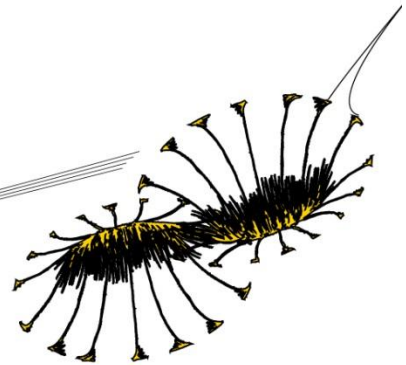


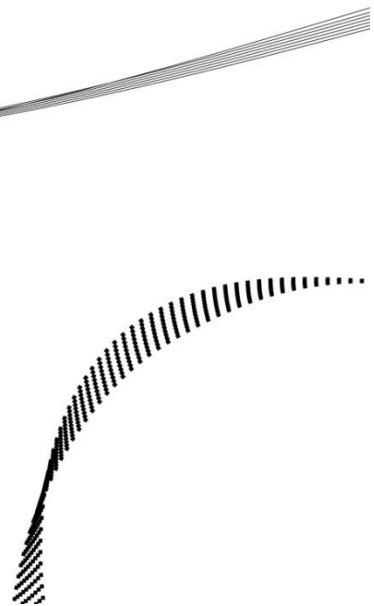
Bachelor's thesis



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Abstract

In recent years, academic researchers have paid much attention to the increase of large scale land acquisition in developing countries, hereafter referred to as ‘land grabbing’, and the side-effects associated with it. The role the European Union plays or will play in the future as cause and solution to these problems is still unclear. European biofuel policy and the concept of ‘land grabbing’, which is commonly associated with biofuel crops, will be analysed in this paper. This study aims to identify the environmental side-effects that are associated with the concept of ‘land grabbing’. The extent to which negative effects of ‘land grabbing’ are present in developing countries with which EU investors are involved is the primary focus. ‘Land grabbing’ is presumed to be partially caused by biofuel policies of the EU and other states that import biofuels. The developing countries that are targeted by ‘economic operators’, from the EU, for land acquisition will be central to the analysis. By using the Land Matrix Global Observatory, land deals for the purpose of biofuel production with European investors will be identified. A literature review and document analysis will then examine the environmental side-effects these land deals have. The results of the analysis reveal that European policy on biofuels and policies of local communities in developing countries have not yet been able to contain the negative impact of ‘land grabbing’. This research paper sheds light on how to amend the existing policies in order to combat further increase in ‘land grabbing’ in developing countries and the associated environmental side-effects.

Key words: Biofuels; EU policy; land grabbing; environmental influences; cap on biofuels

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European Union biofuel policy and the negative environmental influences of ‘land grabbing’

1. Introduction

1.1 Context

In 2003, Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport was published (Council, 2003). Six years later, on the 23rd of April 2009 the European Union put forward Directive 2009/28/EC on the promotion of the use of energy from renewable sources, amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Council, 2009). In this Directive the promotion and usage of renewable energy is laid down, and the target of 10% contribution of renewable energy sources to the transport sector by 2020 is established (Directive 2009/28/EC). The promotion of renewable energy sources, among which biofuel, in the last decade and the establishment of this 2020 target could have unforeseen negative side effects.

In particular, ‘Land grabbing’, which is defined by Borras Jr & Franco (2012) as ‘a catch-all phrase to refer to the current explosion of (trans)national commercial land transactions mainly revolving around the production and export of food, animal feed, biofuels, timber and minerals’, has become a frequent occurring concern in the last decade. The International Food Policy Research Institute reported that in the last eight years 15-20 million hectares of farmland in developing countries has been victimised to ‘land grabbing’ by foreign ‘economic operators’, which are either state or non-state actors (Saturno, Borras Jr & Franco, 2012). ‘Economic operators’, which is the term used in the Directive to refer to any and all entities that conduct economic operations, from the EU that invest in biofuel projects will in this study be referred to as EU investors. Moreover, there are multiple side-effects associated with ‘land grabbing’. Land use change on an increasingly large scale in developing countries has a negative impact on food pricing, the labour market and the environment (Escobar et al, 2009). It seems that policy-makers in the European Union and other supra-national institutions have thus far failed to address these negative side-effects.

There is extensive literature on the regional impact of ‘land grabbing’ within the EU, the effects the European Union’s biofuel policy has on local communities in countries that are targeted for land deals by EU investors, however, is given much less attention. The role of the European Union on the global agricultural arena is often restricted to the European level (Prins et al., 2011). The concept of ‘land grabbing’ by non-state actors will be central to this analysis because the recent increase in demand for biofuels and EU policy regarding this matter is presumed to have a direct effect on the frequency of occurrences and the intensity of the phenomenon.

‘Land grabbing’ plays an important role in the decision making process of the EU and local authorities with regard to biofuels. As response to the pressing concerns about the increase in ‘land grabbing’ in both scale and frequency, the Council (2014) has proposed to restrict the contribution of biofuels to the 2020 targets to 7%. Therefore, policy development of the EU with regard to biofuels will in this paper be examined in two stages. In the first stage the focus lies on the EU Directive on the promotion of the use renewable energy, the resulting increase in ‘land grabbing’ by EU investors and the environmental influences thereof. The extent of EU involvement with Southern countries with regards to ‘land grabbing’ will be determined by means of a global and independent land monitoring initiative which was launched in April 2012, by the name of ‘Land Matrix Global Observatory’. The tool was

created for the purpose of promoting transparency and accountability in land investment decisions (Land Matrix, 2014). The driving force behind the initiative is a multitude of intergovernmental partners, of which The International Land Coalition (ILC) regulates the interface. This tool will be used to identify the land deals with EU investors. By examining which land deals occurred after the Directive came into effects, the tool will then also reveal the extent to which the increase of 'land grabbing' can be attributed to the EU Renewable Energy Directive. Assuming growth of 'land grabbing' events as a result of the Renewable Energy Directive, the negative side-effects of 'land grabbing' will be considered to be a side-effect of EU biofuel policy, or lack thereof. The second stage of this study lies with the expected effects of the potential limit to the contribution of biofuels to the 2020 targets, which was a response to the side effects of 'land grabbing'.

1.2 Scientific and social relevance

The relevance of this study becomes obvious when examining the negative effects of 'land grabbing'. There is extensive literature on the topic of 'land grabbing' and the danger it harbours for the target countries (Anderson-Teixeira et al. 2009, Clancy 2013, De Fraiture & Berndus 2009, Martinello & Filoso 2009, Sulle & Nelson 2009, Van Teeffelen 2012). Although certain measures have already been taken to alleviate the negative impacts, this study examines whether EU biofuel policy has had a significant impact on the socio-economic and environmental implications 'land grabbing'. This paper is intended to raise awareness of the struggles that exist in developing countries partially due to the increase of 'land grabbing' both in frequency and scale, and to assess whether the EU cap on biofuels will have the intended effect. As will become apparent in this study, 'land grabbing' has multiple negative effects. It impact food pricing and has undesirable economic implications and thus does not contribute to poverty alleviation. Moreover, 'Land grabbing' has negative environmental influences on the local communities where it occurs. It is highly relevant for policy-makers to critically analyse the potential effectiveness of the pending attempt of the EU to address all dimensions of the problem of 'land grabbing' by reducing the market for biofuels. The latter refers to the proposed restriction of biofuel contribution to the 2020 targets. It is imperative that solutions are found to eliminate 'land grabbing' as a source of the above mentioned problems. Moreover, to determine the role the European Union plays in this setting is essential for the European Union to contribute in combatting these problems. This study will illuminate European involvement as the partial cause of the problem. In conclusion, suggestions will be made how to address the problems with potential future policy.

1.3 Research question(s):

This paper will address European biofuel policy by answering the following research question:

*What measures **have been** taken by the European Union to resolve any negative environmental side effects of biofuel-driven 'land grabbing'?*

A follow-up question will allow for addressing the effectiveness and possible side-effects of the proposed cap on biofuels:

*What measures **can be** taken by the European Union to resolve any negative environmental side effects of biofuel-driven 'land grabbing'?*

2. Theoretical framework for policy implementation

There is general academic consensus that policy implementation literature has developed in three distinct stages (Conteh 2011, Lindquist 2006). In order to make an analysis of European policy on

biofuels, the development of literature in these generations of policy implementation theories will be discussed. The theoretical framework that spawns from the overview of policy implementation theory development will form the theoretical underpinning for this policy analysis paper. The debate on ‘bottom-up’ and ‘top-down’ approaches to policy implementation can be categorized as ‘first generation’ literature on policy implementation (Conteh, 2011). The top-down approach is characterized by emphasis on policy designers as central actors, whereas bottom-up policy implementation theorists argue that policy is actually made at local level (Matland, 1995). In the ‘top-down’ approach policy implementation begins with design and coordination at the highest level, gradually working its way down to the local level. The ‘bottom-up’ approach focusses on local policy design, where the sum of local policies will determine policy at higher levels. The dispute between these two approaches is no longer as contested as it once was, and it is generally recognized that both approaches have partial merit (O’Toole, 2000).

In ‘second generation’ literature on policy implementation, an integrated framework of both bottom-up and top-down approaches was established (Sabatier, 1986). According to Conteh (2011), the weakness of such frameworks is that they constitute too many concepts and variables to get a clear oversight of the policy that is implemented. One might argue however, that the complexities of modern policy implementation inevitably results in research models with a great many concepts and variables, and that these are required for further understanding of the particular phenomena. ‘Third generation’ literature on approaches to policy implementation recognizes the complexities of modern multi-actor policy implementation, and seeks to address and explain inter-relations between state and non-state actors that play an important role in the delivery of state policy (O’Toole, 2000). Such multi-actor policy implementation transcends institutional borders, and forms the basis for transnational governance (Hajer & Wagenaar, 2003). In this view, it is essential that a network of government actors and public agencies is established to provide continuous feedback on policy implementation and encourages an ongoing debate on how to improve public policy.

An integrated framework of the three generations of literature on policy implementation suggests that collaboration between state actors and public agencies is crucial to ensure the effectiveness and legitimacy of public policy (Conteh, 2011). In such an integrated approach, because actors from all levels of government are involved, multi-level governance is a prerequisite for an effective network of collaboration between all actors, hence combining ‘bottom-up’ and ‘top-down’ approaches to policy implementation. Delegation of competences to non-actors ensures that structured policy feedback is provided, and that the framework does not contain too many unclear concepts and variables.

3. Methodology

3.1 Operationalization

For the fact that land deals are very un-transparent (Land Matrix, 2014), it is difficult to find a dataset that entails a global picture of land deals relevant to this research. In collaboration with other observatories on land deals, the Land Matrix Global Observatory attempted to do so by launching a website that provides information about land deals on a global scale, including dates, size, the involved parties and land use purpose. The dataset is continuously updated, through increasing public involvement. However the data is inherently inaccurate in terms of specifics, it does provide a clear picture of the increase in land deals for the purpose of renewable energy production in the last decade.

Verifying the extent to which European entities are involved in the increase of ‘land grabbing’ is highly relevant to assess the impact of the Directive on renewable energy and to make a preliminary

assessment of the proposed cap on biofuels. If one were to assume that the European targets for renewable energy usage played an important role in the increase of 'land grabbing', then a restriction for biofuel contribution to the 2020 target should have at least some positive effect on reducing 'land grabbing' in developing countries by European entities. In order to determine the necessity of European intervention, it is essential to determine the role EU investors play on the global agricultural arena with regard to biofuel production.

The Land Matrix Global Observatory is an international land monitoring initiative that was launched in order to create transparency and accountability in decisions over land and investments (Land Matrix, 2014). This tool will be used to determine European involvement in the increase of 'land grabbing' in developing countries. In combination with the Land Matrix, the theoretical framework described in the theory section of this paper will be used to analyse the EU Directive on renewable energy. This theoretical framework on policy implementation will then explore the possible (side)-effects of the cap on biofuels proposed by the EU, concluding with a discussion of alternatives.

Determining European involvement will be the first phase of this analysis. The analytic tool mentioned above, The Land Matrix Global Observatory, will be used to identify investors with EU origin who are involved with land deals in developing countries for the purpose of renewable energy production. This will show to what extent the Council Directive on renewable energy might have an influence on the frequency and scale of 'land grabbing' in developing countries. A comparison with investors with other origins will put European involvement in perspective. By evaluating the impact of 'land grabbing' in developing countries by EU investors, the necessity for intervention by the European Union will come to light. The environmental side-effects of biofuel-driven 'land grabbing' will be, after they have been explained, assessed more in-depth by means of a short case study of the United Republic of Tanzania. Before analysing potential European policy instruments that can be designed to tackle biofuel-driven 'land grabbing' and the associated environmental influences, the Council Directive on the promotion of renewable energy will be analysed on the basis of the integrated theoretical framework on policy implementation. The environmental side-effects of this policy instrument will be discussed in more detail. Policy-makers, non-state actors and other stakeholder will be identified on the basis of existing literature and documentation.

3.2 Data collection

Academic search engines (Google Scholar, Refseek, Microsoft Academic Search) will be the main method of literature data collection. Apart from potential datasets, the type of data will be mainly qualitative, in the form of articles and documents. EU legislation is acquired with Eur-lex. Annex 1 comprises of a summary of Directive 2009/28/EC on renewable energy. The Land Matrix Global Observatory will be used in order to identify and assess 'land deals'. Case study specific information about the developing countries will be derived from any available sources that provide information in an official capacity, such as academic articles, documents of government institutions and documentation of non-governmental organizations.

3.3 Research design

For policy design and analyses there is a large range of designs to choose from. Customization of the research design is required in order to make the design best suited for the particular study (Mayer, van Daalen & Bots, 2004). The setting of this qualitative comparative analysis is the countries that are targeted by EU investors for land deals. The macro scale of this analysis, however is good for generalization purposes and thus external validity, makes this project vulnerable to confounders, such as food demand (crops that can either be food or biofuel).

The accumulation of existing literature will, after careful filtration of the information, lead to a clear picture of the relation between 'land grabbing' and the environmental impact on the developing countries targeted by EU investors. If one assumes there is a correlation between the EU's biofuel policy and land grabbing, then if the European Union decreases the cause of 'land grabbing', it will also combat its negative effects.

3.4 Data analysis

The assessment of the environmental effects of land deals with European origins in developing countries and the potential for European intervention is the primary goal of this paper. First, the extent of European involvement in relation to the involvement of other renewable energy investors will be analysed. Moreover, the dates and sizes of these land deals will be discussed more closely. European involvement in terms of the scale of the land deals is an important part of this phase of the analysis. Secondly, the negative environmental effects of 'land grabbing' in these countries will be examined in more detail. In the countries that are targeted by EU investors, the negative environmental influences of land grabbing certainly exist, and it thus would certainly be desirable for the European Union to intervene. The theoretical framework on policy implementation will be applied to the existing EU biofuel policy, followed by application to the proposed cap on biofuels. Policy instruments and other options for tackling the environmental influences will be discussed in the final section of this paper.

4. Application of theoretical framework to the biofuel policy of the European Union

4.1 Biofuels

European biofuel policy is still in early stages of development. In 2009, the Directive 2009/28/EC on the promotion of the use of energy from renewable sources, amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC established renewable energy consumption targets for the Member-states (Council, 2009). By 2020, energy consumption in the transport sector would comprise of 10% renewable energy. Due the promotion of renewable energy and these newly set renewable energy consumption targets, there has been a need for a feasible alternative to fossil fuels (Commission, 2009). Technological advancements in the field of agriculture have made biofuels to be the most promising option. The demand for biofuel is an important factor in the agricultural expansion. Biofuels are fuels that are produced from organic matter. These products can be processed into liquid fuel for either transport or heating purposes (Dufey, 2006). The production and consumption of biofuels supposedly has great advantages over production and consumption of the conventional fossil fuels, such as oil and gas. Although there is some controversy over the matter, the carbon dioxide emission of biofuels is supposedly much less than that of fossil fuels, because the CO₂ emitted in the production process is recaptured by the next crop growth of the next growth cycle (Martinello & Filoso, 2008).

In recent years, biofuels have been categorised into first and second generation biofuels. The second generation spawns from technological advancement in the field of agriculture and biomass conversion and allows for much more energy to be derived from crops than was the case with first generation biofuels. This second generation biofuel technology made it so that the further increase of ethanol production would not require much additional land (Sachs, 2007). Second generation technology utilizes ligno-cellulosic enzymes (renewable carbon) to synthesise bioethanol resulting into bigger

yield (United Nations, 2009). Moreover, about 90% of biofuel comes in the form of bioethanol or biodiesel. Bioethanol is derived from crops such as sugarcane, beet, corn, wheat and cassava, whereas crops such as rapeseed, sunflower, soybean, palm, coconut and jatropha can be used to produce biodiesel. Both these biofuels can be combined with conventional fuels without engine modification (Dufey, 2006), meaning that a mix of conventional fuels and biofuels is marketable, with the possibility to change the composition. To meet increasing demand for biofuels, agricultural expansion and intensification of the crops mentioned above is required (Dufey, 2006).

4.2 Top-down approach

To date, the Directive on the promotion of the use of energy from renewable sources is the only policy instrument that addresses the growth of biofuel crops. The means to achieve the targets set in the Directive remains within the competences of the Member-States of the European Union (Council, 2009). Therefore, the composition of their contribution to the 2020 targets, with regard to the different available renewable energy sources, will be unique for each Member State. As described above, biofuels seem to be the most prominent source of renewables available today. The resulting expansion of the biofuel market triggered a wave of investment by EU investors in agricultural land in developing countries.

The neo-liberal nature of the global agricultural arena allows investors to act without much consultation with state-actors, with the exception of few legal frameworks in the developing countries that are targeted for 'land deals' (Clancy 2008, Cotula et al. 2009). One could argue that this is a top-down approach to implementation policy. The weakness of such an approach lies with the lack of policy customization to suit the specific needs of local communities (Matland, 1995). In the case of the Renewable Energy Directive, this public policy has no regard for the environmental effects that biofuel-driven 'land grabbing' has on local communities outside of the EU. After all, the EU Renewable Energy Directive was established with environmental interests at heart. Although policy analyses address the side-effects of biofuel-driven 'land grabbing', the public policy itself, namely the Directive, was created at the 'top' and has very little regard for the unintended side-effects it has at the 'bottom'.

4.3 Bottom-up approach

The danger of bottom-up approaches to policy implementation is that the accumulation of all policies that are established on local level may not result in the desired national or supra-national policy (Matland, 1995). Moreover, coordination of a bottom-up approach with regard to the biofuel-driven 'land grabbing' cannot be done by the EU alone. Policy development and implementation in local communities to prevent 'land grabbing' are lacking and where they do exist they will drive 'land grabbers' to weak government countries. National governments and local communities within the EU can only translate the renewable energy targets into national or local targets, and have no policy instruments to prevent investors from seeking land elsewhere.

4.4 Networked approach

The Renewable Energy Directive does not specify any requirements for the origin of biofuels. The national governments are free in their method of achieving the targets set by the EU. Moreover, there is a clear lack of communication and coordination with EU investors who are the driving force behind 'land grabbing'. Furthermore, there are many public agencies, research institutions and NGOs that have insight into the environmental effects of 'land grabbing' on the local communities (IIED, OECD, FAO, IFAD). Cooperation between the EU institutions, its Member-States, European entrepreneurs,

NGOs and public agencies is clearly lacking. A networked approach to achieve the targets set in the Renewable Energy Directive is required in order to effectively reduce or eliminate any environmental side-effects that are a result of EU biofuel policy.

5. Biofuel-driven ‘land grabbing’ by EU investors

5.1 EU investors

According to the Land Matrix Global Observatory (2014), in the last decade there have been 23 land deals, either in the making or concluded, with renewable energy as the declared land use purpose. The land deals that have European entities as a primary or secondary investor will be selected for analysis. EU investors were involved in 7 out of these 23 renewable energy land deals of the last decade. Only one of these land deals occurred before the Renewable Energy Directive came into effect in 2009, indicating that 6 of the 7 land deals by EU investors occurred after the increase for biofuel demand in the EU due to the Directive. The following European entities have invested in land deals for the purpose of renewable energy in the last decade: Acciona Energia Mexico, Spain; Endesa, Union Fenosa, Preneal, Iberdrola, Gamesa, Spain; PGGM, Netherlands; Jan-Kasal Company, United Kingdom of Britain and Northern Ireland; EcoDevelopment in Europe AB Government, Sweden; Buchanan Renewables, Netherlands; Grupo Portucel Soporcel, Portugal.

The target countries of these land deals will be the cases selected for an assessment of the negative environmental impacts the land deals brought about. Of the above mentioned land deals, the following countries were targeted and subject to these large scale land acquisitions by EU investors: Mexico, Nigeria, United Republic of Tanzania, Liberia, and Mozambique.

5.2 Observed side effects of ‘land grabbing’

The acquisition of large rural areas by foreign investors, hereafter referred to as ‘land grabbing’, has socio-economic implications which were not initially expected (Saturno, Borrás Jr & Franco, 2012). The most apparent and perhaps concerning impact of ‘land grab’ is the effect on food production in the developing countries. Less land to cultivate crops for domestic consumption, also leading to higher food prices, may lead to increased malnutrition (Oxfam International, 2012). Another concern is that ‘land grabbing’ mainly occurs for the purpose of cultivating biofuel crops, which require less employment, hence result is less poverty alleviation than would have been the case in conventional farming practices (De Schutter, 2011).

The negative impact of ‘land grabbing’ has multiple dimensions, in this study mainly the environmental impact of ‘land grabbing’ will be discussed. The social implications of ‘land grabbing’ require high levels of conceptualization, and are due to the given timeframe not suited for this Bachelor’s Thesis project. For the fact that the environmental effects of ‘land grabbing’ are difficult to quantify, as opposed to the economic effects, the severity of the environmental impact associated with ‘land grabbing’ remains unclear, and will be examined as a result of European public policy on biofuels in this paper.

Besides the most apparent negative effects of ‘land grabbing’, such as a decrease of land use to grow crops for domestic consumption and a lower employment rate, the increase in biofuel crops also has negative environmental influences in the countries that are subject to biofuel-driven land use change, such as loss of bio-diversity, water pollution and soil degradation (Bringezu et al., 2011). The impact

of the necessary agricultural expansion on bio-diversity will be enormous (Groom et al., 2007). The eco-systems of land that is targeted for agricultural transform are highly affected (Clancy, 2013). Another great concern brought about by the increase in biofuel production is the stress on water demands in these developing countries.

Besides the water requirements for biofuel production, biomass crops also increase water pollution, resulting in even more water scarcity. Not only does this affect the population health, but also has an impact on other agriculture and bio-diversity (De Fraiture et al., 2008). Soil quality is also highly affected by land use change for biofuel production. Crop residue is often used for biofuel production. The indiscriminate removal of this residue has repercussions for the environment, for the fact this residue improves soil quality and reduces the risks for soil erosion (Lal, 2005). Moreover, biofuel crops are often fertilizer intensive, hence harmful emissions such as nitrous-oxide and methane may increase by land-use change to more fertilizer intensive crops (Crutzen et al., 2008)

5.3 Environmental side-effects of biofuel production and ‘land grabbing’ in countries targeted by EU investors

According to the Land Matrix, several developing countries have been targeted for biofuel-driven land deals. In order to make an assessment of the environmental effects of these ‘land grabs’, case study of the United Republic of Tanzania will allow for more detailed exploration. Tanzania has been subject several land deals for the purpose of biofuel production. Van Teeffelen (2012) conducted a case study of Tanzania for the purpose of assessing the social impact of biofuel-driven land deals on the local communities. In his study, six agricultural biofuel projects were discussed. These projects all have EU investors as the driving force, either by acquiring the land for production or entering into contracts with local farmers. *Jatropha* cultivation and sugarcane production are most common and prominent for biofuel production in Tanzania (Land Matrix 2014, Sulle & Nelson 2009). Land use change of large areas to sugarcane or *jatropha* results in monoculture, which refers to little variation in agricultural land use. ‘Land grabs’ in Tanzania and other developing countries have little to no regard for the implication of monoculture created by such land deals. Loss of bio-diversity is a result of such monoculture, which requires greater fertilizer, pesticides and water inputs (Groom et al., 2007). Moreover, biodiversity also suffers from large chunks of land transformed for the purpose of biofuel production in the sense that these areas are no longer a suitable habitat for many species.

Water scarcity and pollution are also matters of great concern in Tanzania. Sugarcane crops require great amounts water in comparison with other crops, and are as discussed above often produced under monoculture (De Fraiture, et al., 2008). Water scarcity is not a recent issue in Tanzania, and biofuel production will only increase stress on water management systems (Dungumaro & Madulu, 2003). The requirements for high levels of fertilizer and pesticides also have consequences for water quality. Run-off from high usage of such pollutants decreases water quality greatly (De Fraiture & Berndus, 2009), putting even more stress on water management.

Fertilizer intensive crops are also likely to emit harmful gasses other than CO₂ (Crutzen et al., 2008). Nitrous-oxide emission from the method of fertilization contributes to global warming (Ravishankara et al., 2009). Lack of fertilization application management may therefore reduce the benefits of biofuels with regard to global warming (Martinello & Filoso, 2008). Soil degradation, referring mainly to loss of soil organic carbon (Anderson-Teixeira et al., 2009), is another undesired environmental effect of ‘land grabbing’ and the commonly associated land use change. According to Anderson-Teixeira (2009), the loss of soil organic carbon was mostly pronounced with land use change from native land to sugarcane agriculture. An expansion of area used for sugarcane cultivation may

therefore result in loss of soil organic carbon. As mentioned above, a substantial part of Tanzania's biofuel projects utilizes sugarcane, and not all of these projects use existing plantations that were previously intended for the food market. Loss of soil organic carbon is another environmental concern for local communities in Tanzania.

6. EU cap on biofuels

The European objectives for renewable energy usage, however commendable, have been and will be a significant factor in further increase of 'land grabbing'. When these negative effects of 'land grabbing' came to light and increased in the last decade, the European Union came under pressure from several environmental and developmental NGOs and industrial stakeholders (Commission, 2009). The European Union acknowledged the dangers of the above mentioned predicament and recognized the status quo would not be accepted. In October 2013, the European Union announced that the targets for renewable energy will be revisited by proposing that the contribution of biofuel from food crops to the 10% target for renewable energy in the transport sector in 2020 is limited by 5%. The Commission (2009) first mentioned this option in the impact assessment report of indirect land-use change related to biofuels and bio-liquids in 2009. The impact this biofuel cap could have is still unclear. There is still an ongoing debate about the controversial mandates, and no legislation has passed yet. In May 2014 the European Union agreed on a 7% limit of biofuels (Council, 2014), after they hit a stalemate over the 5% proposal last year.

This is still the only measure taken by the European Union to combat the negative influences of biofuel-driven 'land grabbing'. Cutting part of the EU market for biofuel may indeed very well serve to reduce 'land grabbing' from EU investors, but this is only part of the problem. The existing biofuel projects in developing countries will mostly continue to operate. Crops that can also be sold as food will most likely be exported to enter food markets outside of the EU, e.g. China. The land use change that was brought about by the 'land grabs' that have already occurred has already done damage to the local environment. Although biofuel production is done in the interest of climate and environment, this displacement effect will simply lay the burden elsewhere. Moreover, the proposed cap on biofuels may, like existing policy or lack thereof, also have undesired side-effects. The sudden cut in biofuel demand may have dire consequences for not only EU investors that sponsor biofuel projects, but for domestic farmers that export biofuels to Europe as well. Farmers that produce non-food crops such as *jatropha*, which is commonly used in developing countries to produce biofuel for export, will suddenly have great lack of consumption market.

This policy can again be seen as a 'top-down' approach. This European measure at the top of the policy chain will not solve the problems that already exist in local communities as a result of 'land grabbing'. Preventing 'land grabbing' as the source of the environmental problems may ensure that these problems do not escalate in the future, but it does not tackle the environmental problems local communities face today.

7. Alternatives

The results of this study reveal that the environmental problems of 'land grabbing' each have unique features. Therefore, besides reducing 'land grabbing' as a source of the discussed environmental side-effects, each of these environmental problems may require customized policy to tackle them separately. The results of this study point out that the environmental problems that have been discussed in this paper need to be considered as separate issues, in order to reach sustainable biofuel production in developing countries. Management of land and water resources can go a long way in

reducing these effects. Collaboration between state and non-state actors is the key to effectively manage land and water systems (Fish et al., 2010). The establishment of monitoring systems with intensive feed-back involving expert parties would ensure that land and water management policy is continuously customized to real-time situations.

The Directive acknowledges the environmental hazards of large scale land use change, with regard to bio-diversity. Article 17 of the Renewable Energy Directive contains sustainability criteria for biofuels and bio-liquids. One of the reasons for establishing these criteria was to prevent loss of bio-diversity, but it did not have the intended effect regarding this matter. In order to achieve sustainability, a revision of these criteria could be an option. Moreover, the problem of bio-diversity can be tackled by implementing poly-culture methods, which would greatly reduce the problem of bio-diversity (Groom et al., 2006). Implementation of such methods does however require intensive coordination from experts in the field. The EU can do more besides adopting regulations regarding these policies in the Council Directive and providing financial backing. Implementation of such policies by the EU would be more customized to suit the specific problem, if implemented in collaboration with public agencies which are much better informed about the specific problems (FAO, OECD, Prorustica). The Food and Agricultural Organization of the United Nations embodies agricultural interests of the United Nations, with the main goal of obtaining food security for all. The Organization for Economic Co-operation and Development aims to promote policies that contribute to global economic and social well-being. Prorustica is an organization that facilitates public private partnerships in the interest of ensuring agricultural growth in Africa.

Moreover, because poly-culture methods require less fertilizer, water pollution and increase of harmful emissions is also positively affected. Regulations for fertilization application would also greatly reduce the negative environmental influences of fertilizers. In their study, Kros et al. (2010) analysed the impact of several mitigation measures that have been taken in the EU, assuming 100% implementation due to lack of information. Balanced fertilization and manure application seem to be the most effective measures, because fertilizer consumption is relatively high in the EU (Kros et al., 2010). Balanced fertilization regulates fertilizer application in such a manner that no more than the required fertilizer is applied in order to reach optimal yield. Balanced fertilization measures can also be applied to local communities that harbour biofuel projects. In order to do this, the first step is to determine what quantity of fertilizer will result in optimal yield for each biofuel crop. Climate conditions need be taken into account as well. Independent research institutions such as the IIED and the IFAD would then determine such standards on the basis intensive research. The International Institute for Environment and Development is an independent research institution that aims to promote sustainable development. The International Fund for Agricultural development was launched by the United Nations as a means of financing agricultural development projects. Moreover, application of fertilizer can be monitored by public agencies such as Prorustica, which launched the Tanzania Agricultural Partnership (TAP) specifically for the purpose of reaching optimal fertilizer application. Out of financial considerations, farmers are not likely to use more fertilizer than is needed. The challenge lies with determination of fertilizer application standards and ensuring that farmers are well informed on the matter.

Presently, EU investors are not held accountable for the environmental implications of their projects. If the set of minimum obligatory requirements for land, water and fertilizer management would be revisited in the EU Directive so that they include the responsibility of national governments to ensure that companies of their origin abide by certain standards, this could increase accountability with regard to biofuel-driven land deals. In the Renewable

Energy Directive, Article 18 on the verification of compliance with the sustainability criteria clearly states that by 31st of December 2012, the Commission shall report whether mandatory requirements in relation to air, soil and water are feasible.

By 31 December 2012, the Commission shall report to the European Parliament and to the Council on:

- (a) the effectiveness of the system in place for the provision of information on sustainability criteria; and*
- (b) whether it is feasible and appropriate to introduce mandatory requirements in relation to air, soil or water protection, taking into account the latest scientific evidence and the Community's international obligations.*

The Commission shall, if appropriate, propose corrective action (Council, 2009)

The article is concluded with the option of proposing corrective action. The latter is a very subjective term, but does give the EU options to amend the Directive as such that non-compliance with potentially sharpened sustainability criteria would result in sanctions. This would then give the Member-States greater incentive to regulate investors, defined as 'economic operator' in the Directive, who are engaged in biofuel operations outside of the EU. Compliance with the rules established by the World Trade Organization is another matter. Similar to many climate change mitigation policies, national policies that address the environmental problems discussed in this paper will often fall under the scope of international trade agreements of the WTO. This makes it very difficult for national governments to greatly influence investors that are interested in biofuels.

The promotion and funding of research and development in the field of agriculture may also prove essential in order to reach fully sustainable biofuel production, with regard to environment. Technological innovation made biofuels to be a feasible alternative to fossil fuels. Second generation biofuels heralded a new wave of interest in biofuels as a sustainable energy source (Dufey, 2006). Further technological innovation may very well be the means to eliminate any and all biofuel related environmental issues.

8. Conclusion

There is no doubt that 'land grabbing' has negative environmental influences, as many academic researchers address this issue (Anderson-Teixeira et al. 2009, Clancy 2013, De Fraiture & Berndus 2009, Martinello & Filoso 2009, Sulle & Nelson 2009, Van Teeffelen 2012). This paper has discussed the negative environmental side-effects of 'land grabbing' that is driven by Directive 2009/28/EC on the promotion of the use of energy from renewable sources, amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. Moreover, it assessed the potential cap on biofuel by the EU, which is a response to the side-effects of EU biofuel policy. Besides the proposed cap on biofuels, the European Union has done very little to tackle the negative side-effect that are associated with biofuel-driven 'land grabbing'. Although the local communities that have been negatively affected by European biofuel policy are outside of EU jurisdiction, there are some measures the EU can take besides cutting-in the biofuel market. The environmental problems associated with 'land grabbing' are each very different from the other. Each problem involves different stakeholders and has different consequences. Therefore one could argue that these problems need to be tackled with a highly integrated networked approach, involving experts that are primarily suited for one particular problem.

Continues feed-back allows for adjustment of local policy accordingly. This can only be achieved by close cooperation between state and non-state actors. Institutional borders that limit jurisdiction and authority outside a certain scope or territory and the highly unique nature of each problem limit the capability of one single institution to address these problems. Local authorities on the other hand do not have the competence to address all the environmental issues that are partially caused by decisions taken on a supra-national level. It is essential that non-governmental organizations and public agencies are delegated the competences to implement policy in cooperation with the EU and local authorities. By amending the Directive to limit the contribution of biofuels to the 2020 targets, the EU aims to reduce the occurrence of 'land grabbing' in the future, but this cap on biofuels does not address the environmental problems that exist in local communities today.

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Web-links for analytical tools:

http://www.landmatrix.org/en/get-the-detail/by-intention/renewable-energy/?order_by=

<http://databank.worldbank.org/data/databases.aspx?qterm=indicators&pagenumber=2>

<http://eur-lex.europa.eu/homepage.html>

Annex 1

Summary of EU Renewable Energy Directive from:

[//europa.eu/legislation_summaries/energy/renewable_energy/en0009_en.htm](http://europa.eu/legislation_summaries/energy/renewable_energy/en0009_en.htm):

This Directive establishes a common framework for the production and promotion of energy from renewable sources.

National targets and measures

Each Member State has a target calculated according to the share of energy from renewable sources in its gross final consumption for 2020. This target is in line with the overall '20-20-20' goal for the Community.

Moreover, the share of energy from renewable sources in the transport sector must amount to at least 10 % of final energy consumption in the sector by 2020.

National renewable energy action plans

The Member States are to establish national action plans which set the share of energy from renewable sources consumed in transport, as well as in the production of electricity and heating, for 2020. These action plans must take into account the effects of other energy efficiency measures on final energy consumption (the higher the reduction in energy consumption, the less energy from renewable sources will be required to meet the target). These plans will also establish procedures for the reform of planning and pricing schemes and access to electricity networks, promoting energy from renewable sources.

Cooperation between Member States

Member States can “exchange” an amount of energy from renewable sources using a statistical transfer, and set up joint projects concerning the production of electricity and heating from renewable sources.

It is also possible to establish cooperation with third countries. The following conditions must be met:

- the electricity must be consumed in the Community;
- the electricity must be produced by a newly constructed installation (after June 2009);
- the quantity of electricity produced and exported must not benefit from any other support.

Guarantee of origin

Each Member State must be able to guarantee the origin of electricity, heating and cooling produced from renewable energy sources. The information contained in these guarantees of origin is normalised and should be recognised in all Member States. It may also be used to provide consumers with information on the composition of the different electricity sources.

Access to and operation of the grids

Member States should build the necessary infrastructures for energy from renewable sources in the transport sector. To this end, they should:

- ensure that operators guarantee the transport and distribution of electricity from renewable sources;
- provide for priority access for this type of energy.

Biofuels and bioliquids

The Directive takes into account energy from biofuels and bioliquids. The latter should contribute to a reduction of at least 35 % of greenhouse gas emissions in order to be taken into account. From 1 January 2017, their share in emissions savings should be increased to 50 %.

Biofuels and bioliquids are produced using raw materials coming from outside or within the Community. Biofuels and bioliquids should not be produced using raw materials from land with high biodiversity value or with high carbon stock. To benefit from financial support, they must be qualified as “sustainable” in accordance with the criteria of this Directive.

Context

The Directive is part of a package of energy and climate change legislation which provides a legislative framework for Community targets for greenhouse gas emission savings. It encourages energy efficiency, energy consumption from renewable sources, the improvement of energy supply and the economic stimulation of a dynamic sector in which Europe is setting an example