Indonesia's inconsistent climate change policy, the Indonesian president announced at the UN-Climate Conference 2007 to adopt a 50% reduction target of carbon emissions released through forests fires and to take consequential action against illegal logging. In this respect, it is important to point out that the Indonesian government is highlighting such ambitious objectives due to trade-policy considerations, but is not concerned about climate change in the very first place (Dera, 2009). This also explains why the Indonesian government is vehemently protesting against the RED's sustainablity criteria, which it perceives as being a non-tarrif trade barriers especially designed for palm oil. However, the question, whether the RED's sustainability criteria indeed pose trade barriers and are thereby violating the European Community's (EC's) WTO obligations, is still being discussed (Mitchell & Tran, 2009)[14].

In addition to the incerased EU demand for Indonesian palm oil and the many domestic advantages that go along with growing palm oil production, another important reason for the palm oil expansion and its social and ecological consequences lies within the Indonesian consitution that declares land, water, forest and their resources as government property (*Undang-Undang Dasar Republik Indonesia Tahun 1945*): The consitution facilitates the destruction of natural forest since it lacks a provision regarding economic, social and cultural rights (Klute, 2008). Within Article 33 the constitution refers to economic concerns and social welfare: Article 33 (1) states that the economy is based on the "family principle", which favours the formation of a few conglomerates and a selective enrichment of natural resources. Further, Article (2) supports this tendency by emphasizing branches of production that are essential for the state and the livelihood of the citizen and which therefore need special regulation by the government. Article 33 (3) highlights the state sovereignty over land, water and natural resources, which the state shall use in order to create the highest possible wealth for the people. Accordingly, regarding the case of palm oil production, the Indonesian government sees the highest possible wealth as being reflected in export gains (Fidrus, 2008). As a consequence, in the opinion of the Government and industrial communities, the loss of forest is compensated by the gain and wealth associated with high export revenues (Pastowski et al., 2007). With reference to the principle of sovereignty the government decides on the forest area and the granting of large-area concessions (Departemen Pertanian Republik Indonesia, 2006). The granting of concessions is based on the status of the forest, which is classified by the national Forest Ministry. The classification distinguishes between (1) production forest, in which selective deforestation is allowed, (2) conversion forest, which may be cleared for the purpose

[14] In order to determine, whether the RED is ultimately inconsistent with the obligations under the General Agreement on Tariffs and Trade (GATT), requires consideration of the applicability of a general exception under GATT Article XX (Mitchell & Tran, 2009).

of oil palm plantation creation, and (3) protected forest (Milieudefensie & WALHI KalBar, 2009). Due to lacking political and legal structures, the granting of concession on the basis of the sovereignty principle as well as the supremacy of a few conglomerates, favoured through the family principle, leads to the frequent disregard of traditional landrights and an overexploitation of natural ressources. Additionally, the shift of responsibilities for granting concessions from the central government in Jakarta to the municipalities (*Kabupaten*) in the course of decentralization is followed by a shift of corruption and the formation of local patronage networks (Dera, 2009). This problem context illustrates clearly how policy makers in Europe have established an obligation to use biofuels, while the associated sustainability criteria and the sustainability scheme fall too short to take ultimate responsbility to ensure their sustainability. They are too weak to prevent illegal operations, deforestation, carbon emissions and social conflicts since they do not take into account that the Indonesian government is unable to control the industry. In this regard, the common practice of fast track permits, which has been examined by Friends of the Earth Netherlands & Indonesia in their September issue 2009 "Failing governance – Avoiding responsibilities […]" represents an descriptive example: Palm oil permits are issued in such a fast track manner that results in a de facto waiving of legal requirements meant to protect the environment and local communities. Often these permits are issued without the legally required approvals for the companies' Environmental Impact Assessment[15]. In addition to this, there are oil palm permits being issued that fully or partially overlap with protected forestland. Consequently, as long as laws regulating plantation expansion can be disregarded, expansion still represents the more attractive solution to increased market demand as compared to enhancing yields in existing plantations. This practice, which is largely undetected by government agencies and sustainability initiatives, illustrates how District governments together with oil palm companies try to get a share in the biofuels "pie", while successfully counteracting efforts towards good governance in Indonesia. As a result, the Indonesian Environment Ministry has been forced to relax EIA regulations due to the overwhelming amount of violations of the country's environmental law (e.g. the Indonesian Environment Management Act 1997, the EIA Regulation 1999, and the Plantation Act 2004). At the same time, the RED contains no requirement for biofuel companies to prove that their imports are legal in terms of complying to Indonesian environmental law. Therefore, it is likely that unsustainably produced palm oil is being subsidized by EU Member States and is counted towards the RED's targets[16] (Milieudefensie & WALHI KalBar, 2009).

A central reason that often underlies the issue of bad governance in Indonesia is a different understanding of sustainability (Milieudefensie & WALHI KalBar, 2009). Accordingly, a study

[15] In 2008, the Environment Ministry categorized 78% of all EIA as being of poor quality (Milieudefensie & WALHI KalBar, 2009)

[16] However, what is even worse is that apart from the case of Indonesian palm oil for European bioenergy, palm oil imports into the EU for food applications are not even bound to any legal or sustainability requirements (Milieudefensie & WALHI KalBar, 2009).

by *Watch Indonesia* showed that many local politicians and plantation managers interpret the Indonesian term for sustainable (*berkelanjutan*) as “being able to live from something” (Schott, 2008). While the deforestation and the loss of biodiversity which go along with the expansion of oil palm plantation are being critizised by the EU, the Indonesian Minsitry of Agriculture officially challenges this correlation. Exemplary for this understanding of sustainability is the statement of the Indonesian Minister for Agriculture, Anton Apriyantono, who justified the loss of biodiversity with the creation of millions of jobs due to an expanding palm oil industry: "We should choose between human interests or those of the monkeys" (cited according to Fidrus, 2008). Hence, both the Indonesian notion of ecological as well as social sustainability is diametrically opposed to the European conception of sustainability that is designed as a three pillar approach concerning ecological, economic and social aspects – however, to be fair, it must be said as well that neither the economic nor the social aspect of the threefold sustainability approach has been included into the RED as must-criteria. To conclude, therefore, it is possible to say that both the EU as well as the Indonesian Government primarily pursue strategic interests with the promotion and production of biofuels, which becomes apparent within the respective laws. As long as this is the case, both will remain trapped by a problem solving bias (Dera, 2009). So far, the issue of an opposed understanding of sustainability has neither been addressed by the Indonesian national government, the European Union, nor by private sector sustainability initiatives.

Taking the range of the before mentioned developments and practices in Indonesia into account, it is obvious that the RED’s mandatory targets are a strong driver of palm oil expansion. While land grab and deforestation are still common practice, the sustainability schemes seem to be too limited and to be grasping the issues too late as to prevent negative side effects and other ecological and social issues in an effective way. In addition, as Friends of the Earth Netherlands & Indonesia (2009) stated, European policy makers avoid to address directly the problem of unsustainable levels of demand.

3.3 The Palm Oil Sector and RSPO Involvement

` […] the palm oil sector is both part of the problem as well as part of the solution.´
(Ardiansyah & Kosasih, 2006, p. 14)

A distinctive feature of the Indonesian palm oil sector is that it is dominated by only a few Malaysian, Singaporean and Indonesian corporate groups. Most of these groups grew up to be transnational corporations that invest not only in palm oil but also other industrial branches (Grain, 2007)[17]. The economic system is characteristically structured according to a free market economy, however, it has a strong governmental engagement element (Chua, 2009). In many

[17] For instance, the Indonesian Sinar Mas-Group does not only focus on the palm oil sector but is also market leader in the paper and cellulose industry (Dera, 2009).

economic sectors the Indonesian government is a direct competitor of the private sector companies. This is also the case regarding the palm oil sector: There the state sector is strongly represented with a 22% share of the gross national product and pursues its own stakeholder interests (Grain, 2007). According to government figures, ca. 45% of all Indonesian plantations are owned by big private companies, while the state holds a 13% share (Ekonid, 2007). Consequently, the palm oil production is no pure economic process, but strongly policy-driven. This political control is based on manyfold forms of cooperation between governmental, non-governmental and military actors and is characterized by a entanglement between national, local and transnational levels (Heiduk, 2005). The special role of the state bears not only a problem solving bias by the government regarding sustainability criteria for palm oil, but becomes also obvious in terms of indirect subsidies for the sector. With regard to the latter there exists a twofold mechanism: Firstly, there are no taxes to be paid when tropical hardwoods are cleared or sold in the course of the expansion of oil palm plantations into tropical forests. Secondly, companies receive support from the reforestation fund of the government, if they use artificially created "degraded land", which may be planted with oil palms for reforestation purposes (Klute, 2007b)[18].

Since the Indonesian State can be described to be both partially not capable and partially not willing to establish binding rules regarding sustainable palm oil and their enforcement, private agreements on regulations represent an important regulatory and design element (Enquete-Kommission, 2002). As a transnational network, the RSPO can be regarded as such an example for a voluntary standard setting process. This roundtable is the only global sector-specific sustainability initiative for palm oil. It was officially founded in April 2002 by the World Wildlife Fund (WWF), the Swiss super market chain Migros and some Southeast Asian palm oil producers (RSPO, 2010). It was established due to two main reasons: On the one hand, the foundation was a reaction to consumer boycotts and environmental campaigns in Europe regarding environmental harmful practices of the Malaysian and Indonesian palm oil industry (Pye, 2008). On the other hand, the foundation should help to ensure the access of European markets to Southeast Asian palm oil (Dera, 2009) [19].

The RSPO's central vision is to ensure that "palm oil contributes to a better world" (RSPO, 2008). The advancement of the production, procurement and use of sustainable oil palm products shall be achieved through "the development, implementation and verification of credible global standards and the engagement of stakeholders along the supply chain" (comp. ibid.). The RSPO is composed of 440 ordinary members, 87 affiliate members and 47 supply chain associates. The basis of the RSPO, the ordinary members, is divided into seven categories.

[18] Here, the unproductive juvenile phase of new plantations increases the access to rainforest areas since the plantation can be then financed by the revenues resulting from logging (Nellemann et al., 2007).
[19] The organization *World Rainforest Movement* claimed the vested interest of the RSPO, which they allege to be paving the way for Europe so that it can declare its demand for biofuels as sustainable (cited according to Schott, 2008).

The majority of ordinary members are palm oil processors and traders (39%), consumer goods manufacturers (28%) and oil palm growers (20%). Meanwhile, the minority is represented by retailers, environmental or nature conservation organisations, social or development organisations, and banks and investors (RSPO, 2010). Each of the categories is represented by two council members - only the section of producers poses four. Consequently, the voting companies dominate the roundtouble both in terms of numbers and votes, while environmental and social organisations remain in the minority. This unbalanced structure, but also the Eurocentric initiations illustrate the interest of the economic representatives of the producer and import countries (Patowski et al., 2007).

The terms of admission to the RSPO are the compliance with its goals, the acceptation of the Code of Conduct and the fulfilment of minimum standards (RSPO, 2006). In case of infringements the RSPO may threat with mediation procedure or with the cancellation of the membership (RSPO, 2007a). What needs to be highlighted is that there is a major difference between those who are member of the RSPO and those who have been certified: The RSPO membership merely demonstrates that a producer company has pledged to become sustainable within the next few years. However, it says nothing about the sustainability of its plantations. RSPO-certification is meant to ensure that plantations operate sustainable today. Nevertheless, it is still possible that a company possesses a partial certification meaning that some of its plantations fulfil RSPO-standards but others not. This happens, for example, when a company has just bought new plantations that are not yet sustainable. In that case, the company should provide the RSPO with robust plans showing how the sustainability of these plantations will be achieved in near future (RSPO Secretariat, 2010).

Due to the dominance of companies within the membership structure, the asymmetrical distribution of votes and the moderate member policy, the RSPO, which also enjoys the support of the European Commission, is expected to have a broad, though not a deep, influence on the standard setting process (Patowski et al., 2007). It seems, however, as if the RSPO enjoys a strong backing from Malaysian and Indonesian economic operators: According to Kees Vis, the RSPO's chairman, one third of the world's palm oil producers and 10% of the palm oil buyers are RSPO members (Kees Vis, 2007). With the membership of the association of Indonesian palm oil procucers (GAPKI), 30% of Indonesian palm oil plantations fall under the RSPO principles (Geibler, 2007). At the same time, smallholders who own a significant share of the world's palm oil production, are not yet integrated into the roundtable. In Indonesia smallholders deliver the raw material for ca. 30% of the produced crude palm oil (Colchester, 2006).

The RSPO standards are based on eight principles and 39 criteria that were established in 2005 and which are being implemented through a certification sytem that is based on the mass balance method as it is also laid down in the RED (Kees Vis, 2007). The principles focus on

transparency, compliance with laws, long-term economic stability, use of best practices, environmental responsibility and conservation of natural resources and biodiversity, responsible consideration of employees, individuals and communities, responsible development of new plantings, and continuous improvement. The related criteria are generally of a qualitative nature entailing requirements for plans, documentations and proof. The environmental criteria deal with the area's environmental impact assessment regarding plantation and mill management. (however, this EIA does not refer to the process of EIA upheld by national law), biodiversity, waste management, sustainable energy use, use of fire for waste disposal and for preparing land, and emission reduction. Among these, an important guideline belonging to the biodiversity-criterion prescribes that from November 2005 onwards new plantations may not destroy primary forests or high conservation value forests (HCFV) and should avoid being prepared by fire clearance. Meanwhile, the reduction of emission-criterion is in its current form not compatible with the RED criteria since it does not explicitly address a positive climate balance. It merely addresses pollution prevention plans which regulate the evaluation, monitoring and emissions reduction (RSPO, 2007b). Furthermore, like the RED, the RSPO principles and criteria do not include critical aspects such as competitions for land use and the impact on other areas and food products. In this regard, a major concern regarding the actual legitimacy and credibility of the RSPO is to be found in the fact that the majority of the palm oil industry has never admitted its joint responsibility concerning the negative consequences of palm oil production (Ernsting, 2008). Therefore, there is a problem solving bias also on side of the private economic actors.

According to Bustar Maitar from Greenpeace Indonesia, the sustainable cultivation of palm oil is possible, as long as no further forest is being destroyed. The production has to be concentrated on already existing plantations, while meeting ecological and social requirements. However, an RSPO certifcate is highly suspect if trees are still being cut down. Further, Bustar Maitar clearly doubts the effect of certificates for single companies, if those were part of an international group of companies (cited according to Schott, 2008)[20]. RSPO chairman, Kees Vis, holds a similar view, stating that the world's existing 11 million hectares of palm oil plantations were sufficient for production, provided that cultivation was being optimized. Even in the case of a minimum optimization, the opening of further two million hectares would be enough to meet the future demand and could be established on fallow land (cited according to Schott, 2008). This, however, is still theory since the RSPO would not be able to request its members to abandon the option of any plantation expansion and logging, while making use of the unattractive and unprofitable alternative of cultivating fallow land.

[20] Bustar Maitar stated that there was no use of such a certificate, if a company was for example already certified in Malaysia, while it cleared trees in Papua under another brand name. No one could prove the true origin of the palm oil once it has been mixed together (cited according to Schott, 2008).

All in all, the RSPO and its voluntary certification can stimulate learning processes and innovation and can draw attention to the issue of unsustainable palm oil. However, it is incapable of offering a substitute to an encompassing protection system for rain forests and other regulations. As long as such a system that is supported by the state is not in place, unsustainable structures will remain undiminished. Within a wordlwide booming palm oil market with promising potential, isolated European requirements for certified palm oil have a poor effect, especially since there are huge sales potentials in the producer country markets as well as in China and India that have no demands regarding the sustainability of palm oil (Patowski et al., 2007).

3.4 The Cargill Case: Performance regarding Palm Oil Supply Chain Liabilities

> *"[…] sustainability is a worthy option, at a long sight the only possible option at all."* *(Edwin van der Hoek, Cargill's European Product Line Manager for Palm Oil, Berlin, 2009, cited according to Karotki, 2010)*

The agricultural commodity giant Cargill plays a leading role in the global palm oil market: Its operations as plantation owner, trader, refiner as well as distributor of palm oil and palm oil products including Biodiesel cover the whole value chain from Indonesia to Europe. It has a two-part business model both owning and operating palm oil plantations throughout Indonesia[21]. Cargill conducts two major operations in Indonesia: the oil palm plantation PT Hindoli in South Sumatra (acquired in 1996) as well as PT Harapan Sawit Lestari and subsidiary in Kalimantan (acquired in 2005). Together these plantations cover 41,000 hectares and employ 8,000 Indonesians. Besides, Cargill owns and operates four palm oil mills (with a capacity of 320 tons of palm oil products per hour). Additionally, Cargill buys palm fruits from 11,500 smallholder farmers who again own 23,000 hectares plantations (Cargill, 2011).

The company publicly promotes its commitments to the sustainable production of palm oil on its website stating that it "is committed to sustainable palm oil production and sourcing […]" ("Our Palm Oil Commitments", Cargill, 2010).
In February 2009, Cargill's palm plantation, PT Hindoli in Sumatra, Indonesia received RSPO-certification. For Cargill, this certification was "a landmark achievement" (Cargill, 2009) since PT Hindoli was its first plantation to be certified and also the first one in Indonesia (comp. ibid.). Furthermore, in 2010, the German certification company SGS German GmbH awarded two ISCC certificates to two of Cargill's plantations in Sumatra, four further certificates to palm oil mills and loading devices in Indonesia, as well as certificates to five plants in Europe. Thereby, the ISCC certification officially states that Cargill complies with the criteria of the RED and the FQD. Regarding the ISCC, Cargill was one of the first companies to be awarded a certificate. In this respect, some NGOs considered suspiciously the fact that Cargill was the first

[21] Cargill's activities started in Indonesia in 1974. By now the company employs over 10,000 people (Cargill, 2011).

to receive a number of certificates from the RSPO and the ISCC, while at the same time being both board and ordinary member of these institutions (Cargill, July 13, 2010).

In contrast to Cargill's ambitious sustainability efforts, various NGOs such as *Greenpeace* (2008), *Friends of the Earth* (2009), and *Rainforest Action Network (RAN)* (2010) claimed that Cargill's palm oil operations were far from meeting its commitments and responsibilities under the RSPO and vehemently critizised the award of RSPO- and ISCC-certificates. They accused Cargill for having violated various RSPO criteria and Indonesian law and that it failed to ensure that its supply chain is clear from controversy such as collaborations with questionable palm oil suppliers (e.g. Sinar Mas Group and Duta Palma) [22]. Although the NGOs presented broad evidence for their allegations, Cargill, ISCC and the RSPO were able to put forward strong counterarguments. For instance, they could prove in many cases that the NGOs drew wrong conclusions from Cargill's certificates, sometimes mixing-up different types and scopes of certification. In addition, they correctly claimed that none of these NGOs took the opportunity to avail either the ISCC or the RSPO complaint procedures (ISCC, 2011).

In the following section Cargill's "Supply Chain Liabilities" will be analysed on the basis of seven Benchmark Performance Indicators (*Governance, Policy, Risk Assessment, Inventory, Targets, Implementation, Leadership and Performance)* that have orginially been published by *Greenpeace* within its *Sector Review* "The Hidden Carbon liability of Indonesian Palm Oil" from 2008. Cargill has been chosen as a subject of this analysis since it has a leading and exemplary function within the Indonesian palm oil sector and since it is covering the whole value chain from Indonesia to the European market. Generally, this analysis shall serve as an orientation, highlighting to what extent a leading palm oil company that is known to be a role model, is able to realize sustainability throughout its palm oil supply chain.

1. Indicator - Governance: *Does the company refuse to trade with groups whose operations raise government issues?*

Cargill has been accused by various environmental groups for collaborating with controversial palm oil suppliers such as Sinar Mas and Duta Palma, which are known for their environmentally harmful and socially unacceptable practices. Duta Palma has been one of Cargill's key suppliers for at least seven years. However, Cargill de-listed Duta Palma in 2007 arguing that the supplier did not meet its standards. In this respect, environmental groups justifiably critisized that Cargill acted only in response to the growing public pressure, but not on grounds of its own assessment and initiative (RAN, 2010).

[22] Cargill's alleged RSPO violations: Operating outside of Indonesian law, failing to disclose ownership of palm oil plantations, clearing rainforests without permits, failing to resolve ongoing land conflicts, destroying wetlands. Cargill's alleged Indonesian law violations: Operating without Environmental Assessment Report or Business Permits, clearing rainforests without Timber Cutting Permits, exceeding the maximum allowed concession area, clearing peatlands, using fire in palm oil concessions (RAN, 2010).

The case regarding Cargill's collaboration with the Sinar Mas Group evolved in a similar way: Shortly after public allegations were made by several NGOs, Cargill together with the RSPO assessed the operations of Sinar Mas and its holding company Golden-Agri-Resources (GAR). In its statement on February 11, 2011, Cargill announced that it had jointly agreed with the RSPO, Sinar Mas and GAR to take corrective actions to resolve the issue of RSPO non-compliance. A.o. Cargill encouraged Sinar Mas and GAR to adopt a forest conservation policy and to work together with The Forest Trust (TFT) and the Indonesian government. The corrective actions shall have been implemented by 2015 (Cargill, 2011).

With regard to these exemplary cases, it is negative that Cargill did not initiate action based on its own sustainability standards. This is what one could expect from a role model. However, it is still positive that Cargill undertook actions at all in order to solve the problems regarding its suppliers Sinar Mas and Duta Palma.

2. **Indicator - Policy:** *Does the company support sectoral and national level efforts to reduce emissions associated with deforestation?*

Within its "Sustainability Commitments" Cargill postulates that it fully supports "the efforts of the RSPO to develop the mechanisms to distinguish sustainable palm oil products in the market place." ("Our Palm Oil Commitments", Cargill, 2010d). Moreover, Cargill maintains partnerships with respected environmental organizations, such as the WWF and Flora & Fauna International, and it collaborates with local communities to address topics, such as biodiversity, including orang-utans and tigers, the land rights of local populations, as well as the economic feasibility of oil palm development on degraded lands. Further, Cargill works together with the Indonesian Palm Oil Association (GAPKI) and the Indonesian government to advocate for sustainable palm oil development (Cargill, 2010d). For instance, Cargill joins the "One Man One Tree" national greening movement that has been launched by the Ministry of Forestry in 2009 to help combat the impact of climate change and to preserve forests. The company also supports the development of the sector by accepting smallholder's fresh fruit bunches ahead of its own crops. Furthermore, Cargill collaborates with local farmers to increase their current yields while supporting the RSPO criteria. For this purpose Cargill offers trainings, programs and credits (2010a).

Generally, it seems as if Cargill maintains strategic partnerships with all relevant actors from different decision-making levels and areas that are concerned about the issue of sustainable palm oil. It is notable that Cargill's projects and partners are very high in number and address a broad range of topics. One the one hand, this may create the impression that the palm oil giant is scattering its projects in order to achieve the greatest publicity possible. One the other hand, Cargill's partnerships and projects seem to address topics that are of high relevance to the

realization of sustainable palm oil, and their implementation seems to be pushed forward with ambition.

3. **Indicator - Risk Assessment:** *Has the company assessed the carbon liability and risks associated with deforestation and peat land degradation by its suppliers at group level?*

In July 2010, the company launched a project with its partner WWF to conduct an assessment of its palm oil suppliers in Indonesia. The assessment shall help to gauge the current progress of the respective suppliers to implement relevant RSPO principles and criteria. Throughout the assessment process there will be collaborations with the Indonesian government. The assessment focuses on key areas that include land permits, environmental and social practices. The assessment shall be followed by appropriate solutions and robust plans for their implementation (Cargill, 2010c).

The first stage of the assessment was expected to be completed in early 2011. By this time Cargill intended to be able to establish a realistic timeline to roll-out further assessments across the remainder of its suppliers and to design concrete measures that help the assessed supplier to implement the RSPO standards successfully (Cargill, 2020c). Up to now, the findings of the first assessment stage have not yet been published. Thus, it remains to be seen to what extent Cargill will be able to publish relevant results and to present concrete measures to improve sustainability within the sector in the coming weeks.

4. **Indicator - Inventory:** *Has the company calculated the emissions embedded within its raw material supply chain?*

Cargill began to quantifiy GHG from all its facilities in 2006. Its GHG inventory covers circa 1,100 locations globally and encompassess different manufacturing technologies. The inventory includes both emissions generated from Cargill's own operations and from energy the company buys and is based on the internationally accepted GHG Protocol developed by the World Resources Institute and the World Business Council on Sustainable Development. Currently, the company is working to expand the inventory to include transportation-related emissions. Furthermore, Cargill announces on its websites that it is sharing its operational and supply chain expertise with customers, suppliers and academic institutions to promote understanding of climate change and to explore opportunities (Cargill, 2010b).

Although Cargill's website describes relatively detailed how it organizes its efforts to quantify GHG emissions from its facilities and technologies, concrete data or information resulting from these calculations or explanations regarding the applied methodology are not provided. Moreover, it is hard to assess from this distance to what extent Cargill is actually supporting

customers and supplier with its expertise. Nevertheless, it remains impressive that Cargill seems to untertake considerable efforts and initiatives regarding the quantification of GHG emissions and the shareing of its knowledge.

5. **Indicator - Targets:** *Has the company set meaningful targets to reduce emissions in its raw material supply chain?*

First, Cargill set company-wide environmental goals in 2001. From then on, new goals were established every five years. The latest goals aim at year 2015 and include: improving energy efficiency, freshwater efficiency and GHG intensity by 5% respectively, from Cargill's fiscal 2010 baseline as well as increasing renewable energy use to 12,5% of the compnay's energy protfolio. Furthermore, Cargill set the eventual goal to have a 100% RSPO certified supply chain in future (Cargill, 2010a).

Principally, it can be said that Cargill sets meaningful targets and realistic time spans in which the targets shall be reached. The targets appear to address relevant aspects that may have a strong, positive imapct on the company's climate balance. Although Cargill regularly announces the successful achievement of its targets, it is not possible, of course, to assess this objectively at this point without having insights to further data.

6. **Indocator- Implementation:** *Has the company explained how it proposes to reduce its raw material supply chain emissions?*

Cargill's plans to achieve emissions reduction are being explained on its website and within its publicly accessible "Corporate Responsibility Report". To give an example, Cargill claims to have successfully implemented its plans for an anaerobic digester at its CTP Harapan Sawit Lestari Palm Oil Mill and Plantations in Manis Mata, West Kalimantan, Indonesia, which is part of its plan to use biogas in order to reduce carbon emissions (Cargill, 2010a). The project was launched in October 2007 and pursued to construct a custom-designed Managed Engineered POME (Palm Oil Mill Effluent) Digester (MEP), which is able to reduce organic load substantially in Cargill's water effluent and methane emissions to the atmosphere while additionally creating a renewable energy source that generates onsite electricity, which contributes to the reduction of Cargill's overall operating costs in the long run. Furthermore, Cargill states that the co-products from the MEP process can be used as organic fertilizer as a substitute to other fertilizers (Cargill, 2007).

Modern palm oil production processes, such as the MEP, are indeed positive examples to increase sustainability throughout the production process and to realize optimization potentials. Nevertheless, Cargill needs to prove how seriously it is pursuing its sustainability commitment by applying the technology to further palm oil mills and to further invest in other relevant

optimization potentials. However, that Cargill has already implemented the application of such a modern technology at two of its locations is definitely a positive start.

7. *Indicator - Leadership and Performance:* *Has the company played a leadership role in reducing emissions associated with the palm oil sector?*

Cargill became a RSPO member in 2004 and from then on strongly supported the process of the development of RSPO principles and criteria (P&C) (Cargill belonged to one of the 15 plantation owners that volunteered to pilot the P&C prior to their finalizations). Cargill has made relevant progress in preparing its plantations to meet RSPO standards. In addition, the smallholders at the PT Hindoli plantation became the first smallholder scheme in the world to receive a certificate under the RSPO's Smallholder Principles & Criteria. Throughout the sector and beyond, Cargill presents itself and is regarded as a standard developer and standard setter: Today the company announces proudly that it committed not to plant on HCVF areas and to develop only new plantations on degraded land, i.e. not on deep peat lands or highly biodiverse lands, and that it enforced a `no-burn´ policy, even before the establishment of the RSPO criteria (Cargill, 2010a). Besides, Cargill states that it continuously encourages its third party suppliers to become RSPO members and to attain certification. Also the construction of the MEP Digester represented an effort that went beyond legal requirements and set a standard for the palm oil industry (Cargill, 2007).

Regarding this indicator it has to be outlined that most information originate from the company's website, which does not necessarily mean that they are overly exaggerated or false. Basically, it seems as if Cargill is widely respected within the palm oil sector and beyond and it also enjoys the support of several respected NGOs like the WWF.

Taking the considerations of this analysis into account it can be concluded that Cargill represents indeed an important role model within the palm oil sector. However, in the end, it is difficult to make a clear judgement to what extent Cargill's efforts regarding the realization of a sustainable palm oil production are meant seriously or are rather and mainly resulting from strategic considerations (e.g. Greenwashing). In this regard, the problem is that most sources or actors being concerned with the issue of realizing sustainable palm oil are, of course, also pursuing their own interests: Accordingly, Cargill's investments in green and social projects and in strategic partnerships within and outside the sector also serve to upgrade its image, while environmental organizations may critizise current efforts regarding the certification of sustainable palm oil also in order to stay within the discussion.
Finally, whether it is due to Cargill's influence, commitment, or reputation, it can be concluded that it is an important partner for non-governmental and governmental organizations and also an important promoter of sustainable palm oil in Indonesia and Europe.

3.5 Social and Ecological Implications

The excessive access to areas for the cultivation of palm oil can have considerate opposing effects on land and water resources and biodiversity in Indonesia. Furthermore, the targeted reduction of GHG emissions by the EU through the use of palm oil for bioenergy might be negative depending of where and how the palm oil is being produced. However, the fact that almost half of the Indonesian population is directly or indirectly dependent on the preservation of natural habitats, deforestation and pollution associated with the palm oil production does not only threaten the functioning of ecological systems and biodiversity but also the livelihood of the people (Dera, 2009). Often this process is dominated by conflicts between palm oil companies and local communities that, in a considerable number of cases, are being "solved" violently (Marti, 2008)[23]. As soon as a plantation is being established by a company, the former small farmers become contract farmers, thereby entering into a relationship of dependence (Schott, 2008). Besides, not only local communities are affected by the palm oil expansion, but also indigenous people that are displaced from their used lands, being deprived of their traditional existence. In addition to these social conflicts, the expansion of oil palm plantations can lead to significant social imbalances, if the additional demand for palm oil for use as bioenergy causes the prices for Indonesian staple food to increase. In this respect, it is problematic that the palm oil consumption in import countries is easily substitutable and can be reduced in case of price increases, while in Indonesia palm oil represents an essential good, whose consumption is not flexible. Consequently, the situation can get precarious for those households that are living on or below the poverty line (Dera, 2009). Meanwhile, a *Worldbank* study that examined the relationship between the use of biofuels and food prices concluded that worldwide food prices had increased by 130% between 2002 and 2008. Almost 75% of these price rises for food could directly or indirectly be attributed to the massive use of agricultural products and areas for the production of biofuels (Mitchell, 2008).

Although these social implications of the increased demand for palm oil for the use of bioenergy are highly critical, the RED and its sustainability criteria focus in the first instance on the environmental dimension that is being affected by the biofuels demand:
In order to make a significant contribution to GHG emission savings from the use of biofuels it is essential that the production of biomass does not cause land-use change. In Indonesian practice, however, the palm oil production often involves two types of land-use changes: direct (DLUC) and indirect land-use changes (ILUC). On the one hand, palm oil may be produced on

[23] Conflicts around palm oil production can be classified as (1) rights-based conflicts between oil palm beneficiaries and the company that controls the land, (2) class-based conflicts between elites who received privileges from the company and those who were deprived of lands and livelihoods, and (3) a mixture of both types. Moreover, the conflicts may be due to external factors, such as market price fluctuations of crude palm oil. Depending on the type of conflict, the degree of governmental involvement (e.g. police, courts, military), as well as the degree of fair mediation, the conflict intensity may range from blockades of the plantation, over demonstrations at the company office, to the use of force. In some cases, where justice could not be established, the anger of the community can manifest also in ethical conflicts without clear causal relations (Sirait, 2009).

land *directly* converted from another status to agricultural land. On the other hand, there may be ILUC that occurs "if a different use such as food or feed cultivation that previously prevailed on areas designed for biomass cultivation […] is displaced by it" (Fritsche et al., 2009, p.7). Since the demand for food and feed is still there, their production is relocated to other areas. These areas may have a high carbon stock (e.g. forests, moors) which is reduced if used for the cultivation of food or feed. As a consequence, the resulting carbon emissions are indirectly caused by palm oil cultivation and therefore must be allocated to it. Depending where and how the displacement will occur, the amount of possible emissions may be considerable (Fritsche et al., 2009). With regard to the global market, the extra biofuel demand that may lead *indirectly* to land-use change, manifests itself through a change in demand for agricultural commodities and their substitutes. The change of price may provide an incentive to change behavior towards an increased use of land, which in most cases implies land-use change. With regard to the local dimension in Indonesia, the limited availability of low-carbon stock land and a lack of stringent protection of forests and carbon rich areas are the central drivers of land-use change (EU Commission, 2010).

Interestingly, the authors of the IPRI study "Global Trade and Environmental Impact Study of the EU Biofuels Mandate" (2010) concluded that indirect land-use change (ILUC) "does indeed have an important effect on the environmental sustainability of biofuels". Although they do not see the environmental viability of biofuels threatened by the current "small" EU 2020 mandate, they admit that if the mandated quantities turned out to be higher in fact, "[…] there is a real risk that ILUC could undermine the environmental viability of biofuels". In contrast to this understanding, the RED's overall calculation of GHG emissions includes the carbon emissions that are being released from DLUC, while it does not take into account the emissions released from ILUC. This is partly due to the reason that a concrete methodology that accounts for these indirectly caused GHG emissions is not yet available or ready for use within the scope of the RED [24]. The major problem associated with accounting GHG emissions from ILUC is that it requires projecting impacts into the future, which is inherently uncertain and that the estimated land-use change can never be validated since it is a phenomenon that is impossible to directly observe or measure (EU Commission, 2010). Similarly, a key message of the IPRI study was that ILUC caused by biofuels would be impossible to prove on the basis of current research since the extent and geographic location of ILUC could not be assigned exactly in quantitative terms. Moreover, in practice there was an additional bundle of effects (e.g. the increasing demand for food and feed products, changed productivities, changed weather conditions, and the degree of governmental regulation regarding land-use change) that influenced the issue of ILUC. These methodological limitations are particularly problematic with regard to the

[24] Only the U.S. has already had experience in conducting life cycle assessments on different types of biofuels, which also include indirect land-use change distinguishing between national and international land-use changes (EU Commission, 2010).

Indonesian context since there the risk of ILUC is especially high due to a lack of rights of property and use for land.

Against this background Searchinger et al. (2008) justifiably raise the point that as "emissions from land-use change are likely to occur indirectly, proposed environmental criteria that focus only on direct land-use change would have little effect" (p. 1240). Besides, Fritsche et al. (2009) claim that up to now there were no efficient rules in place concerning ILUC effects or the consequences for food security. Also the implemented certification systems – particularly the mandatory ones – had not yet been able to provide sufficient guidance concerning the broader environmental and social impacts since this would result in trade law problems.

In order to mitigate the problem and conflict potential of competitions for land-use, the EU's RED as well as the RSPO's criteria demand to shift the palm oil plantation expansion towards unused degraded areas since it is widely assumed that cultivating palm oil on such fallow lands are both ecologically sustainable and economically reasonable. In support of this assumption, Patowski et al. (2007) emphasize in their report that only the development of new plantations on tropical fallow land might principally be able to create GHG emission savings compared to fossil fuels. At the same time, however, it must not be ignored that these areas may also be of high ecological value, may require sizeable inputs of nutrients and water to make production economically viable, and may carry the opportunity costs of future carbon sequestration (Robertson, 2008). In view of the Indonesian context, European policy-makers as well as RSPO members usually forget to value the term "unused land" within the local context and confuse it with the notion of a "left, uncultivated farm land" (Gaia Foundation et al, 2008). Accordingly, what governments and companies term as "unused land" are in most cases areas that are used by small farmers, herdsmen, and local communities for food cultivation, income maintenance, grazing, and traditional medicine. Usually these people have no official right of use for these lands. Considering additionally the definition of the Indonesian government for unused land, the situation becomes even more complex: the government in Jakarta distinguishes between (1) *critical land* that has been degraded in the course of intensive agricultural cultivation, (2) *marginal land* that is said to be unproductive and that is possessing a high acidity (also swamps, peat, wet, and dry lands fall under this category), and (3) *sleeping land* to which belong all uncultivated areas that are at the same time of high importance to indigenous people (Food and Agriculture Organization of the United Nations [FAO], 2002).Taking these opposing notions of unused land and the wide range of informal land-uses by local communities and indigenous people into account, it seems that much less "unused land" is available than it has been contemplated by the EU.

4. A SWOT-Analysis of the EU's RED and its Sustainability Criteria

This chapter contains a SWOT-analysis of the RED and the sustainability criteria. Firstly, the analysis elaborates on the *strengths* and *weaknesses* that have an *internal origin* focusing on the positive and negative aspects that are inherent to the research object, i.e. the RED and its criteria. Secondly, the analysis concentrates on the *opportunities* and *threats* that can be derived from the descriptive analysis (Chapter 3) regarding the specific Indonesian context, which are therefore of an *external origin*. During the whole analysis it is important to keep in mind the overarching objective or desired status to which the S, W, O and T are relating to in either a contributive or destructive way. This desired status is:

The RED and its sustainability criteria are an effective means to alleviate climate change, particularly in view of the case of Indonesian palm oil.

4.1 Strengths

Strengths, which are **helpful** *to achieving the desired status*

(1) Operationalizing Sustainability
(2) Broad, Open Stakeholder- & Evaluation Process
(3) Solid & providing Incentives
(4) Detailed, Conservative & Practicable

Probably the most relevant *strength* of the RED is that it sets an important and unprecedented standard by implementing concrete environmental sustainability must-criteria that enable the operationalization of a relatively strong sustainability concept. The environmental sustainability criteria of Article 17(2) to (5) give a concrete definition of sustainably produced biomass for bioenergy and set a strict minimum threshold for GHG emission savings that is based on a detailed and encompassing methodology. In doing so, the sustainability criteria represent a powerful instrument that has a far-reaching influence on the whole supply chain of a biomass product for bioenergy use and the respective economic actors.

A second, very important s*trength* is the fact that the RED is the product of a relatively broad and open stakeholder- and evaluation process. It has emerged from a learning process, in which actors of different backgrounds – research institutions, economic operators and EU Member States' initiatives – have been involved. As a result, the RED enjoys a broad support on the local, national, international and even the global level. A further, significant s*trength* of the RED is its "openness" and expandability regarding other voluntary sustainability schemes or private sector initiatives such as the RSPO. Accordingly, Article 18(4) prepares a basis for this in mentioning that "The Commission may decide that voluntary national or international schemes to measure greenhouse gas emission saving contain accurate data for the purpose of Article 17(2)" (Directive 2009/28/EC). Moreover, the RED requests in Article 18(4) the Community "to conclude bilateral or multilateral agreements with third countries [such as

Indonesia] containing provisions on sustainability criteria" that correspond to the directive (comp. ibid.). Besides, the RED contains a strong evaluative element demanding the Commission and Member States to report for instance on (national) measures taken to respect the criteria, the impact of an increased demand for biofuels on food security and wider development issues in third countries, the respect of land-use rights, air, soil, water, and biodiversity protection, as well as on the impact of ILUC on GHG emissions. This element makes the RED sensitive to aspects that still need development and creates a platform for ongoing evaluation.

A third aspects that is contributive to the above mentioned desired status is that the RED sets solid, mandatory targets, while providing relevant incentives that stimulate their achievement. The 2020-targets are influential because they apply to all Member States and to both domestically and imported biomass products for bioenergy. These products are eligible to subsidies and may be counted towards the target, provided they prove to be sustainable according to the criteria. As a further incentive, the minimum requirement for GHG emission savings is going to be increased incrementally. This incites economic actors to consider optimization potentials and to foster continuous technological progress. Similarly, Annex V provides a bonus that is attributed to the GHG emission saving potential of a biomass product that has been cultivated on "severely degraded" and "heavily contaminated" land. Another example represents the possibility to give more weight to "biofuels produced from waste, residues, non-food cellulosic material, and lingo-cellulosic material" with respect to the 10%-target in transport (Article 21 (2)).

A last relevant s*trength* that shall be mentioned here represents the high level of details included in the methodology, its conservative approach, and its practicability. The environmental sustainability criteria are based on a methodology that takes the whole life cycle of a biofuel into account – Annex V contains 22 production pathways that relate to different biofuels. This life cycle assessment even includes the issue of DLUC. Furthermore, the default values provided by Annex V are based on a conservative assessment of a broad set of data, meaning that the default values chosen from this set are more GHG intensive than the average values. This creates the incentives for palm oil producers and suppliers to achieve a better practice. In order to ensure that the sustainability criteria are fulfilled, a sustainability scheme (the ISCC) that is based on a mass balance system has been introduced by the RED. The mass balance system represents an adequate compromise between (cost-) efficiency and practicability on the one hand, and traceability on the other hand[25]. With regard to the ISCC scheme, it can also be positively highlighted that the system provides the companies and audits with transparent and handy tools to assess the GHG emission intensity of their products. Besides, it has the potential

[25] For instance, the Commission could have just as well implemented a system (Identity Preservation) that guarantees absolute traceability since sustainable and unsustainable biomass products are processed and traded separately. However, this system would be highly cost-intensive and inefficient in terms of trade considerations (Karotki, 2010).

to be extended to other areas of application than bioenergy, such as in the food and oleo chemistry sectors (Karotki, 2010).

4.2 Weaknesses

Weaknesses, which are **harmful** *to achieving the desired status*

(1) Limited & Insensitive with regard to Local Conditions
(2) Inconsequent & Blind to the Broader Social Impact
(3) Scheme with Loopholes
(4) Incoherent & Short-sighted
(5) Overambitious & Counterproductive

A very significant *weakness* of the RED is that its method is strongly limited since it does not consider the broader environmental impacts of biomass cultivation (e.g. ILUC). Furthermore, it is insensitive regarding the impact of the sustainability criteria on third countries such as Indonesia and the various political, economic, and legal conditions prevailing on-site. While the methodology of the RED covers DLUC, it completely fails to include the issue of ILUC within its calculation, although ILUC has a decisive impact on the environmental viability of biofuels and bears the potential to reduce considerably their contribution to the policy objective. In addition to this, ILUC is coupled with negative environmental effects on air, soil and water as well as on biodiversity. However, the current attempts to model ILUC are not yet ready to serve as a legal basis relating to economic operators and their products, but can merely provide contributions to political analyses (Deutsche Biokraftstoffwirtschaft, 2010). A further critical aspect concerns the default values of Annex V, which are in several cases based on insufficient data - sometimes it is impossible to create conservative values since only a single value exists. Next to these methodological *weaknesses*, the RED and its criteria are limited in so far as they do not sufficiently address sustainable agricultural practices for biomass cultivation that have a low negative effect on biodiversity. Up to now, such requirements on agricultural practice have hardly been put into words (Fritsche et al., 2009). Likewise, the RED is unspecific regarding the protection of water, soil, and air, but merely requests research and evaluation on this issue (Article 18 (9) (b)). Furthermore, the analysis of the specific case of Indonesian palm oil (Chapter 3) has shown that the RED fails to consider adequately the impact of its measures on third countries, although its 2020-targets can impossibly be achieved without their contributions. Instead, the RED sets powerful incentives and mandatory targets that in the worst case may lead to environmental load displacement (comp. Section 2.2) resulting in CO_2-emission savings in Europe, while causing ecological degradation and a negative climate balance in Indonesia. (In this case, the argument of climate neutral biomass would lose its grounds). As a consequence, the sustainability criteria can be said to be falling too short as to take ultimate responsibility, and as being too weak as to prevent illegal operations and deforestation in Indonesia. Similarly, Dera (2009) concluded that the EU's certification system

would not grasp the issues prevailing in Indonesia since the divergent understandings of sustainability virtually invite frauds. The EU's and Indonesia's understanding are not only opposed on this issue, but also with regard to several others that are significant to the effectiveness of the RED's objective to alleviate climate change: For instance, the RED does not state clearly *how* the plantations for palm oil (or biomass in general) shall be developed in third countries like Indonesia. Up to now the RED has been insensitive and vulnerable with regard to Indonesian practices of granting permissions for plantations (e.g. fast track permits) and classifying degraded land and forest land in general. Also, the Commission's optimistic assumption that degraded land is environmentally viable and economically reasonable, is not acceptable when considering the Indonesian practice, in which unused land is actually used by locals, and degraded land may still be of high biodiverse value or may need high material inputs to be cultivatable at all. In this regard, the Deutsche Bundeskraftstoffwirtschaft (2010) correctly criticizes that most data regarding arable area available worldwide, on which this assumption is based, are mainly based on estimations and insufficient statistics. To conclude, therefore, it is likely that the amount of available degraded land is less than that contemplated by the EU.

A further *weakness* lying at the core of the directive is that the must-criteria concern environmental sustainability only, while the social and economic aspect shall be "guided" by a soft evaluative approach. This ignores that the three different dimensions of sustainability are interrelated and thereby work, depending on the circumstances, either contributive or counterproductive to each other. This lack of solid social criteria is extremely critical since the social impact of the EU's biofuels demand in Indonesia is particularly severe. The RED strategy is blind regarding local communities and indigenous people in Indonesia who are losing their basis for life as a consequence to land-use competition. Moreover, the rapidly growing demand for biofuel feedstocks has contributed to higher food prices, which pose an immediate threat to the food security of poor net buyers in rural and urban areas. However, so far, the RED contains no efficient rules concerning ILUC effects or the consequences for food security (Fritsche et al., 2009). Another, but related aspect concerns the narrow scope of the sustainability criteria. Putting the RED's objective in a broader perspective, it would have been consequent to apply the criteria also to other sectors than bioenergy only, especially considering the fact that the use of biomass in these other sectors is already huge. Of course, the RED strategy and its focus may be seen as a first step. However, as long as the scope of the criteria is not also extended to other utilization paths, unsustainable biomass cultivation for food, feed and oleochemistry goes on without a check.

A third critical *weakness* refers to the certification scheme and mass balance system that puts the criteria into practice. There are several points that support the argument that the scheme can impossibly be absolutely safe to frauds and other manipulations. Firstly, as it has been outlined in Chapter 3, the scheme is helpless regarding corruptive practices in Indonesia. For instance,

the RED contains no requirements for companies to prove their compliance with the respective Indonesian environmental law. Therefore, it is likely, although not easily detectable, that unsustainable palm oil is counted towards the EU targets. Secondly, the high number of different certificates and schemes in place is already confusing consumers, civil society organizations, and companies. Thirdly, although the mass balance system is working efficiently, it is unsatisfactory when it comes to the direct traceability of a given biomass product and its origin since sustainable and unsustainable products are being mixed. Lastly, it is critical that Annex V of the RED contains conversion factors that can be easily manipulated: Due to the reason that the conversion factors that are used for the calculation of GHG emissions are not fixed, but are in fact available extensively in scientific literature, economic actors may chose those values that are most complimentary to the GHG balance of their biofuel, possibly without having actually achieved GHG emission savings along the supply chain. This grey zone of undefined conversion factors makes it impossible for audits to examine the true GHG emission intensity of a given biofuel [26] (Biograce, 2010).

A fourth central *weakness* that needs to be mentioned refers to the incoherence of the RED's policy objectives and its shortsightedness regarding the embedment of the promotion of bioenergy into the broader framework of sustainable energy policy. As it has been outlined in Section 2.3, the RED strategy pursues different policy goals and interests at the same time (climate change alleviation, energy safety, agricultural policy interests), which are not reconcilable which each other in every respect. In this regard, Searchinger et al. (2008) and Dera (2009) justifiably conclude that the limited scope of quantitative criteria and the general lack of social must-criteria reflect that the EU is equally aiming to increase energy safety as well as to achieve the goal of climate alleviation. This illustrates the conflict between sustainability and energy safety concerning the promotion of biofuels or the general conflict between the EU's environmental and energy policy. Furthermore, the RED avoids addressing the question which non-renewable energies shall be replaced by bioenergy. Moreover, the strategy is unspecific in terms of how biofuel development is being integrated into a wider framework of alternative energies consumption, encompassing energy conservation, and transport policy considerations. This shortsightedness ignores the fact that biofuels are likely to replace only a small share of global energy supplies and cannot alone eliminate dependency on fossil fuels (FAO, 2008).

To complete the analysis of the RED's *weaknesses*, referral has to be made to the RED's overambitious targets and incentives that may also work counterproductively to the policy objective of climate alleviation. Policy interventions, such as subsidies and mandated blending of biofuels with fossil fuels, are driving the rush on biofuels. These measures by the EU (but also by the Indonesian government) have already demonstrated to have high environmental,

[26] It has to be noted that there is currently an initiative under way (since 2009) that tries to summarize fix conversion factors on a list that shall be published and mentioned within national legislation (Biograce, 2010).

social and economic costs. The RED's ambitious mandatory targets and subsidies promote the rapid expansion of biofuel production and LUC that is likely to increase GHG emissions instead of reducing them. At the same time, the criteria and the related certification scheme unilaterally impose a burden that often discriminate against developing countries' producers, especially small farmers, without providing them with capacity-building, and technological and financial support.

4.3 Opportunities

Opportunities, *which are* **helpful** *to achieving the desired status*
(1) Good "Indonesian" Governance
(2) A Strong RSPO
(3) Bottom-Up Process
(4) A Demanding Public
(5) Scientific Progress

Against the background of the *internal analysis* of the RED, the most important, but at the same time rather unlikely *opportunity* that would be helpful to achieving the *desired status* is Good "Indonesian" Governance. The strategy, pursued by the RED, could much more easily be implemented if the Indonesian government would take its climate policy objectives more seriously and if it would enforce its environmental laws with the support of other ministries and governments at "lower" political levels. Moreover, it would be more effective if the Indonesian government undertook successful measures to keep the palm oil industry, district governments and local legal authorities in check.

A second, *opportunity* would be, if the RSPO developed into a strong and democratic organization that enjoys broad support. This would imply that the roundtable should improve its internal structure towards a more balanced arrangement of votes and members. In addition, the RSPO's P&C needs to become fully compatible with the RED, especially the GHG-emission-criterion. As a result, the RSPO would represent a supportive and supplemental element to EU bioenergy policy that promotes sustainable palm oil in Indonesia. Thereby, it could balance the RED's *weakness* regarding a lack of concrete social criteria and could push the standard setting process forward by stimulating a learning process and innovations.

A further, conducive *opportunity* would be the development of a dynamic bottom-up process by economic actors from the palm oil sector. Some palm oil producers or suppliers could develop into role models and standard setters, paving the way for sustainable palm oil practices in Indonesia and Europe: They should take their commitments seriously and partner up with NGOs, governments and small farmers. Besides, they should conduct their own research on yield and production optimization. In doing so, this "sector and actor specific form of governance" would develop into an important counterbalance regarding the weak contribution

and guidance by the Indonesian government (Dera, 2009). This bottom-up process by economic actors is particularly important having in mind the huge responsibility of palm oil companies for causing environmental issues. However, their contribution to the realization of sustainable palm oil should and could never become more than supplemental to governmental measures, but not compensating.

Next to economic actors of the palm oil industry, concerned consumers and civil society organizations, that make constructive and fact-based contributions, represent a further important *opportunity* for the RED to realize its core objective. Only if European citizens continue to demand true sustainable palm oil and if they are concerned about the various issues relating to the supply chain of palm oil, the European Commission will have a policy window for action. If European consumers asked for more information regarding the certification scheme and also demanded an extension of sustainability standards to other sectors that use and process palm oil, the Commission and the Member States would gain an important support and motivation to foster improvements and an extension of sustainability criteria to other areas. This process would be supported, if NGOs made valuable contributions to uncover unsustainable and corruptive practices. Besides, in view of the development that competition for land-use is going to increase and that arable land is limited, it would be conducive if European citizens developed more sustainable consumer patterns.

Last but not least, a crucial *opportunity* represents scientific progress and innovation. It would be helpful for the RED to achieve its goals, if research was able to realize the optimization of biomass production and the possibility to cultivate successfully degraded land in order to alleviate the issue of LUC. Furthermore, researchers could become capable of presenting recommendations for more sustainable agricultural practices in order to eliminate the environmental impacts of biomass production. Considering the issue that biofuels production is currently not economically viable without subsidies, such technological innovations could lower the costs of agricultural production and biofuel processing (FAO, 2008). Likewise, ambitious research on "second- and third-generation biofuels" [27] bears the potential to enhance significantly the future role of bioenergy. Next to these scientific *opportunities* it would be helpful, if think-tanks might became able to present a robust methodology to calculate GHG-emissions from ILUC.

[27] Second generation biofuels are produced from ligno-cellulosic materials (e.g. switchgrass or wood chips). Third generation-biofuels usually represent fuels from algae. There are other technologies claiming to have a fourth generation status – often only to better sell the products. Generally, all higher generation fuels are supposed to be free of the common disadvantages of "lower"-generation biofuels and are supposed to provide greater supplies and to reduce climate-changing greenhouse gases (Van Gerpen, 2010)

4.4 Threats

Threats, *which are* **harmful** *to achieving the desired status*
(1) Bad "Indonesian" Governance
(2) A Weak RSPO
(3) ILUC & Complexity
(4) "Business As Usual"
(5) Incredibility
(6) World Market Demand for Palm Oil
(7) WTO Non-Compliance

Due to the same reason why Good "Indonesian" Governance would pose a great *opportunity* Bad "Indonesian" Governance is the strongest external *threat* to the achievement of the RED core objective. With regard to today's situation in Indonesia, its national government seems to be incapable or not willing to combat corruption within the palm oil sector and in political and legal institutions. Currently, this problem is even being worsened due to the ongoing decentralization process in Indonesia. As Chapter 3 has outlined, the Indonesian government is too weak to enforce national environmental laws and to implement a stringent and coherent climate policy. Since the state itself is engaged in the palm oil business, it is trapped by a problem solving bias. Still, as long as the state does not prevent the flourishing of corruptive structures, single European or private stakeholder efforts remain too weak to be able to make a real difference. Therefore, it may be concluded that the question whether tropical forests will be preserved in future or not, is less likely to be decided by a European certification scheme but rather by the political will of the Indonesian government. Similarly, the success of the RED strategy will be determined by the priorities of policy objectives chosen by the Indonesian government. In this respect, the different understanding of sustainability ("berkelanjutan") in Indonesia and the prioritization of fast before sustainable growth are likely to complicate the implementation of the RED strategy. In view of the lucrative and ever-growing palm oil sector in Indonesia that offers employment, energy supply and huge export gains, it is also clear that the government will continue to pursue its ambitious plantation expansion policy and to go on setting market incentives. Against this background, is it obvious that the position of climate policy among the other overall Indonesian policy goals is not very strong. This is at least proven by various counterproductive activities on different governmental levels and ministries. Furthermore, structural issues such as Article 33 of the Indonesian constitution additionally facilitate the excessive expansion of the palm oil sector and plantations.

Just as the RSPO may develop into a great *opportunity* to the RED strategy, it may develop into a *threat*, too. If the RSPO is incapable of balancing the dominance of economic actors regarding votes and membership, and is failing to involve social and environmental organizations and small farmers, the directive will lack important supporters. Furthermore, the RSPO might turn out to be trapped by the dominance of leading economic actors, merely paving the way for the

economic interests of producer and importer countries. Also, although it may be the case that the RSPO will develop a broad influence on the standard-setting process, it might not be deep and long-lasting. In the end, due to its nature, it is incapable of replacing governmental functions. Moreover, the RSPO might fail to make its P&C compatible with the RED-criteria. Thereby, it cannot balance the internal *weaknesses* of the RED since its own P&C are widely qualitative and soft in nature and also avoid addressing the issue of ILUC. In addition to this, the companies' interpretation of the P&C may remain liberal and the independence of the audit may be increasingly questioned.

A third, severe *threat* that shall be highlighted at this point is the nature of ILUC itself and the general complexity of the issue of Indonesian palm oil. As Chapter 3 has outlined, the risk of ILUC is especially high in Indonesia due to a lack of rights for land and property. Due to its nature, the ILUC is hardly observable and measurable, and in addition to this, it is influenced by a bundle of factors (e.g. food and feed demand, weather conditions, the degree of governmental regulations). Besides, taking a long term perspective, the Indonesian potential to provide land for biomass production is highly limited. Furthermore, Indonesian palm oil itself is a complex and cross-sectional issue that involves many different actors, levels and interests, which makes it hard for the EU to fully take into account all facets of it: For instance, it is complicated to understand how the Indonesian classification of forest areas and unused land is working in theory and in practice and to what extent this diverges with the EU's definitions and classification systems.

As the *opportunity* "Bottom-up Process" emphasizes the significance and potential of economic actors, the latter could equally develop into become a *threat* by pursuing a "business as usual" practice. With respect to this development, it is important to outline that deforestation and ruthless plantation expansion has always been a common practice in Indonesia and is not easily stopped since too many influential actors gain from it. Moreover, the RED strategy to focus on the cultivation of degraded land might be hampered by companies that are not willing to take these economically unattractive areas into consideration as long as other areas can easily be cultivated which also offers the benefit of selling tropical hardwoods. Therefore, as long as this business as usual practice does not come to an end, it will be difficult for sustainable palm oil certificates to convince concerned customers. In addition to this, company groups will make it hard for independent audits to know for sure which operations are indeed sustainable since they may easily produce under another brand name. Supporting these conclusions Fehrenbach et al. (2007) state that it is inevitable that unspoiled areas will continue to be affected by plantation expansion, especially in Indonesia. They add that even if the sustainability criteria prove to be effective in protecting tropical forests and wetlands, it still has to be assumed that the conservative basis case, in which LUC from tropical forests to plantation crops takes place, is the standard. A further *threat* that is related to the overall business as usual issue is that only an

insufficient number of companies in Europe and Indonesia (and of other palm oil producing and importing countries) supports sustainable palm oil, thus circumventing admission of their joint responsibility regarding the consequences of palm oil production. Moreover, small farmers may continuously be excluded from the effort to realize sustainable palm oil, although their share in the palm oil business is significant. Finally, there remains the *threat* of a problem solving bias also on side of economic actors: Companies engage in supposedly sustainable palm oil production only to green wash their operations and to upgrade their image.

A fifth point that has to be noted concerns the general *threat* that the sustainability criteria and the related scheme fail to convince consumers. For instance, NGOs might increasingly misuse their reputation to undermine well-meant, albeit imperfect efforts of private stakeholders to realize sustainable palm oil. Thus, they try to keep the attention of the public, instead of making solid and constructive contributions. Furthermore, the critical development of a rapidly growing demand for biofuel feedstocks, contributing to higher food prices, raises doubts regarding the RED's effectiveness and its reliable pursuit of goals. In addition to this, the growing amount of palm oil certificates and labels confuses consumers, who increasingly put the credibility of the certificates into question also due to bad practice reports that dominate the media.

A further aspect concerns the overall demand for palm oil on the world market. Accordingly, an isolated European effort to realize sustainable palm oil might turn out to be ineffective in view of the huge Chinese, Indian and Indonesian market potential that impose no standards on sustainable palm oil. Therefore, the sustainability criteria cannot prove to be more than just the result of a short-sighted, "self-centered" ethic.

To complete the analysis of external *threats*, the issue of WTO-compliance needs to be highlighted as well. The current debate on this issue may lead to the result that the Indonesian and Malaysian allegations, that the sustainability criteria violate WTO-law, are given justice.

4.5 SWOT-Matrix

In order to present the results of the analysis at a glance, the single points of the categories *strengths*, *weaknesses*, *opportunities*, and *threats* can be arranged in the typical SWOT-matrix below. Besides, the matrix facilitates the concluding step of the SWOT-analysis of developing normative policy recommendations by considering the combinations of the categories S-O, S-T, W-O, and W-T).

	Helpful to achieving the desired status	**Harmful to achieving the desired status**
Internal Analysis **(Attributes of the RED and the sustainability criteria)**	**Strengths:** (1) Operationalizing Sustainability (2) Broad, Open Stakeholder- & Evaluation Process (3) Solid & providing Incentives (4) Detailed, Conservative & Practicable	**Weaknesses**: (1) Limited & Insensitive with regard to Local Conditions (2) Inconsequent & Blind to the Broader Social Impact (3) Scheme with Loopholes (4) Incoherent & Short-sighted (5) Overambitious & Counterproductive
External Analysis **(Attributes of the Indonesian Palm Oil Context)**	**Opportunities**: (1) Good "Indonesian" Governance (2) A Strong RSPO (3) Bottom-Up Process (4) A Demanding Public (5) Scientific Progress	**Threats**: (1) Bad "Indonesian" Governance (2) A Weak RSPO (3) ILUC & Complexity (4) "Business As Usual" (5) Incredibility (6) World Market Demand for Palm Oil (7) WTO Non-Compliance

5. Recommendations towards future EU bioenergy policy-making

Combining the internal with the external analysis (i.e. S-O, S-T, W-O, and W-T) revealed several strategic recommendations for future EU policy-making in order to achieve the overarching objective of climate change alleviation. Generally these recommendations can be grouped according to three main target groups: the European citizens or consumers, civil society organizations and the palm oil industry sector including the RSPO, and the governments of palm oil producing and importing countries, but particularly the Indonesian government.

It is almost impossible to prioritize these recommendations and the respective strategies since each target group plays a crucial role for the RED and the criteria to have a strong effect. Moreover, an eventual prioritization depends as well on how the different threats and opportunities will evolve in future; if they will turn out to have a strong or weak effect and if they occur in combination or not. Still, what can definitely be concluded is that the Indonesian government is the most crucial "actor" to be addressed by the EU (or relevant EU Member States) since it has the power to change the palm oil sector and environmental situation in Indonesia for the better. This regulative function and top-down process cannot fully and effectively be replaced by the RSPO or other private initiatives in the long term, although they have an important function in catalyzing this process.

5.1 First Set of Recommendations:

Desired Status:	**"Effective Climate Change Alleviation"**
Sub-target(s):	Extending & Improving the Criteria, Clarifying Policy Priorities, Improving Policy Coherence, Realizing Sustainable Consumption Patterns
Target Group:	European citizens
Approach:	Information, Raising Awareness

In order to achieve true sustainability, the RED's environmental must-criteria for bioenergy are not enough. This current approach is inconsequent and short-sighted since it does not treat sustainability in its full scope and ignores the broader socio-economic impact of the "policy intervention". Besides, this approach remains implausible and narrow as long as the sustainability criteria focus on biomass for bioenergy only, ignoring the huge utilization of biomass in the food, feed and chemistry sector. Consequently, to extent the criteria in terms of their application and scope would be an important next step that the EU needs to prepare. However, the Commission should also endeavor to improve the scope and quality of the environmental sustainability criteria already in place. As the German *Institute for Energy and Environmental Research* (Fritsche et al., 2009) and the FAO (2008) outline, more specific qualitative and quantitative standards and criteria regarding the sustainable use of water, soil, and air as well as sustainable agricultural practice in general need to be implemented. They

argue further that environmental concerns over biofuel feedstock production are the same as for the impacts of increased agricultural production in general. Therefore, measures to ensure sustainability should be consistently applied to all crops, which means that environmental sustainability criteria for bioenergy represent a first step only, on which a universal application must follow in order to achieve a positive climate impact. In view of this prospect, the biggest *threat* is posed by WTO-law. However, an important *opportunity* that could evolve is public awareness: European citizens could articulate their demand for truly sustainable biomass - especially biomass from palm oil – that does not stop at sectoral boundaries. The citizens could show their strong support for the EU's actions regarding climate change alleviation and that they are also willing to bear the (financial) consequences of such an ambitious policy. Building on this public impulse, the Commission would have a policy-window for action: It could build on previous experiences and the sustainability system that is already in place for bioenergy and could extend the scope and application of the criteria. Besides, this public support would encourage the EU to take action regarding the promotion of renewable energies and to make climate change policy a true priority.

Furthermore, in accordance with efforts regarding the clarification of policy priorities the EU should also work on the issue of policy coherence: It is apparent that the development of biofuels is shaped by a wide range of policy domains such as agriculture, energy, transport, environment and trade. Thus, this development often lacks clear coordination and coherence among each of the policy resorts, which is also a major *weakness* of the RED strategy. Therefore, in order to improve policy coherence and coordination, the Commission should increasingly consider the role of biofuels in relation to each of these policies, ensuring that each of them make appropriate contributions in reaching the various policy objectives (FAO, 2008).

In order to raise public awareness, a central strategy of the EU would be to inform European citizens about the positive and negative impact of the RED and its criteria. In this respect, the public needs to understand how the sustainability system works and what the different certificates and labels stand for, as well as where the biomass products have their origin and how they are being produced. Such an information campaign could additionally contribute to make European costumers more aware about sustainable consumption and to promote more sustainable patterns of consumption in Europe.

5.2 Second Set of Recommendations

Desired Status:	**"Effective Climate Change Alleviation"**
Sub-target(s):	Enhancing the Influence and Improving the Effectiveness of the Sustainability Scheme, Reviewing the Impact and Scope of Incentives
Target Group:	RSPO, Economic Actors, NGOs
Approach:	Participation, Motivation, Strict Enforcement

The European Commission is already a supporter of the RSPO, acknowledging its importance for the (Indonesian) palm oil sector. In this regard, it is a significant *strength* of the RED that it creates room and flexibility to incorporate, for example, the RSPO within the RED strategy (comp. Article 18(4)). Bearing this in mind, the RSPO's future development and its eventual (in-)capacity for improvement represent both an important *opportunity* and *threat*, depending on how capable the RSPO might turn out of solving its internal problems and to address concretely a `positive climate balance´ within its GHG-emission-criterion. In the case that the RSPO should develop into a strong promoter of sustainable palm oil, the EU could use the RSPO as an "extended arm" of the RED strategy in Indonesia and could thereby compensate several short-comings or *weaknesses* of the RED regarding the adequate inclusion of third country implications. In order to accelerate this process and to increase the probability of this opportunity arising ("A Strong RSPO"), the Commission should launch close cooperation with the RSPO to realize important improvements in order to make the organization compatible with the RED.

In addition to this, the EU should closely cooperate with economic operators from the palm oil industry and relevant NGOs to get solid information and data from the ground on how to improve the RED's scheme and criteria. Besides, the EU should stimulate continuous improvements regarding the sustainability system, imposing and enforcing strict standards. This also involves a continuous inspection of the system and the audits that award the certificates in order to strengthen their credibility. Furthermore, in order to meet the ambitious objectives and standards of the directive, the Commission could implement - in cooperation with EU Member States and the RSPO - a "Best Practice Award" for sustainable palm oil companies. As a positive side-effect, this would also motivate innovation and optimization of palm oil production.

As the SWOT-analysis revealed, the ambitious RED 2020-targets and related incentives, such as subsidies, may represent both a *strength* and a *weakness.* Accordingly, the European Commission also needs to review their impact and scope. Currently, the ambitious targets and the motivation given to achieve them are causing artificial rapid growth, exacerbating some of the biofuel production's negative effects. In this regard, the EU has to rethink, to what extent it would be better to promote a more gradual development of the sector and to thereby ease the upward pressure on prices and to reduce the stress on natural resources. Perhaps, subsidies that

are at present linked to the production and consumption of biofuels could be invested better in technologies that enable, for instance, yield increases instead of area expansion (FAO, 2008).

5.3 Third Set of Recommendations

Desired Status:	"Effective Climate Change Alleviation"
Sub-target(s):	Increasing Knowledge and Know-How regarding Critical Issues, Gaining Broad Support for Sustainable Palm Oil, Embedding the RED into a Holistic Climate Alleviation Strategy
Target Group:	Indonesian national and district government(s), Relevant Producer and Importer Countries and other Stakeholders of the International Arena
Approach:	Research, Partnerships, Exchange of Information, Technological and Financial Transfers, Political Agreements, Flanking Measures on the International and Global Level

An important *strength* of the RED is that it sets ambitious goals that are combined with incentives for economic actors and other stakeholders to research on critical issues such as ILUC or the RED's impact on food security. Likewise, Article 17(2) about the increase in the minimum GHG emission saving threshold, stimulates companies' efforts to realize optimization potentials along the whole value chain of biofuels. However, to increase efforts of other actors to achieve scientific progress is not enough. Although some initiatives and evaluative projects by the EU already exist, the Commission has to strengthen its own efforts to realize scientific progress regarding the issue of ILUC and food security in third countries, the optimizations of yield increases, especially on EU domestic areas, and the potential of degraded land-use for cultivation. With regard to the latter, the Commission needs to clarify and identify exactly, which areas are suitable for biomass cultivation without causing additional GHG emissions in Indonesia, and to establish solid plans for sustainable land-use, including their implementation and monitoring. In this regard, the German Institute for Energy and Environmental Research (Fritsche et al., 2009) points out that the greatest scientific challenge is to identify and to locate such areas using minimum effort and the most universally applicable methodology possible, while avoiding negative biodiversity and social impacts. In order to approach the issue of ILUC, the German Advisory Council on Global Change (WBGU, 2008) recommends to conduct an analysis on land-use competition and to develop elements for a global land-use management system, as well as to clarify the relationship between food security and bioenergy. Similarly, the federal association *Deutsche Biokraftstoffwirtschaft* (2010) emphasizes the need to conduct a viable analysis of causes of GHG emission intensive LUC, particularly in strongly affected regions, that does not only consider biofuels but all uses of agricultural biomass. Taking into account the high uncertainties involved with ILUC, the association further suggests to intensify efforts regarding monitoring, field research, and to focus especially on the evaluation of the RED's implementation in third countries. This is also what can be deduced from the *weaknesses*

and *threats* presented above: The use of land for biomass production for bioenergy needs to be evaluated through sensitive analyses that have an intensified regional scientific perspective.

Being aware of the high risk involved with the impact of ILUC the European Commission (2010) stresses that action concerning ILUC should principally be addressed under a precautionary approach. Currently, the Commission is finalizing an impact assessment focusing on different policy options that deal with ILUC [28], whose final version is going to be presented in July 2011 together with a legislative proposal containing amendments of the RED and the FQD. Furthermore, in order to ease the land-use pressure, dedicated research on yield optimization needs to be accompanied by investments in technology and the strengthening of institutions and infrastructure in third countries. Besides, in order to increase the pressure on economic actors to realize ecological optimization potentials, biomass products should be only certified if they can prove that modern optimization technologies have been applied. However, the realization of optimization potentials is an area that is still in need for action[29]. Should the Commission and other relevant actors fail to realize scientific progress within these areas, the positive impact of biofuels remains limited if not even illusory. In this case the whole idea of Article 17(2), i.e. a minimum threshold for emission savings, will increasingly be put into question and the theoretical assumption made in Section 2.2, that the EU is just displacing its environmental load onto third countries, thus achieving sustainability and environmental improvements at the expense of sustainability and environmental quality in the "South", gains real ground. Likewise, the RED's main *strength* and innovative core, being able to operationalize environmental sustainability, can be doubted.

Due to the fact that Bad "Indonesian" Governance represented the strongest *threat* within the SWOT-Analysis, it is crucial for the EU and relevant Member States to approach the Indonesian government. In order to achieve the RED's greatest possible effect, the Commission needs to enter into close cooperation with Indonesia. To gain Indonesian support for sustainable palm oil and related standards, the EU needs to create incentives for the Indonesian government. Such could involve technological and financial support but also the provision of know-how regarding the use and introduction of bioenergy in Indonesia, or by sharing experiences in green accounting. In this respect, the RED strategy should not forget to consider the realization of sustainability with a broader perspective. Thus, it is also in the interest of the EU to stimulate the development of a sustainable energy system and structural changes also with regard to Indonesia: Instead of focusing solely on the development of the unstable and controversial

[28] The policy options are (a) either to take specific action regarding ILUC, or to continue monitoring, (b) to introduce additional sustainability requirements on certain categories of biofuels, (c) to increase the minimum threshold, and (d) to attribute a quantity of GHG emissions to biofuels reflecting the estimated ILUC impact.

[29] For instance, specific areas of optimization encompass the extensive energetic use of by-products, the extensive collection and energetic use of biogas that is being generated during waste water treatment, or the definition and consequent enforcement of environmental standards in accordance with the current state of technology (Patwoski et al., 2007).

biofuel business, which is determined by other countries, the Indonesian government should be motivated to invest also in the development of other renewable energy sources that are abundantly available throughout the country. In order to enter cooperation with Indonesia the Advisory Council on Global Change (2008) recommends as a first step the establishment of "bioenergy-partnerships" such as interstate technology-agreements, which could also include aspects of a sustainable land-use policy or trade partnerships. Such a closer cooperation should enable the EU and EU Member States to learn about the specific conditions and circumstance on-site. For instance, the EU could launch single projects in order to gather more information and insight into relevant local issues and stakeholders. In doing so, relevant actors to be addressed are district governments, local NGOs, palm oil producers and suppliers, as well as small farmers. In this regard, a major issue to focus on represents the implementation of appropriate sustainable agricultural practices in Indonesia[30]. Moreover, the inclusion of Indonesian small farmers needs special attention and requires active government policies and support in order to increase the acceptance and credibility of environmental standards. Here, areas of investment are: infrastructure, rural finance, market information and market institutions, and legal systems.

The *strength* of the RED's Article 18(4) to enable bilateral or multilateral agreements bears the possibility to reach an "EU-Indonesian" agreement that specifies the implementation and impact of the RED in Indonesia. In this respect, a major aspect that should also be object to such an agreement should be to reach a common commitment on and understanding of sustainability and sustainable palm oil production. This should also include a common definition regarding degraded, unused land and the general classification of forest area. In this respect, it is also crucial to enforce such definitions together with effective applications of land-tenure policies in order to protect vulnerable communities (FAO, 2008). Generally, the effort to reach an agreement should be accompanied by direct European support for Indonesia and other palm oil producing countries in discussing and preparing their own rules on sustainable bioenergy and the inclusion of these rules into the European certification system (Fritsche et al., 2009). Also, the Indonesian government needs to be better informed of international consequences that go along with the development of biofuels. Here, international dialogue through existing mechanisms can help to formulate realistic and achievable biofuel mandates and targets (FAO, 2008). In order make a first step to reduce the risk of ILUC in Indonesia, the EU should try to incorporate existing European or national LUC regulations into the agreement (e.g. Cross Compliance). For this, a regional investigation into areas affected by LUC needs to take place,

[30] Such sustainable agricultural practices include to consider low bioenergy impacts, the use of domestic species and local varieties, avoiding mono cultures, giving preference to perennial crops, using methods that cause low erosion and machinery use, the low use of fertilizers and pesticides, avoiding irrigation, as well as establishing "buffer zones" and "stepping stone biotopes" (Fritsche et al., 2009).

which would lead to the additional advantage of gaining solid regional data (Deutsche Biokraftstoffwirtschaft, 2010).

Being aware of the fact that the European demand for sustainable palm oil is only one part of the huge world market demand for palm oil (by any standard), the EU should also use international arenas to convince leading palm oil importers, such as India and China, to implement sustainability standards. This strategy is, of course, of a very soft nature and has a long-term perspective. To achieve sustainable palm oil production on a global level, different international initiatives have to harmonize their activities and to improve their coordination. A possible step, that could be promoted by the EU and its Member States, is to establish an international forum in which sustainability criteria can be debated and agreed (or amended) to ensure that they achieve their intended environmental objective without creating unnecessary barriers to suppliers in developing countries. In particular with regard to the latter aspect, the EU is obliged to provide assistance in capacity-building to developing countries.

With regard to the *threat* of the RED's non-compliance with WTO-law, it can be recommended that the EU should push forward the formation of a consensus among WTO members on the role that the WTO should play regarding the development of biomass certification. This attempt should aim at a general improvement of the acceptance of environmental and social standards within the WTO-contract regime (Patowski et al., 2007).

In view of the general aim to make the international system supportive of sustainable biofuels development, an overall review of current biofuels policies needs to take place that carefully assesses their costs and consequences. Such a review should also consider the potentials of taking advantage of opportunities for urban and rural agricultural development and protecting the poor and food insecure.

Finally, the aim that accompanies the task of promoting sustainable palm oil on a global level is to embed the RED into a true and holistic strategy to alleviate climate change. In this regard, the EU also needs to develop solid plans to promote the development of second and third generation biofuels and of other renewable energy sources. Besides, it needs to be more explicit regarding which fossil fuels are going to be replaced by bioenergy in terms of proportions and priority. This effort has to be based on an extensive analysis of the role of bioenergy within the future energy system that also addresses the topics of encompassing energy conversion and the role of transport policies. Due to the reason that land-use competition will increase in future, it is obvious that bioenergy alone represents no sustainable energy source, but has to be seen rather as a bridging technology that is applied in combination with other alternative energies, such as wind and solar power (WBGU, 2008). Accordingly, in order to steer the use of bioenergy, a global regulatory framework needs to be established. Such a framework could, for example, be based on a developed UN-Climate-Change regime and the foundation of a global commission

for sustainable land-use. These measures could be supported further by efforts that strengthen and improve international environment and development regimes (e.g. the Biodiversity Convention; the Desertification Convention) (WBGU, 2008). Furthermore, in order to strengthen international climate policy the EU should push forward efforts regarding the development of an international forest regime that guarantees the protection of tropical forests and the world climate. This efforts need to be supported by diplomacy and financial incentives (Patowski et al. 2007).

5.4 Concluding Statement

Taking finally the SWOT-analysis of the RED and the sustainability criteria as well as the deduced recommendations into account, it can be concluded that the overall objective (that the RED and the criteria represent effective means to alleviate climate change, especially with regard to the case of Indonesian palm oil) is in view of the current developments and issues unlikely to be achieved in the short- or mid-term.

At present, internal *weaknesses* and *threats* seem to outweigh the *strengths* and *opportunities*, which may be mainly due to the reason that the EU undertook ambitious measures and steps that were led to a significant extent by strong strategic interests without taking into account the entire impact of the promotion of the use of biofuels. While the RED and the sustainability criteria are significant and promising in their attempt to operationalize sustainability, an evaluation of current negative consequences and their costs versus the efficiency of using palm oil for biofuels leads to critical results. Although the analysis of *strengths* and *opportunities* showed that there are huge potentials to build on, it revealed at the same time that there are vast areas that are still in need of action.

With regard to the future development of the EU's energy supply, it has to be outlined that a one-sided and aggressive promotion of bioenergy does not contribute to the aim of climate allegation. Rather, the focus should be laid upon the development of other renewable energies and structural change. However, regarding the specific case of Indonesian palm oil, the goal to achieve a positive climate balance will remain in the far distance, as long as both the EU and the Indonesian government pursue their own strategic and short-sighted interest in the first place.

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