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AN ANALYSIS OF CHINA'S BIOFUELS POLICY AND CHINESE DISCOURSE ON LAND ACQUISITION FOR BIOFUELS IN AFRICA

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AN ANALYSIS OF CHINA'S BIOFUELS POLICY AND CHINESE DISCOURSE ON LAND ACQUISITION FOR BIOFUELS IN AFRICA

By

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Preface

The following document has been formatted as an electronic thesis. Hyperlinks are intended to facilitate navigation from the table of contents, list of figures and tables to main text within the main document as well as the supplementary appendix sections.

The publications presented in this document are the research conducted as part of my Masters degree in Environmental and Energy Policy at Michigan Technological University.

Chapter 1 presents a historical institutionalism policy analysis on China's biofuel policy using a Historical Institutionalism Ends and Means (HIEM) framework. The data was collected and analyzed by me. Dr. Adam Wellstead introduced the HIEM framework to me. Dr. Audrey Mayer and Dr. Adam Wellstead provided comments on writing the paper.

Chapter 2 presents a political ecology analysis on the Chinese public media's discourse on China's land acquisition for biofuel production in Africa. The data was collected and analyzed by me. Dr. Emma Norman provided help on the political ecology analysis part of the paper. Dr. Kari Henquinet, Dr. Audrey Mayer, Dr. Emma Norman and Dr. Robert Handler provided comments on writing the paper.

Abstract

China has recently undertaken a very ambitious biofuel production program. However due to a lack of arable land domestically, this program has necessitated the leasing of arable land elsewhere (e.g., in Africa). This thesis first conducts a policy analysis of China's biofuel policy using a historical institutionalism ends-and-means framework. The analysis reveals the ways in which China achieves its biofuel production goals through adopting various levels of policy means. China's success in biofuel development is partly due to its unique policy-making and policy-assessment system, which ensures that biofuel production goals can be met. The second chapter analyzes China's discourse on Chinese companies' land acquisitions for biofuel production in Africa. Revealed through China's press coverage since 2007 on this issue, it is clear that China's public media promoted the perception that China's land acquisition in Africa is a win-win situation for both China and Africa, helping China's economic development as well as contributing to Africa's sustainability. Even though some efforts towards realizing social sustainability have been reported, the attitude of the Chinese public media (also the Chinese government) toward land tenure rights, human rights, and stakeholder involvement is still hazy; these are the concerns that are most prevalent in the scholarly literature.

Introduction

The replacement of petroleum-based transportation fuels with renewable biofuels is an emerging imperative in many countries, commonly to achieve energy independence (self-sufficiency) goals, reduce carbon dioxide emissions, and encourage domestic industry development (Buyx & Tait, 2011; Gomiero, Paoletti, & Pimentel, 2010; Greene, 2011). Even though biofuel production is a new industry with only less than 20 years of history in China compared to Brazil, the United States (US) and European Union (EU), the development of the biofuel industry in China is notable with respect to the speed at which it has developed (Figure 1). In less than 20 years, China has become the world's third largest country in biofuel production after Brazil and the US, and has routinely surpassed its five-year production goals. According to "The Twelfth Five Years Strategic Plan for Renewable Energy Development" (2012), China is aiming to make renewable energy satisfy 11.4% of total energy consumption in 2015. In order to reach this goal, China will produce 4 million tons of bioethanol and 1 million tons of biodiesel by 2015 (NEA, 2012). The Chinese government is also looking to expand the production of biofuels even further in the future so that renewable energy will account for 15% of total energy consumption by 2020, which means that China will produce 10 million tons of bioethanol and 2 million tons of biodiesel by 2020 (NEA, 2012).

However, China's large population and limited availability of arable land make it challenging to meet this target domestically. In addition, the biofuel policy in China does not specify that biofuel feedstock and production have to come from the domestic market. Given all these facts, it should not be surprising that China has joined the trend in

overseas land acquisition; China has committed itself to several land acquisition[1] deals that will allow it to grow biofuel crops in other countries (Von Braun & Meinzen-Dick, 2009). In its September 2010 report, the World Bank claims that there are now about 45 million ha covered by recent large-scale land acquisitions, 70% of which are in Africa (Deininger & Byerlee, 2011).

My research will address the following research questions:

1. How have China's domestic biofuel policies along with food security concerns driven China's land acquisition for biofuel biomass in Africa?

2. What does a HIEM analysis of China's biofuel policy reveal about China's unique biofuel production trajectory?

3. What is the Chinese public media's discourse on its land acquisition for biofuel production in Africa?

4. What is the relationship between Chinese public media's discourse and China's policy on land acquisition for biofuel production in Africa?

My thesis is composed of two chapters: Chapter 1, A Historical Institutionalism Analysis of China's Biofuel Policy; and Chapter 2, A Political Ecology Analysis of China's Discourse on China's Land Acquisition for Biofuels in Africa. In the first chapter, I used a historical institutionalism framework to review and analyze the policy ends and means of China's biofuel policy. Historical institutionalism is an approach to study policy change which features historical orientation as a way to understand how institutions structure and change political behavior and outcomes (Steinmo 2008). Its

[1] Other common words referring to overseas land acquisition include "land grabbing" and "land investment", where the former places an emphasis on the negative aspects of the trend and the latter from a positive perspective. In order to maintain the neutrality of this study, I am using "land acquisition" here.

function of explaining the interaction effects among different historical processes as they unfold over time, thus recovering the causality of historical events, has been recognized as a powerful approach to study politics and the policy process (Thelen 2002). Cashore and Howlett (2007) argued that every policy is in fact a complex regime of ends- and means-related goals, objectives and settings, and policy change can occur at the following six levels: abstract goals, objectives, specifications, instrument logic, mechanism and calibration (Cashore and Howlett 2007). Therefore, I would like to review the whole history of China's biofuel policy by analyzing its policy ends and means, thus exploring how China achieved its rapid development of biofuel production, and illustrate the ways in which China's commitment to develop biofuel production serves as a driving force for land acquisition in Africa.

Chapter 2 of my thesis is a political ecology discourse analysis of China's land acquisition for biofuel feedstock production in Africa. In this chapter, I conducted a discourse analysis on data collected from the Chinese public media. I used the lens of sustainability to analyze the nature of China's land acquisition for biofuel production in Africa. In addition, I conducted a brief review of China's policies applied to land acquisition in Africa and an analysis on the policy implication of the discourse.

Chapter 1 A Historical Institutionalism Analysis of China's Biofuel Policy*

1.1 Introduction

As a promising alternative to fossil fuel-based transportation energy, biomass-based biofuels have become a common imperative in many countries such as US, Brazil, Canada, Australia, India, France, Germany and China, in order to achieve energy security, mitigate climate change and develop rural economies (Sorda, Banse, & Kemfert, 2010). Governments across the world have adopted various policy instruments that foster the biofuel industry (Sorda et al., 2010). For example, since 1978 the US has subsidized its ethanol industry using tax credits, mandatory blending requirements, blending credits, and import tariffs (Sorda et al., 2010). In addition, the 2007 Energy Independence and Security Act (EISA) requires that 36 million gallons of biofuels be used in the U.S. for road transportation by 2022 (Josling, Blandford, & Earley, 2010). Creating a consumption requirement is another way to subsidize production. As for Brazil, instead of subsidies, its government has focused on mandatory blending requirements, investments to support biofuel research and technology development, and creating a market for modified vehicles running on biofuels (Sorda et al., 2010). A well-structured policy analysis can determine the success or failure of these policy approaches, and provide other countries with lessons toward more efficient and sustainable biofuels development.

* The material contained in this chapter is planned to be submitted to a peer-reviewed journal.

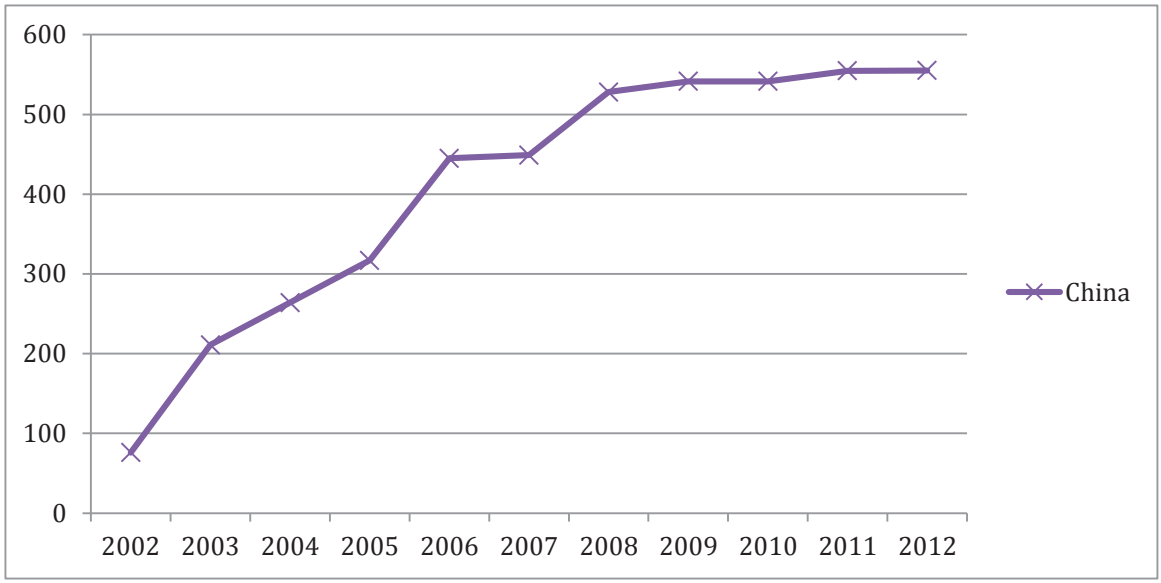

Figure 1.1 China Bioethanol Production (Millions of gallons) (Data source: usda.gov)

Many scholars have provided useful descriptions of Chinese biofuels policies. Qiu et al's (2012) comprehensive overview of major legislation and policies found that China's concern for food security impacted China's biofuels development policy, by moving from cereal-based to non-cereal-based biofuels production and focusing on using marginal land for biofuels feedstock production (Qiu, Sun, Huang, & Rozelle, 2012). In addition, Qui et al. (2012) found that China's biofuels development targets were set with cautiousness, but in order to meet these targets, there were still sustainability challenges (Qiu et al., 2012). Zhang et al. (2012) found that policies promoting biodiesel using waste cooking oil were not working effectively, because of the poor publicity of biofuels and a faulty supply chain coordination mechanism, absence of a recycling service network, and overuse of regulatory controls and goal planning. Wang (2011) identified the major policy obstacles that China faces in the transition to more efficient biofuels governance, including: vague development directions; ignored impacts on society, environment and economy; and limited public participation. Wang and Tian (2011) summarized China's biofuels policies, and argued

that China may use other countries' experience as a reference, but ultimately needs to make policy decisions according to China's own strategic plan and local conditions. However, little attention has been paid to the entire policy-making history of China's biofuels policies. A systemic examination of this policy history will reveal the ways in which China's policy instruments have or have not been successfully meeting domestic biofuels policy goals.

Here I conducted a review of China's biofuels policies, using a framework developed by Cashore and Howlett (2007) that considers three key policy elements: goals, instruments, and settings. Inspired by Hall (1993), historical institutional approaches have typically been developed for Anglo-European countries. It has never, to my knowledge, been applied to a country with a highly concentrated political and economic system such as China. Therefore, this policy analysis will not only provide researchers with the application of the historical institutionalism in a new type of political system, but also a new perspective to study China's biofuels policies and industrial development.

Section 2 of this chapter explains the theoretical framework – historical institutionalism, which is adopted for this analysis. In section 3, I conduct a detailed historical institutionalism analysis of China's biofuels policy. In section 4, I discuss about my findings through the policy analysis. In section 5, I offer conclusions about the policy analysis.

1.2 Theoretical Framework

Historical institutionalism is an approach to study policy change, which features a historical orientation as a way to understand how institutions structure and change political

behavior and outcomes (Steinmo 2008). It illuminates the interaction effects among different historical processes as they unfold over time, thus recovering the causality of historical events, and has been recognized as a powerful approach to study politics and the policy process (Thelen 2002). Over the years of study on policy dynamics, scholars have come to a widespread understanding that any analysis of policy development must be historical in nature and cover a period of years or even decades (Cashore & Howlett, 2007).

In his study of economic policy development in Great Britain and France, Hall (1993) proposed a new approach to analyze policy development, by distinguishing between the means and ends of policy as well as between abstract and specific aspects of policy measures (Hall, 1993). Cashore and Howlett (2007)'s analysis of policy change in the Pacific Northwest forest sector went one step further and argued that every policy is in fact a complex regime of ends- and means-related goals, objectives and settings, and that policy change can occur at the following six levels: abstract goals, objectives, specifications, instrument logic, mechanism and calibrations (Cashore & Howlett, 2007) (Table 1). The historical institutionalism ends-and-means (HIEM) framework is useful for analyzing China's biofuels policy change, by exploring China's policy ends and means in the six levels mentioned by Cashore and Howlett (2007). This analysis will help us to understand the ways in which China has been establishing three levels of policy ends: abstract goals, objectives, and specifications, in various stages of its biofuels policy development, and addressing these ends using policy means in three levels: instruments logic, mechanism and calibrations.

Table 1.1 The HIEM Framework

	High Level Goals	Program Level Operationalization	Specific “on the ground measures”
Policy ends	GOALS What general type of ideas governing policy development?	OBJECTIVES What do policies formally aim to address?	SPECIFICATIONS What are the specific “on the ground” requirement of the policies?
Policy means	INSTRUMENT LOGIC What general norms guide policy implementation preferences?	MECHANISMS What types of instruments are utilized?	CALIBRATIONS What are the specific ways in which the instrument is applied?

Modified from (Cashore et al., 2010)

1.3 A Historical Institutionalism Analysis

China’s biofuels development policy (Appendix 1, Table 1.) can be divided into four policy regimes: no specific government policy (pre-2000); technological and market testing (2001-2005); production expansion; (2006-2010) and increasingly sustainable production (2011- present). The HIEM framework (Table 1) will be adopted to investigate the policy ends and means in each stage except for the pre-2000 stage (when there was no policy).

1.3.1. Pre-2000: No Specific Government Policy

In 1996, ‘China’s Ninth Five-Year Economic and Society Development Plan and Vision Goal of 2010’ mentioned developing bioenergy as an energy source for rural areas for the first time. However, before 2000 China did not have a specific biofuels development policy. Instead, China’s main goal was to research processing technologies for bioethanol, biodiesels, and fermented methane gas (Chew, 2006; Qiu et al., 2012), to establish a

technical base for biofuels development. A number of laboratory tests supported by the government were carried out under the "National High Tech Research and Development Initiative" (Qiu et al., 2012). Research centers were established and operation data were collected by Chinese government agencies working with Volkswagen (Chew, 2006). The research in this period resulted in improved technology for producing corn-based bioethanol (Qiu et al., 2012).

When the necessary technology was ready, China entered into its second stage of biofuels development – technological and market testing.

1.3.2. 2001 – 2005 Technological and Market Testing

Table 1.2 Policy Elements 2001 – 2005

	High level	Program level	Specific "on the ground measures"
Policy ends	GOALS Developing bioethanol to replace petroleum oil	OBJECTIVES Testing technological and market feasibility of maize-based bioethanol	SPECIFICATIONS Promoting bioethanol mixed gasoline in specific areas
Policy means	INSTRUMENT LOGIC Regulatory control and goal planning	MECHANISMS • Establishing production testing plants; • Establishing pilot utilization programs; • Setting biofuels production standards	CALIBRATIONS • E10 standard; distributing bioethanol mixed gasoline in 27 cities of 9 provinces; • Financial support to bioethanol production and distribution

Goal and Instrument Logic: The goal for this stage's biofuels policy can be found in "China's Tenth Five-Year Economic and Society Development Plan" (the Tenth Plan) released in 2001. This strategic plan explicitly stated the goal of developing bioethanol as one alternative to petroleum oil. The announcement of this new goal in China's renewable energy development history was based on rising global crude oil prices, increasing from 20 USD/barrel to above 100 USD/barrel in less than a decade, and a growing domestic oil imports needed to meet growing demand due to its rapid economic growth, from 280.6 kb/d in 1995 to 1357.2 kb/d in 2000, a 29.3% increase (IEA, 2012). Facing the combination of increasing crude oil prices and demand, the Chinese government realized the importance of developing renewable energy resources to replace increasingly expensive petroleum oil, and reflected that awareness in its strategic planning.

Energy (including biofuels) governance in China is dominated by the central government. As a nation featuring highly concentrated political power and a centrally planned economy, this should not be a surprise. The National Development and Reform Commission (NDRC) was given the primary authority to organize the formulation of key policies regarding renewable energy, such as issuing licenses and permits for new plant establishment and regulating fuel prices (H. Wang, 2011). In addition to the NDRC, seven other governmental ministries were given responsibilities to regulate the production and distribution of bioethanol blended gasoline, including the Ministry of Finance (MOF), Ministry of Commerce (MOC), State Administration of Taxation (SAT), Ministry of Public Security (MPS), Ministry of Environmental Protection (MEP), General Administration of Quality Supervision, Inspection and Quarantine (GAQSIQ), and State Administration for Industry and Commerce (SAIC). In addition, due to the high cost and

risky nature of biofuels production (H. Wang, 2011), China's biofuels industry has been highly dependent on governmental support from the beginning. Governmental direct investment and subsidies are among the various forms of governmental support provided to the industry during this stage.

Objectives and Mechanisms: To achieve the goal of developing a bioethanol industry in China, the core objectives for this stage are represented by four executive advisory and management measures: the Denatured Fuel Ethanol Production Standard (2001) (Standard 2001), Production Standard for Bioethanol Gasoline for Automobiles (2001) (Standard for Bioethanol for Automobiles 2001), Pilot Testing Program for Extensive Use of Bio-Ethanol Gasoline for Automobiles (2004) (Testing Programme 2004), and Executive Details regarding Extensive Use of Bio-Ethanol Gasoline for Automobiles (2004) (Executive Details 2004).

In the beginning of this policy regime, there was no supplier that could produce biofuel in a large scale, nor a market to consume biofuel. Therefore, the Chinese government used policies to generate both the supply and demand sides of a biofuels industry. Before launching a nation-wide biofuels development program, the Chinese government wanted to standardize biofuels production technology, and experiment with the market structure for biofuel-blended fuel.

The four executive advisory and management measures also included mechanisms to address the above-mentioned objectives. Standard 2001 included specific requirements for bioethanol production standards. Standard for Bioethanol for Automobiles 2001 also included detailed requirement for blending bioethanol and gasoline. The market for bioethanol was created by two policy instruments, namely the Testing Programme 2004

and Executive Details 2004. According to these two policies, a pilot program was established to test whether the bioethanol-blended fuel could be used by cars.

Settings and Calibrations: To meet the objectives of testing the technological and market feasibility of bioethanol, more policy instruments were created between 2001 and 2005.

From 2001 to 2004, the Chinese government invested $700 million USD to start four state-owned bioethanol production companies in Henan, Jilin, Heilongjiang and Anhui provinces. In April 2001, China announced the Standard 2001 and Standard for Bioethanol for Automobiles 2001, and specified the production of the E10 blend (mixing 10% bioethanol into gasoline) as a national fuel standard. For the blending, storage and transportation of E10 products, the internal standards of China Petroleum & Chemical Corporation (SINOPEC), a state owned corporation, were used. In March 2002, two detailed implementation guidelines were jointly issued by the NDRC and seven other ministries: the Pilot Testing Program of Bioethanol Gasoline for Automobiles, and the Detailed Regulations for Implementing the Pilot Testing Program of Bioethanol Gasoline for Automobiles. According to these two policies, a pilot program for the introduction of E10 fuel in specified areas was launched. Then in 2004, the Testing Programme 2004 and Executive Details 2004 were announced jointly by the same ministries, and specifically designated 27 cities in nine provinces as markets for E10 fuel produced by the four bioethanol plants. In addition, these policies also included specific financial incentives for the four plants: an exemption from a five percent consumption tax on ethanol production; a refund of value added taxes; compensated feedstock reserve prices; and compensated losses from selling E10 versus petroleum-based fuel (Chew, 2006). A policy provision

issued by the MOF in 2004 stated that the expected subsidies per ton of bioethanol production would be set at RMB 2736, 2395, 2054, 1373 and 1373 yuan each year from 2004 to 2008 (Qiu et al., 2012).

1.3.3. 2006 – 2010 Expansion of Biofuels Production

Table 1.3: Policy Elements 2006 – 2010

	High level	Program level	Specific "on the ground measures"
Policy ends	GOALS • Expanding bioethanol production (reaching 2 million tons); • Biodiesel production reaching 200,000 tons by 2010; • New emphasis on Food security	OBJECTIVES • Ensuring feedstock supply and consumption markets; • Ensuring food security while developing biofuels industry	SPECIFICATIONS • Biofuels producers do not suffer any economic loss • Expanding non-grain feedstock plantations;
Policy means	INSTRUMENT LOGIC Regulatory control and goal planning	MECHANISMS • Stop approving any plants using grain as feedstock; • Promoting non-grain feedstock	CALIBRATIONS • Requiring petroleum retailers to include biofuels into their distribution system, or they will be penalized; • Establishing venture capital funds; • Subsidies for non-grain feedstock plantation on marginal land; • Low interest loans and direct subsidies to non-grain bioethanol plants; • Tax deductions

Goals and Instrument Logic: The biofuels development goals for this stage are found in "China's Eleventh Five-Year Economic and Society Development Plan" (the Eleventh Five-Year Plan) released in March 2006, as well as the Mid and Long Term Development Plan for China's Renewable Energy (the Mid and Long Term plan) issued in August 2007. The Eleventh Five-Year Plan emphasized more rapid development of bioenergy and expanding China's production capacity of bioethanol and biodiesel. After the pilot testing programs from 2001 to 2005, the Chinese government was more confident about China's biofuels production and consumption capacity, thus it was seeking to expand its biofuels production to a larger scale. With that general goal in mind, the NDRC issued the Mid and Long Term Plan, in which the annual biofuels production target was set as 2 million tons of bioethanol and 0.2 million tons of biodiesel by 2010. Moreover, the Mid and Long Term Plan also made it clear that "biofuels must not compete with grain over land, it must not compete with the food that consumers demand, it must not compete with feed for livestock, and it must not inflict harm on the environment."

Regulatory control and goal planning was still the policy instrument logic behind biofuels development in this stage. The development of biofuels production relied on goal setting by the NDRC, laws made by the National Congress, and executive provisions issued by state ministries such as MOF, SAT, SAF, and so on. Due to the fact that the four bioethanol companies had been relying on government subsidies, it was difficult for them to expand their production capacity by using a market mechanism.

Objectives and Mechanisms: At the end of last stage of biofuels policy, China had four bioethanol production plants, as well as a regional market created by the government to consume bioethanol. In order to expand bioethanol production, the next step was to ensure

a stable feedstock supply. The four bioethanol plants were designed to use stale maize and wheat from the national food stockpile, which had grown large enough to become a financial burden to maintain. However, as the four plants' production capacity improved, stale corn and wheat supplies were consumed quickly. In 2006, as the stale corn stock has been consumed completely, the bioethanol plants turned to fresh corn on the market, causing corn prices to rise 6% in 2006 (Kearney, 2007). As a country with the largest population of the world but only one-fourth of the world average per capita arable land (Q. Wang & Tian, 2011), food security has always been a concern in China. Consequently, it became obvious that if the four plants continued to use grain as feedstock, bioethanol production would start to compete with people for food, and the limited availability of grain would prevent bioethanol production expansion. Therefore, the Chinese government issued several policies during this stage in order to address this conflict.

In December of 2006, the NDRC and MOF jointly issued the Notice Regarding Strengthening the Administration to Bioethanol Projects and Promoting Healthy Development of Bioenergy Industry, which mandated a shift to feedstock plants that were non-edible crops such as cassava and cellulose. Furthermore, in September of 2007, the NDRC issued the "Directive Advice Regarding Improving Sustainable Development of Corn's Further Processing", in which the NDRC explicitly stated that new biofuels plants would not be approved using grain as feedstock. In the same year, the first non-grain based bioethanol plant, Guangxi COFCO Bioethanol Company, which uses cassava as feedstock, was approved by the NDRC.

Specifications and Calibrations: The Chinese government used a variety of measures to strengthen the market for the distribution and consumption of biofuel. According to

Article 16 of the Renewable Energy Law (issued in 2005), petroleum retailers had to include biofuels into their distribution system. If they failed to do so, they were required to compensate biofuels producers for any losses (Article 31). In addition, in 2005, the NAT and MOF jointly issued a Notice Concerning Taxation Policy Regulating Fuel Ethanol Pilot Producers, providing a tax exemption to the four pilot bioethanol producers, essentially exempting the four state owned bioethanol producers from Value-Added Tax (VAT) and sales tax.

A number of subsidies, tax reductions, tax refunds and other financial incentives were created to encourage the development of non-grain based bioethanol during this stage. The Guiding Catalogue for Renewable Energy Industries issued by the NDRC in 2005 stated that financial institutions would provide interest-free government loans for technology research and development of non-grain and forest-based biofuels, as well as the selection and cultivation of biofuel crops. Also the Interim Measure for Administrating Renewable Energy Development Fund was launched by the MOF in 2006, which provided support for non-grain based bioethanol and biodiesel. In 2008, the SAT and MOF jointly issued the Notice about Taxation Policy for Products Generated from Comprehensive Utilization of Resources. According to this policy, a VAT refund could be gained only if bio-diesel producers used waste animal oil or plant oil for at least 70 percent of their raw materials.

In 2007, China issued the Biodiesel Blend Standard (BD100) for Diesel Engine Fuels. BD100 specified a standard for producing biodiesel, but did not include a standard for blending biodiesel with petroleum diesel. Therefore, biodiesel could not enter the mainstream distribution network, limiting the development of the biodiesel industry. The Biodiesel Blend Standard (B5) released in 2010 specified the standard of blending 2% -

5% biodiesel with 95% - 98% of petroleum diesel so that the fuel can be used in vehicles, and thus biodiesel-blended fuel started to enter the vehicle fuel distribution and consumption network.

1.3.4. 2011 – Present: Building a More Efficient Biofuels Industry

Table 1.4 Policy Elements 2011 – Present

	High level	Programme level	Specific
Policy ends	GOALS • Producing 4 million tons of bioethanol and 1 million tons of biodiesel by 2015; • Producing 10 million tons of bioethanol and 2 million tons of biodiesel by 2020 • Paying attention to ecological and environmental protection while developing biofuels	OBJECTIVES Expand the production of biodiesel	SPECIFICATIONS • Building a sustainable waste cooking oil supply chain • Encouraging non-grain-based bioethanol production, while discouraging grain-based bioethanol
Policy means	INSTRUMENT LOGIC Regulatory control and goal setting	MECHANISMS • Biodiesel mixing standard; • Ensuring biodiesel feedstock supply	CALIBRATIONS • 49 cities were picked by the central government as pilot cities to establish waste cooking oil recycling systems, and financial support is provided by the central government • Reduce subsidy to grain-based bioethanol from 1276 yuan/ton to 500 yuan/ton; meanwhile the substitute to non-grain-based bioethanol is 750 yuan/ton.

Goals and Instrument Logic: By the end of the 2005 – 2010 stage, China's biofuels annual production had reached 1.8 million tons of bioethanol and 0.8 million tons of

biodiesel; China became the third largest biofuels producer of the world, after Brazil and the US. In China's "Twelfth Five Year Strategic Plan for Renewable Energy Development", the NDRC stated that China would build a more efficient biofuels industry, with the goal of producing 4 million tons of bioethanol and 1 million tons of biodiesel by 2015, and 10 million tons of bioethanol and 2 million tons of biodiesel by 2020. Given the projected gasoline consumption of 109 and 153 million tons and diesel consumption of 205 and 281 million tons by 2015 and 2020 separately (USDA, 2013)[2], the biofuel production goal will meet 3.7% for gasoline and 0.49% for diesel consumption by 2015, and 6.5% for gasoline and 0.7% for diesel consumption by 2020. By "a more efficient biofuels industry", the NDRC means both more efficient biofuels production technology and a more stable biofuels feedstock supply. In this document, the NDRC also stated that when developing renewable energy, attention should be given to environmental protection, and biofuels production should not cause depletion of forest and arable land.

Regulatory control is still the main instrument logic during this stage. The Chinese government is not yet using market mechanisms to regulate the development of biofuel.

Objectives and Mechanisms: In 2011, the National Standard for Biodiesel Fuel was released to give China's biodiesel producers and distributors a technical standard to follow.

China's biodiesel production is relatively small compared to bioethanol. By 2011, China had approximately 50 small-scale production plants. Even though the total production capacity of these plants can reach as high as 3 million tons, the real production amount is only 0.8 million tons. The main reason for this, as several studies have suggested,

[2] The numbers was drawn from the Annual Biofuel Report of China published by USDA, but the data were estimated by the Energy Research Insitute, NDRC of China.

is due to unreliable feedstock supplies, which has been identified as the main obstacle that China's biodiesel industry faces (H. Zhang, Wang, & Mortimer, 2012; Y. Zhang, Bao, Ren, Cai, & Li, 2012). Therefore, China's policies so far have focused on ensuring the feedstock supply for biodiesel production.

Specifications and Calibrations:

China has been very explicit that domestic biodiesel production will use non-edible oil as the main feedstock, thus the use of waste cooking oil has been a focus. A key bottleneck for using waste cooking oil as feedstock is the cost effectiveness of collecting oil, therefore China has issued several policies to build a sustainable waste cooking oil supply chain. In 2011, 33 cities were picked as pilot studies to establish a waste cooking oil recycling system, and the central government provided 90 million USD for this effort. In 2012, 16 more cities were added to the program. NDRC is currently working on adding additional cities for the third round.

In 2012, MOF issued a "Notice Regarding Adjusting Subsidy to Bioethnoal" and set the subsidy to non-grain based bioethanol as 750 yuan/ton, while reduce the subsidy to grain-based bioethanol from 1276 yuan/ton to 500 yuan/ton. The Chinese government intends to this policy instrument to encourage second generation bioethanol production while discouraging first generation fuels.

1.4 Conclusion

The review of China's biofuels policy using the HIEM framework demonstrates that China's biofuels policy has achieved process and program success in terms of setting and meeting all production targets, as well as establishing and promoting rapid biofuels development in China in less than 20 years. I would like to argue that this policy success

is because of China's unique policy-making process, featuring specific policy goal setting and policy evaluation every five years.

The Chinese government routinely uses a five-year goal setting strategy in all policy areas. The whole economy of China is divided into various sectors, with specific and quantitative policy goals set for each one. One of the advantages of this strategy is that it is easy to evaluate whether the policy goals have been met by checking quantitative achievements. In terms of biofuels production, every five years the central government of China (primarily the NDRC) evaluates whether the previous production goal has been achieved, and sets a new goal for the following five years. Through this process, the whole country's biofuels production has to be assessed to ensure that the next production goal is realistic and harmonious with the country's other strategic goals. This mechanism forces a regular and quantitative assessment of biofuels policy objectives and policy instruments, thus ensuring that problems can be identified and corrected before they are unmanageable. The HIEM analysis of China's biofuels policy demonstrates China's rapid policy response to problems as they emerge. Although it has been widely agreed that subsidizing corn-based ethanol is causing food prices to rise and that corn-based ethanol has a negative return on energy invested (Searchinger et al., 2008; Solomon, Barnes, & Halvorsen, 2007), the US is still subsidizing corn-based ethanol through various programs. These programs include USDA Farm Bill energy title programs such as the Rural Energy for America Program and the Bioenergy Program for Advanced Biofuels; tax breaks such as the Alternative Fuel Vehicle Refueling Property Credit, Master Limited Partnerships, Jobs Creation Act, and biodiesel tax credits; and various Departments of Energy and Transportation programs (Taxpayer.net, 2013; Tyner, 2008). Instead when the Chinese

government discovered the food price impact of using grain as a bioethanol feedstock, they quickly responded by prohibiting the use of grain with several policies in 2006.

This policy analysis also contributes to the study of policy change through demonstrating the following advantages of using a HIEM framework to analyze policy regimes. First, HIEM analysis reveals horizontal relationships among policy ends and means in various levels. Thus scholars can identify the ways in which abstract policy goals are realized by specific targets. For example, when the Chinese government decided to increase the production of biodiesel in a significant way (from 0.2 to 1 million tons), their specific policy end was to build a sustainable waste cooking oil supply chain. The Chinese government identified a bottleneck in China's biodiesel development and aimed to resolve it with an alternative feedstock (waste cooking oil).

Secondly, HIEM analysis demonstrated the vertical relationship among policy ends and means within the same level, thus revealing whether the Chinese government adopted appropriate policy means to address certain policy ends. For example, when the Chinese government decided to expand non-grain feedstock plantations in the 2006-2010 phase, they used policy instruments such as providing subsidies for non-grain feedstock plantations on marginal land, and low interest loans and direct subsidies to non-grain bioethanol plants. These instruments were effective in terms of boosting China's non-grain bioethanol production. Additionally, by standardizing bioethanol production (Standard 2001) and bioethanol blending with gasoline (Standard for Biotheanol for Automobiles 2001), as well as setting up pilot programs in selected cities, China successfully incorporated bioethanol into the gasoline supply chain, thus boosting bioethanol demand and production.

Through analyzing policy ends and means in a historical context, the HIEM analysis was also able to identify causality between the specific policy ends were set and the policy instruments that were issued, thus demonstrating the interaction effects among different historical events. For example, the HIEM analysis revealed the reason behind the Chinese government's sudden abandonment of grain-based bioethanol feedstock, which was the complete consumption of stale corn in the national food reserve and the 6% raise of corn price in China in 2006 when the plants turned to fresh corn on the market. Previous policy analyses have used descriptive methods usually focusing only on a few policies or a certain aspect of China's biofuel development (Qiu et al., 2012; Xiao, Li, Shen, & Li, 2010; H. Zhang et al., 2012), failing to provide a more complete and comprehensive understanding of China's biofuel policy development.

The success of China's biofuels policy has also triggered concerns. The most recent policy goals China set for biofuels production aims to produce 4 million tons of bioethanol and 1 million tons of biodiesel by 2015, and 10 million tons of bioethanol and 2 million tons of biodiesel by 2020 ("The Twelfth Five Years Strategic Plan for Renewable Energy Development" (2012)). However, according to Qiu, Huang et al. (2010), based on suitable arable lands for energy crops, the yield of energy crops, and the efficiency of the conversion rate of feedstock to biofuel, at the maximum China can only produce 5 million tons of bioethanol by 2015 and 12 million tons by 2020 (Qiu et al. 2010). Qiu, Huang et al. (2010) further note that these production estimates do not consider water resource constraints, the suitability of soil quality of the marginal lands for energy crops, and the cost effectiveness of planting bioethanol feedstock. They argue that when these factors are all taken into account, even using half of these marginal lands for bioethanol crops is already a

challenging task for China (Qiu et al. 2010). When China's domestic supply is not able to meet its production goals, it is not surprising that China has turned to acquiring land and planting biofuels crops beyond its borders. To obtain an idea of how much land would be required to meet China's shortfall in domestic biofuel production, we can use cassava as an example. According to a study by Tian and Zhao 2007, on average, each hectare of land can produce 19.5 tons of fresh cassava (Tian & Zhao, 2007), and Qiu, Huang et al. (2010) estimated that producing 1 ton of bioethanol requires 7 tons of cassava. Therefore, to meet the target shortfall of 1.5 million tons of bioethanol by 2015 and 4 million tons by 2020, China would need an additional 0.53 and 1.43 million hectares of land by 2015 and 2020, respectively. Given China's domestic shortage of arable land, these millions of hectares must be sought abroad.

Chapter 2 A Political Ecology Analysis of China's Discourse on China's Land Acquisition for Biofuels in Africa*

2.1 Introduction

A heated debate has emerged regarding the nature of China's recent land acquisitions in Africa for biofuels production. Mainstream western media and scholars have claimed that China is on an exploitative hunt for natural resources to meet its domestic development needs, and therefore these land acquisitions in Africa are representative of "neo-colonial exploitation" or "land grabbing" (Adem, 2010; GRAIN, 2008b; Harvey, 2005; Yan & Sautman, 2010). Others argue that China's land acquisition is another form of development aid to African countries, establishing 'economic diplomacy' or obtaining 'soft power' (Braeutigam & Tang, 2009; Sautman & Yan, 2007). Still other scholars take a more neutral ground and believe it is difficult to make a conclusion yet, due to this phenomena's multi-layered and paradoxical nature (Hofman & Ho, 2012). Much attention has been paid to China's land acquisition in Africa in terms of its large scale and fast speed (Atkin et al., 2009; GRAIN, 2008a). However, there are also counter-arguments that a 'global magnifying glass' has been put on China's every move in the world (Hofman & Ho, 2012) and it is an erroneous statement that China is at the center of large-scale farmland acquisition in developing countries (Tortajada, 2014).

The land acquired in Africa by Chinese companies can generally be divided into two categories: land for growing food crops and land for biofuels crops. Although Chinese cooperation with African countries on food crops has been ongoing since the 1960s

* The material contained in this chapter is planned to be submitted to a peer-reviewed journal.

(Braeutigam & Tang, 2009), China's involvement in Africa for biofuels crops did not start until 2007. Since the social, political and ecological drivers behind food and biofuels crops can differ, and since land acquisition for biofuels crops have received less attention, here I specifically focus on the analysis of China's discourse on land acquisitions for biofuels in Africa.

The debate over China's land acquisition for biofuels production in Africa is just one perspective of the unprecedented attention to the contemporary China-Africa relationship in recent years. The China-Africa relationship has received academic and media interest since Zhou Enlai's path-breaking African tour in 1963-4 (Large, 2008). Among all the China-Africa relationship studies, trade and resource extraction have generated the most literature to date (Large, 2008). Resource extraction in order to meet China's high speed economic development is generally perceived as the primary motivation behind the current Chinese engagement in Africa (Harvey, 2005; Large, 2008), which is often viewed as a reflection of China's commitment of neo-colonialism in Africa by Western scholars.

Despite the wide coverage of literature on the China-Africa relationship, there remains basic knowledge gaps about many areas of China's expanding involvement in Africa. Large (2008) states that "Given some of the more inflated claims about a 'new scramble' or 'new imperialism', there is a marked gap between the perceptions and exaggerated projections of an inexorable Chinese rise in Africa and knowledge of how this is actually playing out" (Large, 2008 P57). In addressing this research gap, here I provide an analysis of China's discourse on land acquisition for biofuels production in Africa, as well as the policy implications of the discourse. Through the discourse

analysis, I argue that China's foreign land acquisition for biofuels production is driven by China's need for energy security and alternative investment opportunities, limited biofuel feedstock supply, and biofuel feedstock's high investment return rate. The Chinese media emphasizes that land acquisition for biofuels production in Africa is a win-win situation for China and Africa, which is a reflection of the Chinese government's new engagement policy in Africa to switch from humanitarian aid to a more market-oriented and mutual beneficial co-operation (Braeutigam & Tang, 2009). Even though the Chinese media states that Chinese companies are committed to building a more sustainable Africa, effective policies to regulate Chinese companies which acquire land for biofuels production have not yet been advanced. This study builds on a thorough collection of China's domestic media products related to China's land acquisitions in Africa.

2.2 Background

Matondi et al. (2011) believe that peak oil and climate change are the ultimate triggers of the drive for global biofuels production. Based on studies by the US Energy Information Administration (EIA) and the Association for the Study of Peak Oil and Gas (ASPO), as far as oil and natural gas are concerned, the end of the fossil age is not more than a century away (Matondi, Havnevik, & Beyene, 2011). Furthermore, data from the International Panel on Climate Change (IPCC) shows that the CO_2 content of the atmosphere is 37 per cent higher than 1750, before the industrial revolution (IPCC, 2005). The IPCC estimates that CO_2 emissions from fossil fuels have contributed almost 75% of the increase in the greenhouse effect since 1850 (IPCC, 2005). Besides energy security and climate change mitigation, rural development is also advocated as a reason to pursue a switch from fossil fuel-based oil to biofuels (Cotula, Dyer, & Vermeulen,

2008). It is believed that biofuels development can provide better opportunities and employment for farmers and rural people (Cotula et al., 2008).

The concern over energy security and climate change mitigation has pushed governments all over the world to make mandatory biofuels development targets for replacing petroleum-based transportation fuels with biofuels (Cotula et al., 2008). According to a study by Rothkopf (2007), 27 of 50 countries surveyed in 2007 had enacted or had considered mandatory requirements to blend biofuels with traditional transportation fuels, primarily in the EU, US, Brazil, China and India (Rothkopf, 2007). Since biofuels development requires a large amount of feedstock (which in turn has large land and irrigation requirements), the global biofuels development has generated increasing demand for more intensive land and water use. Ironically, the governments making the mandatory biofuels production targets are also governing areas that support the least cultivatable land that can be used for biofuels crops without competing with domestic food security. In Asia, Europe and North America, almost the total cultivable area is either under cultivation or under forest (Cotula et al., 2008). Africa and South America, on the other hand, contain 80 per cent of the world's reserve agricultural land (Cotula et al., 2008).

Although the exact amount of land being acquired by foreign land investors in Africa is still unknown at this point, the numbers suggested by several studies have presented a broadly consistent picture in terms of the significant scale of land acquisitions by foreign investors in Africa. According to a joint study by the Food and Agriculture Organization (FAO), International Institute for Environment and Development (IIED) and International Fund for Agricultural Development (IFAD), since 2004, there have been 2.5 million

hectares (ha) of land acquired by foreign investors in just five African countries: Ethiopia, Ghana, Madagascar, Mali and Sudan (Cotula, 2009). Friis and Reenberg (2010) found that from 2008-2010, land deals in Africa have affected between 51 and 63 million ha of land (Friis & Reenberg, 2010). A study by the World Bank (Deininger & Byerlee, 2011) documented land acquisitions for 56.6 million ha worldwide between 2008-2009, of which two-thirds of the land area was in Africa. Furthermore, there has been an upward trend in both land acquisition project numbers and allocated land areas in African countries, with predicted further growth in investments in the future (Cotula, 2009).

Land acquisition is generally intended for growing food or biofuels crops. Thus it is not surprising that as more countries (including the US, EU, China, India and Brazil) make policies requiring mandatory targets for use of biofuels in transportation fuels and create guaranteed markets for biofuels, more land in Africa is targeted for growing biofuels crops to meet this growing demand. European countries have been identified as dominant players in land acquisition for biofuels (Cotula, 2012), however China is an emerging power that cannot be ignored.

Even though the biofuels production industry started only 20 years ago in China, its development is notable with respect to the speed at which it has developed (Figure 1). In less than 20 years, China has become the world's third largest country in biofuels production after Brazil and the US, and has routinely surpassed its five-year production goals. According to "The Twelfth Five Years Strategic Plan for Renewable Energy Development" (2012), China is aiming to make renewable energy satisfy 11.4% of total energy consumption in 2015. In order to reach this goal, China will produce 4 million tons of bioethanol and 1 million tons of biodiesel by 2015 (NEA, 2012). The Chinese

government is also looking to expand the production of biofuels even further in the future so that renewable energy will account for 15% of total energy consumption by 2020, which means that China will produce 10 million tons of bioethanol and 2 million tons of biodiesel by 2020 (NEA, 2012).

As a country with a large population and limited arable land, China is concerned that biofuels development may compete with food crops, having significant negative impacts on food security. Therefore, Chinese policy requires that biofuels crops can be grown only on 'marginal land'. According to a study by Qiu and Huang et al. (2012), China has about 6.67 million ha of marginal land, mainly located in Inner Mongolia and Xinjiang. However, in terms of the productivity of marginal land and the efficiency of the conversion rate of feedstocks to biofuels (Qiu et al., 2010; Qiu et al., 2012; Tian & Zhao, 2007), it was concluded that at maximum, China can produce 12 million tons by 2020 (Qiu et al., 2010). Qiu et al. (2010) further note that these production estimates do not consider water resource constraints, the suitability of soil quality of the marginal lands for energy crops, or the cost effectiveness of planting bioethanol feedstock. They argue that when these factors are all taken into account, even bringing half of these marginal lands into production for bioethanol crops represents a challenging task for China (Qiu et al., 2010), which means that China will only be able to produce 6 million tons of bioethanol by 2020, a 4 million ton shortfall.

China's biodiesel production is facing a similar situation. As of 2011, China had approximately 50 small-scale production plants. Even though the total production capacity potential of these plants is 3 million tons, the real production amount was only 0.8 million tons. The main reason for this is due to unreliable raw material supplies, the main obstacle

to China's biodiesel industry (Y. Zhang et al., 2012). Unless a sustainable and robust supply chain can be established, it is not expected that China can make its biodiesel production target for 2020.

From the above discussion, it is clear that it will be challenging for China to meet its biofuels production targets using its domestic marginal land. Therefore, it is not surprising that China has joined various foreign investors and acquired land in South Asia, Latin America and Africa to grow biofuels crops. Since 2007, three Chinese companies, ZTE, Sunshine Kadi and Julong Group, have acquired land from the Democratic Republic of Congo (DRC), Zambia and an undisclosed African country separately (Table 1).

In 2007, ZTE, a formerly state-owned Chinese company announced that it would invest $1 billion to acquire 3 million hectares land in the DRC to grow oil palm. Possessing abundant fertile land and water, DRC has only cultivated 20% of its arable land (Reisinger, 2012). However, the DRC's land law is not adapted to the country's customs and traditions and the DRC's governmental and institutional structures are weak, lacking proper regulations and policies to protect its citizens' rights (Reisinger, 2012). This suggests that the government is not in a position to assure that foreign land leases will not be detrimental to its citizens or the environment. Unfortunately, more details regarding this transaction are not available, since both the Congolese government and Chinese investors have restricted any further information about this project (Reisinger, 2012).

According to GRAIN's 2010 report, Wuhan Kaidi planned to invest 2 million ha in Zambia to grow *Jatropha* in 2009, but the project was called off due to local

communities' opposition. However, a press release (MOFCOM, 2011) indicated that in 2011 Kaidi announced it had established Kaidi Bio Zambia Corporation and would invest $5.74 billion in Zambia for biofuels development. The whole project will move forward in four phases. The first phase's investment will be $450 million. It is expected that the first phase will start operating by 2017 and is expected to hire more than ten thousand local workers.

In a press release, Julong Group announced that it would start investing in Africa by planting 500,000 ha of oil palm for biofuels (People.cn, 2014). In order to expand its business in Africa, Julong has established representative offices in four countries including Liberia, Cameroon, Ghana, and Kenya. Unfortunately which country the plantation will be established in was not disclosed.

Table 2.1: Chinese Companies' Land Acquisition for Biofuels Deals in Africa

Time	Host Country	Chinese Company Name	Size (hectare)	Biofuel Crop Type	Status
2007	Democratic Republic of Congo (DRC)	ZTE International	3 million	oil palm	0.2 million hectares have been planted
2009	Zambia	Sunshine Kadi New Energy Group (Sunshine Kadi)	2 million	cassava, corn and soybean	Project was called off due to Zambian opposition in 2012, but resumed in 2014.
2014	One of the four countries: Liberia, Cameroon, Ghana, Kenya	Julong Group	0.5 million	oil palm	Representative offices have been established

2.3 Theoretical Background

Political ecology examines the political dynamics surrounding material and discursive struggles over the environment in the Third World (Bryant, 1998). It is a useful framework that traces the causation of environmental degradation to broader systems, especially political systems. Ariza-Montobbio et al. (2010) argued that external structures such as state institutions, global markets, peak oil and the price of energy, frame the incentive structures that motivate certain actors to promote new energy crops. White and Dasgupta (2010) stated that the global trend of agro-fuel expansion is driven by the need for investing countries to find a quick fix to their energy and environmental security

problems, as well as the search for corporate capital, and by the attempt of hosting countries to find new ways to revive rural and agrarian development.

Harvey (2005) made the argument that over the past thirty years, China has focused on its path toward 'socialism with Chinese characteristics' or, as some call it 'privatization with Chinese characteristics' (Harvey, 2005). During this process, China constructed a form of state-manipulated market economy that achieved phenomenal economic growth rates, averaging close to 10% a year. This rapid growth has two implications for China's land acquisition activity in Africa. First, as Chinese companies have successfully accumulated a large amount of capital, they now require an external investment outlet for their internally accumulated surpluses (Harvey, 2005). Chinese businesses have started to expand their scope of investment globally since the mid-1990s. Second, China's dramatic growth has made it increasingly dependent upon foreign sources of raw materials and energy (Harvey, 2005). China's demand for oil, metal, agricultural imports, forest products, and other natural resources has changed the global economy and market structure. For example, China's mass imports of soy beans from Brazil and Argentina has provided a significant boost to those nation's economies (Harvey, 2005). Given China's demand for energy and the economic power it has, it can be expected that China's land acquisition for biofuel production will significantly influence the ecosystems, communities and even political dynamics in throughout the African continent.

The role of unequal power relations in constituting a politicized environment is a central theme of political ecology (Bryant, 1998). The unequal power relations can be reflected in conflicting perceptions, discourse, and knowledge claims about development

and ecological processes (Bryant, 1998). In this way, actors in power often have more control over knowledge and forms of representing reality, therefore suppressing alternative forms of values expressed by local communities and indigenous groups (Ariza-Montobbio, Lele, Kallis, & Martinez-Alier, 2010). White and Dasgupta (2010) point out that agro-fuels uniquely obtain a "convenient green packaging" as alternative fuels emphasized by investing countries, which makes corporate large-scale land acquisition and forest conversion less likely to be suspected to cause negative environmental and social impacts (Ariza-Montobbio et al., 2010; White & Dasgupta, 2010).

Discourse analysis is a common research method used to discover the perceptions of and knowledge claims made by alternative energy investing countries. Ariza-Montobbio et al. (2010) analyzed the discourse promoting *Jatropha* cultivation in India and found that even though national and state policy discourses describe *Jatropha* as a "pro-poor" and "pro-wasteland" development crop, the field work on *Jatropha* plantations shows that *Jatropha* cultivation favors resource-rich farmers, while reinforcing existing processes of marginalization of small and subsistence farmers. In a political ecology analysis of the US's sugarcane bioethanol production in Latin America, Hollander (2010) describes the way in which the US government, domestic and transnational corporations, growers and consumers formed a dominant discourse that sugarcane bioethanol is critical for US energy independence and is environmentally friendly. Concurrently, they downplayed the concerns over the concentration of ownership and control of the sugar industry and the expansion of monoculture, with an associated increase in landlessness, rural poverty and food insecurity (Hollander, 2010).

2.4 Research Method

The primary research method of this study is an analysis of China's news media articles on the issue of China's land acquisition for biofuels production in Africa. Using a discourse analytical approach, I explored the dominant knowledge regimes constructed and conceived by Chinese public media in their sociopolitical context. To this end, this article bases its argument on data drawn from electronic news reports found by the most well-established news search engine in China: news.baidu.com. News.baidu.com does not provide news reports, rather it provides free access to news reports on the internet provided by electronic newspapers and public websites. It does not include blogs, forums and private websites. The search engine features an advanced search function, which allows users to enter specific date periods and single or multiple keywords to find news reports on the Internet. Although China's communist media system has been eroded by the introduction of a market economy in recent years, the press in China is still largely influenced by the government (Wei Wang, 2008). Therefore, data collected through this channel largely reflects the Chinese government's positions and attitudes concerning China's land acquisitions in Africa.

The data collection process began with searching on news.baidu.com for news reports that involved various combinations of the following keywords: outward investment and cooperation (对外投资经济合作), Sino-Africa cooperation (中非合作), Africa (非洲), biofuels (生物液体燃料), overseas (海外), Oil Palm (棕榈), Jatropha (麻风树), Zambia (赞比亚), DRC (刚果), ZTE (中兴) and Kaidi (凯迪) . The time frame of the search was

set from 2007 to 2014, since China's land acquisition for biofuels in Africa did not start until 2007. The resulting news dataset was comprised of different genres of news discourse: opinion pieces, features and hard news. The variety of data allowed this study to trace the same theme within a cross-section of genres. The search results were then identified one by one in terms of its relevance to China's land acquisition for biofuels production in Africa. This was carried out by employing the following criteria: First, the news report had to be related to Sino-Africa economic investment or cooperation; second, if the news report was specifically regarding food crops, it was eliminated. The 53 reports (Appendix 1) that passed the selection constituted the effective samples for this study.

The whole data set was loaded into Atlas.ti software. Atlas is a software widely used in qualitative data analysis and research. It helps qualitative researchers to organize vast amount of data, code original data sources, and keep track of interrelations among coding themes and sub-coding themes. Before the coding started, according to Williams et al. (1990) and Miles and Huberman (1994)'s suggestion, the following initial general themes were created from the literature review: Chinese public's views toward Africa (View), Sino-Africa relationship (Relationship), Chinese government's role (Government), Drivers of China's land acquisition for biofuels in Africa (Drivers), and sustainability issues in land acquisition in Africa (Sustainability). As the coding progressed, the following new coding themes emerged: Western countries' accusation against China in terms of land grabbing (Accusation), other countries' land grabbing activities in Africa (Other Countries), the perceived situation of China's land acquisition for biofuels in Africa (Situation), and China's strategic plan related to land acquisition for biofuels in Africa (Plan). Therefore, in total nine coding themes were identified after the coding

process. All codes were organized as ‘code families’ in Atlas.ti according to the coding themes they belong to. In the next stage, codes in each coding theme were reviewed a second time, and sub-coding themes were identified (Table 2). I then generated a report from Atlas. The report organizes contents of the news articles coded by me according to the coding and sub-coding themes under which they were categorized. When conducting my data analysis, I was able to easily access the data in my coding themes and sub-coding themes to support the following arguments.

Table 2.2 Coding Themes and Sub-Coding Themes

Coding Themes	**Sub-Coding Themes**
Accusation	Accusation
	Argument
Driver	Energy security
	Biofuels development goal
	Limited domestic biofuels material supply
	Palm oil’s high return rate
	Domestic investment market competition
Government	Policy support
	Information and service provision
	Regulating overseas investment
Other Countries	Countries who are acquiring land in Africa
	Impacts to African people
Plan	Acquiring land in Africa for biofuel
Relationship	History
	Current
	Future
Situation	ZTE
	Kaidi

	Other
Sustainability	Sustainability issues
	Perception of sustainability
	China’s contribution to sustainability
View	Africa
	Biofuels development
	China’s land acquisition in Africa

2.5 Results

From the data, it is clear that the Chinese public media generally supports the idea of investing land for biofuels crops in Africa. The main reason claimed by the Chinese public media is that it is a win-win situation for both China and African countries, contributing to the sustainable development goals of African countries as well as helping China’s energy security and economic development. In order to support this claim, the Chinese media made statements that African countries have a great desire and potential to develop biofuels industries, but are not making much progress so far due to capital and technology limitations, which Chinese companies can provide. In addition, the Chinese public media reported intensively about the way in which China has been providing various kinds of support to African countries in the past, as well as Chinese companies are helping local communities in Africa currently. The Chinese public media constantly prods the Chinese government to provide more support to help Chinese companies’ further involvement in land acquisitions in Africa. In addition, from the news reports, the drivers behind China’s land acquisitions as well as China’s attitude toward Africa were discovered.

Drivers Behind China's Land Acquisition for Biofuels

Overall, four drivers behind China's land acquisitions in Africa were summarized from the data. These drivers included: 1) energy security; 2) limited domestic biofuels crops supply; 3) biofuels feedstock's high investment return rate; and 4) additional investment opportunities for Chinese companies.

The Chinese public media is aware that China relies heavily on imported oil, which places China's economic development at risk as global petroleum oil reserves are decreasing and oil prices are increasing. A news report by Bioon.com cited Yuanchun Shi, a member of the Chinese National Academy of Science, stating that "China's consumption of petroleum oil is raising in a high speed. … China's reliance on imported oil is currently 50%, which is a huge burden to China's economic development. … the best alternative energy is biofuels instead of wind, solar or nuclear energy (Bioon.com, 2008)." Biofuels development is clearly essential to China's energy security. In addition, Chinese public media is concerned about the sources from which China imports petroleum oil. According to a news article, over ninety percent of China's imported oil was transported by sea through the Strait of Hormuz or Malacca, which are both in the control of the U.S. Should anything happen between the US and China, or should severe terrorism occur along the transportation routes, China's oil imports would be severely impacted (Cableabc.com, 2014). On the other hand, African countries, for example DRC, Tanzania and Zambia, generally have good relationships with China. Therefore, the Chinese media argues that growing biofuels crops in Africa will provide a more stable source of energy for China. In several news reports, it has been suggested that China should work with African countries to exchange China's capital and technology with

Africa's land for future biofuels development (China Economic Network, 2009; Chinese Economic Herald, 2011).

The Chinese media also realized that China's biofuels development has a critical bottleneck, which is the limited availability of biofuels crops. According to the China Economic Herald, currently the two most suitable biofuel crops for China are sweet sorghum and cassava. However, "China has limited arable land for planting sweet sorghum and cassava, far from meeting the need of biofuels development" (Chinese Economic Herald, 2011). The China Economic Network (2009) gave more detailed information stating that "(China's) arable land has decreased to 1.827 billion acres totally and 1.39 acre per capita, which is only one third of global average. In the meanwhile, water resources are limited, with more than half of land not having enough irrigation. In addition, urbanization in recent years is occupying larger amounts of land. Thus China needs to import a large quantity of cassava (China Economic Network, 2009)." In order to resolve this issue, the Chinese Economic Herald (2011) suggested that the Chinese government should "encourage Chinese companies to go overseas to grow sweet sorghum and cassava, and produce bioethanol out of these materials in African local factories" (Chinese Economic Herald, 2011). The China Economic Network (2009) made similar statements that China should purchase or lease land in nations which have more abundant arable land and resources, such as the DRC, Ghana and Ethiopia, to grow biofuel crops (China Economic Network, 2009).

The Chinese public media has also been promoting the idea that acquiring land in Africa is a great investment opportunity for Chinese companies. In recent years, Chinese companies have been facing increasingly tough domestic investment and market

competition, and thus are turning to overseas markets for additional investment opportunities. Biofuels, as a promising alternative to petroleum, have high potential for investment return. In a news article regarding ZTE's overseas investment for oil palm growth, ZTE CEO Weigui Hou stated "biofuels will become ZTE's future profit growth point" (Jia, 2008). ZTE picked oil palm as the biofuel crop grown overseas because palm oil is the most demanded vegetable oil globally and the profit rate can reach as high as 60 per cent (Jia, 2008). Thus investing in biofuels overseas is becoming a new strategy for Chinese companies for diversifying investment and generating cash flow. The three companies acquiring land for biofuel crops in Africa (ZTE, Kaidi and Julong) are all public companies, whose primary goal of going to Africa is to obtain investment opportunities and benefits. They basically make their own decisions in terms of which kinds of biofuel crops to plant according to their understanding about the global biofuel market. Their investment strategies follow Chinese policy mainly because the companies see the targets as profit opportunities, not because the companies are implementing government policy.

Government's Role

From the data, it was observed that the Chinese government plays a critical role in land acquisition in Africa, even though the three Chinese companies currently acquiring land in Africa are privately owned. Given China's centrally-planned-economy, a land acquisition deal is not totally a company's own investment decision, but it has to fit into the Chinese government's overall global investment strategic plan to obtain support from the government. In a news article, it was reported that the Vice Minister of Ministry of Agriculture (MOA) has shown support to ZTE's land acquisition for palm oil in DRC,

promising to include ZTE into the Chinese government's "Going Global" strategy; thus MOA along with MOC will work with ZTE to promote its overseas land acquisition (Jia, 2008). What's more, the Chinese media reports intensively about the government's involvement in land acquisition, including policy and financial support, as well as information and service provision. For example, ifeng.com reported that the Chinese Ambassador in DRC, Yingwu Wang, promised that the Chinese government will make a full effort to help Chinese companies' overseas development (Fan & Zhang, 2012). The MOC has been issuing 'Overseas Investment Guidance by Countries' since 2009. The 2014 guidance covers over 166 countries and areas, including each country's political, economic, social, legal and cultural information (ifeng.com, 2014). In addition, a press release by the MOC stated that it would make a five-year overseas investment strategic plan to provide guidance to Chinese companies, by indicating the main countries and industries that the Chinese government would support (sina.com, 2014). The news article also suggested that the MOC will make laws to protect Chinese companies' overseas investment, provide investment information and public service, as well as request data from Chinese companies (sina.com, 2014).

Sino -Africa Relationship

When reporting about China's investment in Africa, the Chinese media often emphasizes the good political relationship between China and Africa historically, as well as assistance that China has been providing to African countries (Fan & Zhang, 2012; Gao, 2014; Wen Wang, 2013). For example, a news report quoted Chinese Prime Minister Keqiang Li's position when talking about Sino-Africa relations that "you will never forget someone who has cried with you", showing the close relationship between

China and Africa (Gao, 2014). In addition, the Chinese media reported that China has provided the DRC with over $300,000 aid in the past 40 years, and helped the DRC to build railroads, roads, hospitals, schools, and factories (Fan & Zhang, 2012).

Power relations

The Chinese media asserts that both China and Africa are trying to develop their economies to become stronger players on the global stage. One news report said “The African dream is to become an equal, united, stable and rich Africa, which is the same idea as China wants to revive to become a strong and rich nation” (Wen Wang, 2013). Even though China will eventually seek political and military power, at this stage, China is trying to obtain stronger economic power. In addition, the Chinese public media believes that China has superior economic power to African countries. The Chinese media describe Africa in terms of “low agricultural productivity”, “poor infrastructure” and “weak industrial base” (ChineseEmbassy.org, 2014); on the other hand, they believe China has “advantages in capital, technology, and professional labor”(ChineseEmbassy.org, 2014). Therefore, they believe Africa needs China and China can use these advantages to “help” African countries’ economic development.

Win-Win Situation

When the Chinese media reported about China’s land acquisitions for biofuel production in Africa, there was a constant use of the phrase “win-win” for both China and Africa. For example, in a news report, the China Economic Herald (2011) stated that the African continent has a large amount of land available which is suitable for growing biofuels crops; therefore, China should export biofuel-manufacturing technology to Africa to help local communities to explore agricultural resources and establish a biofuels

industry, which would be a win-win result (China Economic Herald, 2011). The China Economic Herald further stated that "while China can obtain clean biofuel, African countries can also use biofuel crops as food, … This model can help local peasants by raising their income and improving their living standard. When they experience the benefits brought by Chinese companies, they will voluntarily protect the mines developed by Chinese companies, thus strengthening China's interest in Africa and building a long–term African strategic plan" (China Economic Herald, 2011).

The Chinese media argued that China's biofuels development is facing some bottlenecks, including high biofuel feedstock collection cost and limited land availability (China Economic Herald, 2011). In order to overcome the bottlenecks, the news report gave some suggestions, and one of them was to encourage corporations to go overseas to plant or purchase biofuel crops and produce biofuels (China Economic Herald, 2011). The Chinese media maintained that acquiring land in Africa to grow biofuels crops "can provide China with clean biofuel, … which fits China's long term strategic plan in Africa, … thus China can not only use Africa's resources more efficiently, but also establish a market base for the future, … speeding up China's economic development" (China Economic Herald, 2011).

In addition, the Chinese media repeatedly emphasized the great investment opportunities in Africa. News365 quoted African Union Commission (AUC) Chairperson Dr. Nkosazana Dlamini Zuma as saying that the "Africa era has come!" (News365.com, 2013). According to the Chinese media, in recent years sub-Saharan Africa has maintained a high economic growth rate and low inflation rate, and thus will become one of the global economic growth engines (News365.com, 2013). Six out of the ten

countries that have the highest GDP growth rate are in Africa (Hexun.com, 2013). Behind the high economic growth rate is the need for capital investment. According to News365.com (2013), Africa will need 90 billion to 100 billion USD for building infrastructure. Therefore, the Chinese media encouraged Chinese companies to invest in Africa. China.com described Africa as a "rich and shallow mine, which needs global investors and labors' exploration … this gives adventurous Chinese people endless opportunities" (Wen Wang, 2013).

A common view of the Chinese media toward Africa is that generally Africa has a large amount of uncultivated land and abundant water resources, with low agricultural productivity. Songtian Lin, the Director of Department of African Affairs in the Ministry of Foreign Affairs, made a similar statement in a speech. He said "Africa's cultivated land only accounts for 27.3% of arable land. Its agricultural infrastructure is behind and productivity is low. Most African countries are still at the stage of traditional agriculture and cannot support themselves (ChineseEmbassy.org, 2014)." The Chinese media reported that since 2007, many African countries have started to develop biofuels industries. These countries include Zambia, South Africa, Kenya, Ghana, the DRC, Senegal and Nigeria. Among these countries, the DRC established a special committee for developing biofuels (People.cn, 2008). Zambian peasants have already planted over 200 thousand acres of land in biofuels crops under the support of a British company (Not named in the report) (People.cn, 2008). However, the Chinese media believe that Africa's biofuels development overall is facing great challenges, such as a lack of infrastructure and professional laborers, and low agricultural production level (Bioon.com, 2009). The Chinese media argue that China's investment in Africa can help

African countries, because of China's advantage in capital, technology and professional labor (Fan & Zhang, 2012). The Chinese Ambassador to the DRC Yingwu Wang made the statement that "most of Chinese companies' overseas investment projects were supported by the Export-Import Bank of China or China Development Bank, thus having abundant capital support" (Fan & Zhang, 2012). In addition, Yingwu Wang believed China has advanced industrial technology that is suitable for African development, as well as highly educated professionals who are adventurous and work hard (Fan & Zhang, 2012). Furthermore, the Chinese media believes that China's land investment in biofuels can help African countries to resolve their energy shortage issue. Wuhan Kaidi (2014) reported that currently over 70 percent of Zambia's energy came from forests, thus causing deforestation at the speed of 300 thousand hectares annually. Therefore, the Zambian government hopes that the investment of African Kaidi Biofuels Zambia LLC can help mitigate this energy shortage situation (Science and Technology World, 2014). In a press release about ZTE Agriculture's land investment for biofuels in the DRC, it is also mentioned that ZTE's investment for oil palm in DRC will help it meet its demand for both palm oil and biodiesel, thus reducing the DRC's reliance on imported gasoline and diesel (Liu, 2009).

Other benefits the Chinese media believes that African countries will gain from Chinese companies' investment are employment and training opportunities. Xinhuanet reported that "overseas localization", which means to hire local employees in overseas branches, has become ZTE's focus of "capacity building" in Africa, with over 30 percent of employees hired locally (Y. Wang & Song, 2014). In a news report about ZTE's investment in an oil palm plantation in the DRC, it is mentioned that a planter would hire

thousands of local employees (Liu, 2009). In addition, it is reported that when ZTE was developing its tele-communication business in Africa, it made an effort to gain the trust of African countries by establishing orphanage shelters, building training centers, and providing local college students with internship opportunities in various African countries (Y. Wang & Song, 2014).

2.6 Discussion

There has been much debate about the nature of China's land acquisition for biofuels in Africa. Is this an action of neocolonialism by China or it is a win-win situation as claimed by the Chinese government and media? Scholars have agreed that this distinction depends on whether the land acquisition deals mitigate negative environmental and social impacts, while optimizing economic benefits for the host country (Robertson & Pinstrup-Andersen, 2010).

In the emerging global land acquisition literature, scholars have found that biofuels have the potential to generate both macro and micro benefits for host countries (Hallam, 2009). On a macro level, biofuels development can: bring capital investment and technology transfer into host countries; provide employment opportunities, skills development and secondary industries; and generate income from lease rent and tax collection (Cotula et al., 2008; Hallam, 2009, 2011; Robertson & Pinstrup-Andersen, 2010). On a micro level, biofuels development can: revitalize land use and livelihoods in rural areas; increase income for small-scale farmers; secure real, long-term poverty reduction in countries that have a high dependence on agricultural commodities; and improve rural infrastructure (Cotula, 2009; Cotula et al., 2008; Robertson & Pinstrup-Andersen, 2010). While the potential benefits can make land acquisition for biofuels a

development opportunity for host countries, there are also risks associated with the investment. If the risks are left unaddressed, they can prevent the actualization of this development opportunity for host countries. In many cases, biofuels development is associated with negative environmental and social impacts (Cotula et al., 2008; GRAIN, 2008a; Obidzinski, Andriani, Komanidin, & Andrianto, 2012). A study by Obidzinski et al. (2012) in three oil palm plantations in South Asia showed that plantation establishment at all three sites caused deforestation, resulting in significant negative impacts such as water pollution, soil erosion and air pollution (Obidzinski et al., 2012). In addition, the study also observed that traditional landowners have experienced restrictions on traditional land use rights and land losses, along with increasing land scarcity, rising land prices, and land conflicts (Obidzinski et al., 2012).

It is both the host and investor country's responsibility to ensure that land acquisition deals are contributing to sustainability in African countries. For international investors, it is recommended that before investing in land for biofuel prouction, they should understand the communities whose land they are acquiring. Land without legal titles is not necessary unoccupied. Land not cultivated might have significant cultural and religious meaning for the community. Also, investors should minimize negative environmental and social impacts in local communities, try to avoid displacement, meet the demands of evicted farmers, and try to create employment opportunities for local people (Hallam, 2011; Robertson & Pinstrup-Andersen, 2010).

There have been multiple international sustainability initiatives that can be applied to regulate global land acquisition for biofuels, including the Roundtable for Sustainable Biofuels (RSB) as well as the "Principles for responsible agricultural investment that

respects rights, livelihoods and resources (the Seven Principles)" developed by the World Bank, UNCTAD and IFAD. The aims of both initiatives are to guide biofuels development, both domestic and global, to contribute to sustainable development, especially emphasizing social and environmental sustainability. The RSB includes 12 principles: legality; planning, monitoring and continuous improvement; greenhouse gas emissions; human and labor rights; rural and social development; local food security; conservation of soil, water and air; use of technology, inputs and management of waste; and land rights (Roundtable on Sustainable Biofuels (RSB), 2009). The Seven Principles include 1) Respect for land and resource rights; 2) Ensuring food security and rural development; 3) Ensuring transparency, good governance, and a proper enabling environment; 4) Consultation and participation; 5) Responsible agro-enterprise investing; 6) Social sustainability; and 7) Environmental sustainability (World Bank, 2010).

When the factors recognized by scholars and principles adopted by international initiatives are applied to analyze China's discourse on land acquisition for biofuels in Africa, it can be concluded that the Chinese government and companies are making some effort to address some of the responsibilities and principles mentioned above, including providing employment to local people, rural and social development, and somewhat to social sustainability. Unfortunately at this point, it is still premature to determine whether China is truly contributing to Africa's sustainable development or not. On the one hand, from the discourse analysis, the Chinese public media has been mainly emphasizing the economic benefits to Africa from China's biofuels development there, without addressing possible negative social and environmental impacts due to China's investment. In fact, one interesting finding is that when the Chinese media reports about negative

environmental and social impacts, they are always associated with other countries' land acquisition. Even though some efforts on social sustainability have been reported, it is still not clear what the attitudes of the Chinese public media (also the Chinese government) are towards land rights, human rights, and stakeholder involvement, which are top concerns of international development scholars. Also, even though the discourse shows some evidence that the Chinese government would like to contribute to food security and environmental sustainability, more data are needed to show the way in which this attitude is implemented on the ground.

2.7 Policy Implications

The above discourse of the Chinese public media toward land acquisition for biofuels in Africa is correlated with China's policy on land acquisition for biofuels generally (Table 2.3). This should not be surprising since the Chinese media remains closely monitored by the government, despite the recent reform on media (Stockmann & Gallagher, 2011). Since the late 1970s, the Chinese media has experienced a reform, turning from one hundred percent state owned and financed by the state to commercialized and partially privatized (Stockmann & Gallagher, 2011). The Chinese media was encouraged to self-finance with advertising revenues, though still receives indirect or direct subsidies from the state (Stockmann & Gallagher, 2011). However, the Chinese government still exerts a great deal of control over the Chinese media. The Chinese government owns at least 51% of all Chinese public media. In addition, a Propaganda Department has the authority to give editorial guidelines, and even to dismiss personnel (Stockmann & Gallagher, 2011). Given these facts, it can be expected that the

Chinese media's discourse on land acquisition for biofuel production in Africa will be highly correlated with Chinese government policy on the issue.

In recent years, the Chinese government has issued ten policies that can be applied to Chinese companies' land acquisition for biofuels in Africa. Among the ten policies, six of them (policy 3, 5, 6, 7, 9, 10, Table 2.3) provide various forms of financial support including direct funding, subsidizing interest on credit, as well as tax reductions and exemptions. These support programs demonstrate that the Chinese government has realized the importance of overseas investments to the Chinese economy, and is promoting Chinese companies' overseas investment in agriculture, just as the public media suggested. On the other hand, policy number 8 (Table 2.3) states that it has been realized that there are problems in China's overseas investments, including labor conflicts (especially related to local employees), environmental protection issues, and worker safety issues. Therefore, this policy requires that Chinese companies investing overseas must follow the host countries' regulations about environmental protection and labor rights. In addition, companies are required to create employment opportunities for local people, as well as respect local cultural traditions. In this policy, the concept of 'win-win' is mentioned as the principle of operation for Chinese companies when committing to overseas investment.

Policy number 1 (Table 2.3) provides an appraisal method to evaluate the performance of Chinese overseas investment companies through five aspects: profit, solvency, asset quality, development capability and social contribution. Thus it is clear that the performance of Chinese companies' overseas investment is evaluated mainly according to their economic performance. One factor to be mentioned is social

contributions. While it seems that this factor will consider the social impact of Chinese companies' overseas investment, according to the policy, the indexes used to measure 'social contribution' include: tax contribution, foreign exchange obtained, amount and value of natural resources obtained, and net asset growth rate. Thus it shows that the 'social contribution' is still mainly about economic impact.

Table 2.3 China's Policies Related to Land Acquisition for Biofuels in Africa

Number	Name	Date	Agency
1	Overseas investment integrated performance appraisal method (temporary)	10/1/2002	MOFTEC
2	Temporary method for annual inspection of overseas investments	10/31/2002	MOFTEC, SAFE
3	Several opinions on encouraging and guiding individual private and non-publicly owned companies	2/19/2005	State Council
4	Registration system for overseas China companies and organizations	9/14/2005	MOFCOM
5	Circular on strengthening financial support to significant overseas projects	09/25/2005	NDRC, CDB
6	Management method for outward economy and technology cooperation special fund	12/9/2005	MOF, MOFCOM
7	Notification on questions related to the supporting policies for outward economy and technology cooperation special funds	5/8/2006	MOF, MOFCOM
8	Circular on regulating the overseas investment and cooperation of Chinese companies	6/6/2008	MOFCOM, MFS, State Council, SASAC
9	Guidance document on income tax reduction and exception of overseas investing companies	7/2/2010	SAT
10	Several opinions regarding encouraging and guiding private companies' overseas investment	6/29/2012	NDRC

2.8 Conclusion

The Chinese biofuel industry has achieved rapid development in the past 20 years. However, this rapid development, driven by production goals as policy goals, and

increasing concerns for food security, has driven the Chinese government to encourage Chinese companies to acquire land for biofuel production in Africa. This encouragement has been strengthened by the companies' view of biofuels as a highly rewarding investment option and promising alternative energy source to replace petroleum oil.

The dominant discourse of China concerning land acquisition for biofuels in Africa thus predominantly views it as a "win-win" situation, exchanging China's capital, technology and professional labor with Africa's land and water. When reporting about China's land acquisition for biofuels in Africa, the Chinese media mainly focuses on economic benefits that African countries gained from China's investment, with some attention to social benefits. This reflects the Chinese government's attitude towards power. Since the 1970s, the Chinese government has been focusing on developing its economic power domestically. As China has grown its economy to a size comparable with the US and EU, China gained more global political and military power. China sees its path of development and global standing as a successful model that can be adopted in Africa.

At this point, it is still premature to conclude whether China is committing neo-colonialism in Africa by investing in land for biofuel. Chinese companies are overseas primarily for making profit; however, because Chinese companies (even private companies) are supervised closely by the Chinese government, even when investing overseas, they have to follow certain restrictions made by the government and make sure that their operations overseas will not damage the Chinese government's international image. The Chinese government cares about the accusation of 'neocolonialism'. In order to avoid this accusation, the Chinese government has been promoting the discourse of

‘win-win’, and policy (Policy No. 8) requires Chinese companies to pay attention to sustainability when investing overseas. I would like to argue that, in order to make sure that the policies (especially the ones protecting environmental and social sustainability) are implemented, a third party monitoring system should be established by the Chinese government in African local communities.

My study provides Chinese policy makers with a systematic analysis of the Chinese public media’s discourse, as well as a review of policies on China’s land acquisition for biofuel production in Africa. The Chinese government has always maintained that it’s investments in Africa are to assist Africa’s development. If Chinese policy makers would like to avoid the accusation of neo-colonialism, more policies must aim to mitigate the environmental and social impacts while optimizing economic benefits. There must be more attention on human rights, land rights and stakeholder involvement, which have not been specifically covered in Chinese policies to date.

For African people and policy-makers, my study illustrates the way the Chinese public media view them, as well as the approach the Chinese government adopted when entering their communities. African policy makers are reminded that they need to make and enforce appropriate local and national policies to protect their people and environment, because the Chinese government may have goals that do not mesh with those of the African communities in which Chinese companies operate.

For global development academics, my study provides an empirical study of the current China-Africa relationship and contributes a case study to the field of political ecology. China’s land acquisition for biofuels in Africa is only one aspect of the current China-Africa relationship, which has attracted attention and intensive study from global

scholars. My study shows the way in which China's investment in Africa has changed from a pure aid approach from the 1960s, to a more market oriented one. Chinese companies are there primarily for making profits, instead of providing aid to Africa. In addition, my study also shows the way in which one country's political and economic dynamic can impact on another country's environment. It shows the way in which alternative energy investments can be linked to sustainability goals (and lack thereof), for example by arguing that investments contribute to a win-win situation and broader sustainable development goals.

Currently, little systematic study has been conducted regarding the operation of Chinese companies when acquiring land for biofuels in Africa, thus it is difficult to make an objective conclusion about the nature of Chinese companies' activities there. To have a more comprehensive understanding about the nature of China's land acquisition for biofuels in Africa, more studies in African local communities in which Chinese companies are active will be needed.

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Zhang, Y., et al. (2012). Analysing the status, obstacles and recommendations for WCOs of restaurants as biodiesel feedstocks in China from supply chain,Äôperspectives. *Resources, Conservation and Recycling, 60*, 20-37.

Appendix 1 Table A1.1 China's Biofuel Policies Issued from 1996 to 2014

English Name of Policy	Chinese Name	Year
China's Ninth Five-Year Economic and Society Development Plan and Vision Goal	中华人民共和国国民经济和社会发展第九个五年计划	1996
China's Tenth Five-Year Economic and Society Development Plan	中华人民共和国国民经济和社会发展第十个五年计划	2001
Denatured Fuel Ethanol Production Standard	变性燃料乙醇国家标准	2001
Production Standard for Bioethanol Gasoline for Automobiles	车用乙醇汽油国家标准	2002
Pilot Testing Program of Bioethanol Gasoline for Automobiles	车用乙醇汽使用试点方案	2002
Detailed Regulations for Implementing the Pilot Testing Program of Bioethanol Gasoline for Automobiles	车用乙醇汽油使用试点工作实施细则	2002
Pilot Testing Program for Extensive Use of Bio-Ethanol Gasoline for Automobiles	车用乙醇汽油推广试点方案	2004
Executive Details regarding Extensive Use of Bio-Ethanol Gasoline for Automobiles	车用乙醇汽油扩大试点工作实施细则	2004
Renewable Energy Law	可再生能源法	2005
Notice Concerning Taxation Policy Regulating Fuel Ethanol Pilot Producers	关于乙醇生产试点的税收政策的通知	2005
China's Eleventh Five-Year Economic and Society Development Plan" (the Eleventh Five-Year Planå	中华人民共和国国民经济和社会发展第十一个五年计划	2006
Interim Measure for Administrating Renewable Energy Development Fund	可再生能源发展专项资金管理暂行办法	2006
Notice Regarding Strengthening the Administration to Bioethanol Projects and Promoting Healthy Development of Bioenergy Industry	关于加强生物燃料乙醇项目建设管理，促进产业健康发展的通知 u	2006
Biodiesel Blend Standard (BD100)	生物柴油混合标准 BD100	2007

Mid and Long Term Development Plan for China's Renewable Energy	中国可再生能源的中长期发展计划	2007
Directive Advice Regarding Improving Sustainable Development of Corn's Further Processing	关于促进玉米深加工健康发展的指导意见	2007
Notice about Taxation Policy for Products Generated from Comprehensive Utilization of Resources	关于资源综合利用及其他产品增值税政策的通知	2008
Biodiesel Blend Standard (B5)	生物柴油混合标准 B5	2010
Twelfth Five Year Strategic Plan for Renewable Energy Development	可再生能源发展第十二个五年计划	2011
National Standard for Biodiesel Fuel	生物柴油国家标准	2011
Notice Regarding Adjusting Subsidy to Bioethnoal	关于调整生物乙醇补贴的通知	2012

Appendix 2 Table A2.1 News Reports Related to China's Land Acquisition for Biofuels in Africa from 2007-2014

Number	Author	Date	Name	Media	URL	Chinese Name of Article
1		6/3/2007	Bio-Energy Development in Africa Stimulate Debate	Xinhuanet.com	http://news.xinhuanet.com/world/2007-06/03/content_6191559.htm	非洲开发生物能源引发争议
2		8/2/2007	Africa Will Start Producing Biofuels	Bio1000.com	http://www.gdyd.com/news/Information/200708/31815.html	非洲将开始生产生物燃料
3		9/20/2007	Biofuel, a Treatment Worse Than Disease?	163.com	http://money.163.com/07/0920/16/3ORJPQOV002524SJ.html	生物燃料，比疾病更糟糕的治疗？
4		10/23/2007	Brazil Call on Africa for a BiofuelsRevolution	Ce.cn	http://www.ce.cn/cysc/ny/xny/200710/23/t20071023_13342530.shtml	巴西呼吁非洲进行生物燃料革命
5		10/25/2007	Which Countries Have the Biggest Potential for BiofuelsDevelopment	Bioon.com	http://www.bioon.com/biology/bioengery/314216.shtml	发展生物燃料哪些国家最具潜质
6		11/8/2007	Zambia Government Reassert Its Support For BiofuelsDevelopment	Xinhuanet.com	http://www.ah.xinhuanet.com/swcl2006/2007-11/08/content_11614298.htm	赞比亚政府重申支持发展生物能源
7		12/10/2007	Biofuel: Africa's New Fossil Oil?	Xinhuanet.com	http://www.ah.xinhuanet.com/swcl2006/2007-12/10/content_11902461.35htm	生物燃料：非洲的新石油？
8		12/11/2007	The Benefits and Risks of Biofuelsto Developing Countries	Xinnong.com	http://www.xinnong.com/news/20071211/25433_2.html	生物燃料对发展中国家的利益和风险
9		12/13/2007	Biofuel: Risk or New Development Opportunity for Africa?	Bioon.com	http://www.bioon.com/bioindustry/bioenergy/341721.shtml	生物燃料：对非洲是风险还是新的机遇

10		12/27/2007	African Countries Favor Renewable Energy, BiofuelsWill Advance Sustainable Development	Chinapower.com.cn	http://www.chinapower.com.cn/newsarticle/1041/new1041779.asp	非洲国家青睐替代能源 生物能源推进可持续发展
11		1/9/2008	For Mitigating Energy Shortage, Africa Equally Focus on Exploring New Energy Resource and Energy Efficiency	People.com.cn	http://finance.people.com.cn/GB/71364/6752776.html	缓解能源短缺，非洲开源与节流并重
12		8/7/2008	African Countries Are Eager to Develop Biofuels	Xinhuanet.com	http://news3.xinhuanet.com/newscenter/2007-08/07/content_6490563.htm	综述：非洲国家积极开发生物能源
13		8/14/2008	Looking for Alternative Energy, Focus on Biofuel	Bioon.com	http://news.bioon.com/article/6292845.html	找寻替代能源 聚焦生物燃料
14		09/04/2008	ZTE's New Strategy: Overseas Planting	Sina.com	http://finance.sina.com.cn/chanjing/b/20080904/10125271561.shtml	中兴新战略：海外种植
15		2/24/2009	BiofuelsIndustry Has Quietly Started in Southern Africa	Bioon.com	http://www.bioon.com/bioindustry/bioenergy/385292.shtml	非洲南部生物燃料产业悄然起步
16		04/03/2009	China and Zambia will Work Together to Develop Biofuels	Bioon.com	http://www.bioon.com/bioindustry/bioenergy/389178.shtml	中国与赞比亚 将合作开发生物燃油
17		4/10/2009	Thoughts and Suggestions regarding Exploring Cassava Resource in Africa	Ce.cn	http://big5.ce.cn/gate/big5/intl.ce.cn/gjzx/africa/as/sd/200905/14/t20090514_19075104.shtml	在非洲开发木薯资源的思考建议
18	Bin Liu	07/14/2009	ZTE will Invest to Build One Million Hectare Palm Oil Planter in DRC	Biotech.org.cn	http://www.biotech.org.cn/information/70697	中兴农业公司将在刚果投建面积达100 万公顷的油棕种植园
19		7/14/2009	Zambia Investment and Development Agency Signed A Memorandom with a German	Sina.com	http://finance.sina.com.cn/roll/20090714/15302948587.shtml	赞比亚投资发展与德国公司签署利用麻风树提炼生物柴油备忘录

			Company regarding Producing Biodiesel Using Jatropha			
20		12/04/2009	ZTE Invest Heavily on BiofuelsProjects	Ccin.com.cn	http://www.ccin.com.cn/ccin/news/2009/12/04/102949.shtml	中兴能源巨资投向生物能源项目
21		01/06/2010	Suggestions for Exploring Cassava Resources in Africa	Zgny17.com	http://www.zgny17.com/story/html/news_1360.html	在非洲开发木薯资源的思考建议
22	Chunju Guo	01/30/2010	The World Bank Economist Calls African Countries to Speed up on Making BiofuelsPolicy	Cri.cn	http://gb.cri.cn/27824/2010/01/30/2625s2745909.htm	世界银行经济师呼吁非洲国家加速制定生物燃料政策
23		8/31/2010	Many Countries are Acquiring Land in Africa for Biofuel, African Continent's Appearance is Changing	Sina.com	http://news.sina.com.cn/o/2010-08-31/090918044892s.shtml	多国收购土地提炼生物燃料 非洲大地面目全非
24		09/03/2010	A Fight for Land Going on in Africa in Order to Make Biofuels	163.com	http://news.163.com/10/0903/15/6FLRU8SE000146BC.html	为制造生物燃料，非洲上演"夺地"大战
25	Dong Mu, Qing Meng	7/14/2011	Wuhan Kaidi Entering Zambia for Bio-Energy Development	Ccin.com.cn	http://www.ccin.com.cn/ccin/news/2011/07/14/188839.shtml	武汉凯迪进军赞比亚开发生物能源
26		7/19/2011	Wuhan Kaidi Will Invest 450 Million USD in Zambia for BiofuelsDevelopment	Sina.com	http://finance.sina.com.cn/roll/20110719/032310169416.shtml	武汉凯迪拟投资4.5亿美元在赞比亚发展生物质能源产业
27		07/30/2011	The Hat of "Land Grabbing" in Africa should not be Put on China	Ifeng.com	http://news.ifeng.com/gundong/detail_2011_07/31/8067567_0.shtml	在非洲"圈地"的帽子戴不到中国头上□□□
28		8/10/2011	Villagers in Kenya are Evicted from Their Home by Biofuels	022net.com	http://www.022net.com/2011/8-10/501357202952513.html	生物燃料将肯尼亚村民赶出家园
29		8/20/2011	BiofuelsDevelopment is Delayed, Non-Grain BiofuelsDevelopment should Accelerate	qq.com	Ht36tp://news.qq.com/a/20110822/000521.htm	物燃料发展迟滞 非粮乙醇产业应提速

30	Hairong Yan, Boli Sha	08/25/2011	China's Big Investment in Africa: Agriculture Neoliberalism or New Neocolonialism	21ccom.net	http://www.21ccom.net/articles/qqsw/qyyj/article_20110825440007.html	中国巨资投非洲：农业帝国主义抑或新殖民主义
31	Yanan Wang, Chen Song	09/08/2011	Persistence and Reward: Interviewing ZTE's Vice President for Middle East and Africa Area	Xinhuanet.com	http://news.xinhuanet.com/fortune/2011-09/08/c_122005836.htm	坚守与回报——访中兴通讯中东非洲地区区域副总裁
32		9/13/2011	India and Saudi Arabia are Spending Heavily in Africa on Acquiring Land for Agricultural Growth	Chinanews.com	http://www.chinanews.com/gj/2011/09-13/3321782.shtml	印度沙特等国在非洲花巨资购地生产农作物
33		9/23/2011	Report Says China's Land Acquisition in Africa is Damaging Local People's Interest	163.com	http://news.163.com/11/0922/18/7EITNS4H00014JB5.html	报告称中国非洲购地损伤当地民众利益
34		10/20/2011	Bioenergy: Carbon Mitigation can Reach as High as 1 Billion Tons Annually	Xinhuanet.com	http://news.xinhuanet.com/energy/2011-10/20/c_122176777.htm	生物能源：每年可减排 CO2 超 10 亿吨
35		11/09/2011	ZTE Communication: Develop Oil Palm Planter to Optimize Investment Structure	Aweb.con.cn	http://news.aweb.com.cn/20111109/462272004.shtml	中兴通讯：发展棕榈种植园优化投资结构
36	Jirong Fan, Jianbo Zhang	01/21/2012	An Interview to Chinese Ambassador in DRC – Yingwu Wang: Fully Take All Advantages to Help Companies' Overseas Development	Ifeng.com	http://news.ifeng.com/gundong/detail_2012_01/21/12118255_0.shtml	专访中国驻刚果（金）大使王英武：充分发挥各种优势助力企业海外谋发展
37		7/18/2012	SCB Reports Positively on Sino-Africa Agricultural Trade Potential	Sina.com	http://finance.sina.com.cn/nongye/nyhgjj/20120718/172312601058.shtml	渣打报告看好中非农业贸易潜力
38		09/04/2012	Foreign Media Reports US Company is Land-Grabbing in the Name of Assistance	Sina.com	http://news.sina.com.cn/w/2012-09-04/031925093322.shtml	外媒称美国公司以人道援助为名在非洲圈地
39		3/19/2013	Jianguo Wei: Three Questions Existing in Companies' Investment in Africa	Hexun.com	http://bank.hexun.com/2013-03-	魏建国：走出去企业对非洲投资存在三大问题

					19/152232952.html?from=rss	
40		04/09/2013	SG BiofuelsCorporation will Enter Southeast Asia or Africa within Six Months	Biotech.org.cn	http://www.biotech.org.cn/information/106536	SG 生物燃料公司将在 6 个月内进军东南亚或非洲
41		7/13/2013	Africa, a New Continent for Ningbo Companies "Going Global" Strategy	News365.com	http://www.news365.com.cn/xwzx/gd/201307/t20130713_1322980.html	非洲，甬企走出去的“新大陆”
42		9/6/2013	New Europe: EU should End Africa’s Pain on BiofuelsDevelopment	Ifeng.com	http://finance.ifeng.com/a/20130906/10623893_0.shtml	新欧洲：欧盟应结束非洲生物燃料之痛
43	Wen Wang	09/18/2013	China Goes Overseas, Africa is the Paradise	China.com.cn	http://www.china.com.cn/news/world/2013-09/18/content_30069848.htm	中国走出去 非洲是乐土
44	Wen Ren	10/12/2013	EU Will Possibly Slow Down BiofuelsDevelopment	Bioon.com	http://www.bioon.com/bioindustry/bioenergy/584126.shtml	欧盟或将暂缓生物燃料发展
45		12/20/2013	Department of Commerce Issued ‘Guidance for Outward Investment by Countries (Areas)’	People.com.cn	http://finance.people.com.cn/n/2013/1220/c70846-23902861.html	商务部发布对外投资合作国别(地区)指南
46		05/05/2014	European and American Countries ‘s Land Acquisition in Africa Is Damaging Local Agriculture	Xinhuanet.com	http://news.xinhuanet.com/world/2014-05/05/c_126460969.htm	欧美圈地非洲殃及当地农业
47	Jirong Yuan	5/5/2014	Europe and US’s Land Grabbing in Africa is Damaging Local Agriculture	163.com	http://news.163.com/14/0505/05/9RF5DBIO00014AED.html	欧美圈地非洲殃及当地农业
48	Mei Gao	5/6/2014	Keqiang Li on Sino-Africa Friendship: You will Never Forget Someone Who Has Cried With You	People.cn	http://politics.people.com.cn/n/2014/0506/c1001-24978756.html	李克强谈中非友谊：同哭过永不忘
49	Jinchao Guo	5/8/2014	Keqiang Li: Focus on Sino-Africa Cooperation in Green and Low Carbon Field	Ifeng.com	http://news.ifeng.com/a/20140508/40212965_0.shtml	李克强：侧重中非绿色低碳领域合作

50		7/15/2014	Weijun Sun:Julong Group is Commited to be a Successful "Going Global" Agricultural Company, Business in Africa will Start This Year	Tj.people.cn	http://www.022net.com/2014/7-15/541550252820810.html	孙卫军：聚龙集团立志做成功的"走出去"农业企业 今年开始启动非洲业务
51	Cecilia Tortajada	08/04/2014	'Land grabbing' myth and China-bashing	ShanghaiDaily.com	http://www.shanghaidaily.com/opinion/foreign-perspectives/Land-grabbing-myth-and-Chinabashing/shdaily.shtml	N/A Article was written in English
52		10/22/2014	The Ministry of Commerce: The Five-Year Plan Making for Outward Investment has been Initiated	Sina.com	http://finance.sina.com.cn/stock/t/20141022/142620610006.shtml	商务部：已经启动制定对外投资合作的五年的规划
53		10/22/2014	The Ministry of Commerce Issuing Overseas Investment Guidance by Country	Ifeng.com	http://finance.ifeng.com/a/20141022/13207359_0.shtml	商务部发 2014 对外投资合作指南 涵盖 166 个国家和地区