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Carbon Forestry and Trading: A Case Study of Green Resources in Uganda



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Abstract

This study was conducted in Norway and Uganda. The objective was to investigate the carbon forestry markets using Green Resources AS as an example. Green Resources is an interesting case because it is one of the largest companies engaged in carbon forestry at the African continent.

The main problem discussed in the thesis is: *What are the challenges of forestry carbon markets, and are they reflected in Green Resources' projects in Uganda?* By using features from neoliberalism and institutionalism, I explain why forest carbon markets have been more successful in the voluntary than in the compliance market. I also look at the forest carbon market's challenges with concern to prices and certifications, in addition to some of the perceived benefits and challenges such projects face. The last section of the analysis focuses on Green Resources' plantations in Uganda and serves as an example of some of the challenges carbon forestry projects face "on the ground". Different institutional arrangements influence GRAS projects and are believed to have an impact their business strategy.

In order for the reader to grasp the background for the creation of carbon markets, additionally to which markets that exist and how they function, a thorough presentation is given in the parts before the methodology chapter. Neoliberal theory provides the basic understanding for why a market solution to the climate problem was chosen. Central features in market creation are property rights and commodification of the carbon credits.

The methodology used in this thesis is qualitative and based on interviews, literature review, various reports and observation.

The results from the study show that policy processes by and large influence the market as new institutionalism emphasize. Also features from neoliberalism and critical institutionalism explain the actual results we see in the carbon markets today. Green Resources face typical challenges in carbon forestry markets. With regards to socio-economic impact and sustainability of their projects, my findings indicate that Kachung plantation operating in the compliance market is doing better than Bukelaba operating in the regulatory.

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List of Abbreviations

AAU	Assigned Amount Units
ACR	American Carbon Registry
A/R CDM	Afforestation/Reforestation Clean Development Mechanism
AUD	Australian Dollar
BFC	Busoga Forestry Company
BRICS	Brazil, Russia, India, China and South Africa
CCBA	Climate, Conservation and Biodiversity Alliance
CDM	Clean Development Mechanism
CDM EB	Clean Development Mechanism Executive Board
CERs	Certified Emission Reductions
CFR	Central Forest Reserve
CEO	Chief Executive Officer
COP	Conference of Parties
CO ₂ e	CO ₂ equivalents
CSR	Corporate Social Responsibility
DEOs	District Environmental Officers
DFS	District Forestry Services
DNA	Designated National Authority
DNV	Det Norske Veritas
EIA	Environmental Impact Assessment
EU	European Union
FSC	Forest Stewardship Council
FSSD	Forest Sector Service Department
GDP	Gross Domestic Product
GR	Green Resources
ha	Hectares
HFC	Hydro Fluorocarbon
IETA	International Emission Trading Association
IFC	International Finance Corporation
IFM	Improved Forest Management
ILO	International Labor Organization
IPCC	International Panel on Climate Change
JI	Joint Implementation

ICERs	Long-term Certified Emission Reductions
LFC	Lango Forestry Company
LULUCF	land use, land use change and forestry
NAG	Norwegian Afforestation Group
NEMA	National Environmental Authority
NFA	National Forestry Authority
NGO	Non-governmental organization
NIE	New Institutional Economics
MWE	Ministry of Water and Environment
NOK	Norwegian krone
Norad	Norwegian Agency for Development Cooperation
Norfund	Norwegian Investment Fund for Developing Countries
OECD	Organization for Economic Co-operation and Development
PD	Project Description
PES	Payment for Environmental Services
SEA	Swedish Energy Agency
SPGS	Sawlog Production Grant Scheme
tCERs	Temporary Certified Emission Reductions
VCS A/R	Voluntary Carbon Standard Afforestation/Deforestation
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Units
VVB	Validation/Verification Body
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

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The front-page picture is from Green Resources' tree nursery in Kachung (private photo)

1.0 Introduction

Carbon markets represent a relatively new creation that was invented in the light of the increased focus on climate change policies. They were an important part of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. The background for the Kyoto negotiations was the first Assessment Report on climate change published by the Intergovernmental Panel on Climate Change (IPCC) in 1990. IPCC regularly publish reports on the development on climate change, and the main message of the IPCC 2007 report was that the existence of warming of the climate system is crystal clear. Further, that increased temperatures since mid-20th century stems from anthropogenic greenhouse gas concentrations (IPCC 2007).

There are many perspectives on the creation of these markets. They can be seen as politically constructed, and prevailing literature mainly focus on three explanations for the success of carbon markets as a policy instrument (Paterson 2011). The first is that they became a key in the Kyoto protocol as a consequence of US' practice of pursuing their own political interests, and a desire of the other nations to find a solution that the US was able to ratify. The second focuses on flexibility. Many states, in particular those with a perception of high emission reducing costs, such as the US and Norway, wanted to meet their obligations to the Kyoto Protocol by investing in reduction of climate gases abroad. The last point is efficiency, as some actors wanted to find solutions to reduce emissions that are as cheap as possible, and that equalize marginal reduction costs across all actors (ibid).

Carbon trading is an intricate system with the simple goal of making it cheaper for companies and governments to reduce their emissions. Generally, carbon trade exists in two forms: "cap and trade" and "offsetting." Under the cap and trade-system intergovernmental bodies and governments hand out licenses to pollute to different industries. Instead of reducing its own emission, a company can trade their permits with others who more cheaply can reduce their emissions. Carbon offsets is financial support to emission saving projects, such as hydroelectric power stations and development of forestry projects. The UN-administered Clean Development Mechanism (CDM) is part of this scheme (Gilbertson and Reyes

2009). Even though offsets tend to be presented as emission reductions, they do not reduce pollution per se. The reason is that they do not directly contribute to lower emission rates when the projects are initiated and launched¹. They do, however, aim to contribute to development of cleaner projects in countries in the southern hemisphere that would not exist without such support. Therefore, one may assume that it reduces future emissions from developing countries. One criticism of these projects is that pollution keeps the same levels in the northern countries, while the global south possibly takes the costs socially and environmentally. On top of that, some argue that the real CO₂-reductions are non-existing.

Alongside the regulatory markets, you find voluntary offsets. These offsets give consumers and companies a chance to gain better conscience and market themselves as “green”. Voluntary markets face many of the same problems as the regulatory. Additionally, they are criticized for:

“individualizing the response to climate change, distilling the complexities of how energy is produced and used, and how land is distributed, into a seemingly simple question of authorizing a small payment with a click on the computer mouse.”

(Gilbertson and Reyes 2009, 12)

With the development of carbon markets, several ways to engage in carbon capturing have emerged. Afforestation and reforestation is one of them, and even though carbon markets are highly criticized, there exist several advantages with these projects. Among these advantages may be decreased erosion, increased rainfalls² and preservation of natural forests. Preservation of natural forests may happen due to forest plantation activity because it may change the use of natural forests to plantation forest products. Forest carbon markets have recently been subject to volatile price changes³ and increased focus on third-party certification of projects. The Norwegian company Green Resources AS is an example of a

¹ This may change in the long run as new environmentally friendly projects can outdo more environmentally harmful projects.

² This point is very controversial, but some claim it is an actual benefit, despite the difficulties that exist in proving this statement.

³ With regards to prices, all carbon markets have been affected by a slowdown in demand and oversupply of carbon credits.

foreign company that engages in the carbon forestry market. The company has acquired land in Eastern Africa to commit to this activity alongside commercial wood production. Their aim is to achieve the highest standards within both the voluntary and the regulatory market. Additionally, they commit to the highly recognized standards of the Forest Stewardship Council (FSC).

The work of Green Resources is based on an institutionalized market system influenced and formed by governments, commercial actors, intergovernmental organizations and non-governmental organizations. Per se, most forestry businesses operate within the voluntary market. Green Resources has managed to gain CDM certification for their plantation in Kachung in Uganda. Their other plantation in Uganda, Bukaleba, achieved the Voluntary Carbon Standard (VCS) in 2012 (Green Resources 2012). The voluntary market tends to be more criticized than the regulatory because it lacks an overall agreement about standards and regulations.

1.1 Aim of the Study

The overall aim of this study is to investigate institutional benefits and weaknesses in the forestry carbon markets in relation to how carbon markets work. Green Resources' projects in Uganda will be used as examples of a carbon forestry projects. During February/March 2013 I conducted fieldwork for this master thesis visiting the plantations researched, in addition to different institutions and NGOs relevant for my project. I spent three days in Bukaleba and two days in Kachung. The rest of the time was spent at various institutions in Kampala. After I returned to Norway I continued visiting relevant actors, researchers and NGOs with knowledge of the company and carbon markets. An important aspect is to look into how the carbon market got institutionalized politically and economically, and look into the challenges such projects face. Neoliberal and institutional theories are used to explain this invention. Property rights are seen as important and are therefore discussed. I look at the preconditions for how a market is built and how the different standards play out their role. With regards to different standards I compare the two plantations in Uganda because of their achievements of different standards.

A study of the carbon markets is interesting because carbon trade have grown into the largest environmental market in the world. These markets now trade for more than 100 billion US Dollars yearly, and are expected to challenge the derivatives market, which is currently the world's largest financial market, within a decade (Lohmann 2009). The case study is interesting because Green Resources is a large actor within the carbon forestry market. They have solid support from the Norwegian government in regards of funding/loans. The Norwegian Ministry of Finance signed a big contract with the company to buy climate quotas, but had to go back on the deal in the fall 2012. The reason was that GR did not get the CDM approval in time. Additionally, Norway as a country is one of the main contributors to carbon forestry projects and is highly involved in the REDD+ process.

1.2 Problem Definition and Research Questions

The main problem discussed in the thesis is:

What are the challenges of forestry carbon markets, and are they reflected in Green Resources' projects in Uganda?

The analysis more specifically aims to answer the following questions:

1. Why has carbon forestry projects been more successful in voluntary than regulatory carbon markets?
2. What influence prices in the two markets? Are there any differences between the voluntary and regulatory markets?
3. What role do certifications play in voluntary and compliance carbon markets?
4. What socio-economic influence can carbon forestry projects have on local populations? Do other institutional arrangements influence how a carbon forestry company works?

1.3 Structure of the Thesis

This thesis is divided into seven main parts. The first chapter after the introduction presents Green Resources, the company used as a case and example throughout

the thesis. More specifically, an overview of the company's background, shareholders and economic contributors, and goals and objectives are given. After this, the company's two plantations in Uganda are presented. The next part presents the carbon economy and the emergence of carbon markets. Six subsections in this part focus on global warming, climate change and forestry, the emergence of carbon markets and a presentation of the voluntary and regulatory carbon markets. Last is a presentation of how the market works in practice. The chapter after this presents the theoretical framework of the thesis, neoliberalism and institutionalism. Next is a country profile of Uganda. The chapter gives an introduction to why forestry is important for the country and look at factors influencing carbon forestry projects in the country. Chapter 6 outlines the methodology used in my research project, before an analysis of the material is presented in chapter 7.

2.0 Green Resources

This chapter presents Green Resources' history, shareholders and economic contributors, and goals and objectives. After this brief introduction to the company, their two plantations in Uganda are presented. In this presentation, the certifications related to the forestry carbon market are introduced. Their role in the carbon markets will be discussed in the chapter about the carbon economy and the emergence of carbon markets.

2.1 Background

Green Resources is a forest plantation, carbon offset, renewable energy and forest products company. It was established in 1995 by Mads Aspren, the current CEO, under the name Fjordgløtt AS (Molberg 2012). The company got renamed to Tree Farms in 2000 before it changed to the current one in 2007 (Gaarder 2009).

Aspren was formerly the chief executive of analysis for the forestry business in the investment banks Merrill Lynch and Morgan Stanley (Langberg 2012). He wanted to form a company in the forestry business, and based on his knowledge he estimated that Eastern Africa was the best location in the world for conducting this business due to land availability, low labor costs, stability of governments, good rainfall and long traditions of Nordic development aid (Green Resources 2011a).

2.2 Shareholders and Economic Contributors

The first forest was planted one year after the start-up in Bukaleba Central Forest Reserve in Uganda, and Aspren used his own and friends' savings to establish the business. Since the start, many investors have contributed with 700 million Norwegian Kroner (NOK), or equivalent to approximately 125 million USD (Langberg 2012). Among the investors you find Storebrand ASA, Steinerud AS, New Africa Ltd, Phaunos Timber Fund Plc. (Green Resources 2011b), and the well-known Norwegian investor Kjell Inge Røkke (NTBtekst 2012). Green Resources have received funding from Norad to some of their community activities. Close to Bukaleba they have contributed in building a health center, in addition to a HIV/AIDS prevention project in Mayuge district. The company has also been granted loans from the Norwegian government agency Norfund

amounting 42,3 million NOK (Norfund 2011). The last loan GR got from Norfund was given in cooperation with Finnfund (Finland). The amount they got was in total US\$25 million, and it is supposed to be paid back within six years (Bjergene 2012). The company has grown into the largest forestry operation in Africa covering 14,000 ha under production and 610,000 ha under development (Nel and Hill 2013).

2.3 Goals and Objectives

The company states that their objective is to be “Africa’s best and the world’s lowest cost, forest and carbon credit company” (Green Resources 2011c). Their targets are to generate great returns to their shareholders, offer their workers challenges and outstanding working conditions, to protect the environment, and conservation and development of the local communities where they have plantations. They want to become a leading company within the carbon offset- and energy business. Furthermore, they will absorb and store the maximum amount of CO₂ through forestation ventures and by transforming plantation forests into renewable energy (Green Resources 2011c). Their carbon markets initiative stems from tree planting, bio-energy and to manufacturing of wood products. Financial turbulence in 2007/2008, continuing today with the Euro crisis, has significantly lowered the profitability of carbon markets. GRAS has, however, sold their credits during the last years and have had an income of one billion dollar stemming from these credits (Bjergene 2012). The CDM credits generated from the plantation in Kachung are sold to the Swedish Energy Agency, VCS from Mwenga in Tanzania is sold to the CarbonNeutral Company (Green Resources 2012). Parts of the revenue from these sales are supposed to go back to the local communities surrounding the company’s many plantations.

GRAS use a win-win narrative including environmental, developmental and economic benefits, often used in what may be considered as a new and green neoliberal approach. As mentioned above, GRAS has grown large, and they currently have plantations in South Sudan, Tanzania, Mozambique and Uganda. The land areas leased by the company cover more than 1000 km² (about the same size as Hong Kong), and they have planted forests on about one fourth of the area today. The goal is to plant about half the area within a couple of years. The

company employs around 4000 employees, mostly hired in Africa, and 3000 as seasonal workers (Langberg 2012).

For the purpose of this study, I have focused on Green Resources' two plantations in Uganda: Bukaleba and Kachung. GRAS' subsidiaries in Uganda, Busoga Forestry Company (BFC) and Lango Forestry Company (LFC) manage them. Formerly, Green Resources operated under different names, but chose to rename the plantations into local names. The renaming of the plantations may have been a strategic move so that the local populations could more easily identify with the company and their plantations.

2.4 Green Resources in Uganda

Green Resources has two plantations in Uganda. Both are running operations, and according to the manager in Uganda there are currently no plans of expanding the operations further⁴. The plantation land is leased from a Ugandan government agency, National Forestry Authority (NFA), on a 50-year lease. Generally, NFA operates with lease contracts where you pay for the actual planted land, making the payments rise as the plantation grows. Bukaleba and Kachung are both carbon forestry projects, and are being played out in the complex and weakened environmental sector in Uganda. The areas where the plantations are located are characterized by rapid deforestation. The annual deforestation in the country is estimated to 1.9%, leading to a loss of 90.000 ha of forests per year (National Forestry Authority 2009).

2.4.1 The Bukaleba Plantation

The Bukaleba forest is located alongside Lake Victoria in Mayuge district, 120 kilometers east from Kampala, the capital of Uganda, and 40 kilometers from the industrial center in Jinja. The total area is 9,165 hectares, and approximately 4500 are seen as plantable. The rest are set aside for conservation, infrastructure, and 500 ha for community land and a riparian buffer zone. By 2012 the plantation was

⁴ GRAS has chosen not to expand their operations in Uganda because available land areas have been subject to conflict (interview Isaac Kapalaga, 13.02.2013).

4,182 hectares large, and is managed by a subsidiary of GR, Busoga Forestry Company (BFC) (Green Resources 2012).

Figure 1: Map showing the location of Bukaleba Forest Reserve⁵



Source: Google.com

The plantation consists mainly of two types of trees accountable for 96% of the plantation (Green Resources 2011d). Seventy-eight percent of the area is planted with *pinus carribea*, also known as Caribbean pine. The tropical pine is fast growing (James Cook University 2013), and is exotic in Uganda as its natural habitat is in the Caribbean and southern America (World Agroforestry Centre 2013). The pines are grown for sawlog with 20-year rotations (Green Resources 2011d). Eighteen percent of the area is covered with *eucalyptus grandis*. The species is native in Australia, and therefore imported artificially to Uganda. The tree is fast growing, large, and known to be one of the most productive plantation eucalyptuses (Florabank 2013). In Green Resources' plantations it is grown for utility poles on 10-12 year rotations (Green Resources 2011d). The last 4% are indigenous hard woods (Green Resources 2012). The average altitude of the plantation is 1,100 meters with fertile soil conditions. The average temperature is 23 degrees Celsius, and the average rainfall is 1,250 mm per year with two rainy seasons from March-May and September-November (Green Resources 2011d).

⁵ The red circle shows the approximate location of Bukaleba CFR.

2.4.2 Scholarship Program

BFC joined a scholarship program financed by the European Union and the Sawlog Production Grant Scheme (SPGS) in 2004 (Green Resources 2011d). The SPGS is an action taken by the Government of Uganda's Ministry of Water and Environment, and is based on a public-private cooperation. Both the EU and the Norwegian Government used to fund it, but due to a corruption scandal in the government and expiration of the contract, Norway decided to withdraw its funding in the fall of 2012. SPGS is managed by a Steering Committee that consist of representatives from the Government of Uganda and different development partners (SPGS 2009). The program includes extensive training and grants covering 50% of the planting expenses for 1,000 hectares of Green Resources' forests in Kachung and Bukaleba.

2.4.3 Certifications

GRAS has managed to obtain two high standard certifications on their plantation in Bukaleba. It became certified under the Forest Stewardship Council in April 2011 (Green Resources 2012). In addition, the carbon credits from the 2134 hectares of the plantation got certified with Voluntary Carbon Standard (VCS) (Nel and Hill 2013). The credits are not yet sold, but the volume available is 25,350 VCUs. The project is expected to deliver 100,000 tCO₂e in the period 2012-2015 (Green Resources 2012). The Bukaleba plantation has not got approval of A/R CDM and the Climate, Conservation and Biodiversity Alliance (CCB) standard. Because the planting in Bukaleba started before 1999, the plantation cannot get the CDM certification. It should be possible to obtain the CCB Standard, and this certification is even promoted to complement the Voluntary Carbon Standard that Green Resources has obtained. It is uncertain whether the company has tried to get this certification, but informants expressed that this failure was caused by failure to demonstrate sufficient net social benefits. Bukaleba Central Forest Reserve (CFR) has by NFA a defined encroachment level

⁶ of 49,67%. Four villages are located within and in the buffer zone of the forest reserve. I visited Nakalanga, Bukaleba and Walumbe.

2.4.4 The Kachung Plantation

In 2007, Green Resources bought the Norwegian Afforestation Group (NAG), and by this acquired the 660-hectare Kachung Forest (Green Resources 2011d). NAG got a planting permit from NFA in 1999, and the designated area of GR accounts for most of the plantation (Green Resources 2012).

The forest is located in Dokolo District in Northern Uganda, about 30 kilometers south by car from the city of Lira. The plantation lies at an altitude averaging 1000 meters above sea level, and the average temperature is 28 Celsius (Green Resources 2011d). Kachung is located in a district with rainy seasons similar to the Bukaleba plantation. The plantation area covers 2,670 hectares of land, in which approximately 2,100 are useful for planting trees, 530 hectares are set aside for conservation, and the remaining 73 hectares are to be used to build infrastructure (Green Resources 2011d). By 2012, the plantation size was 2,021 hectares. The plantation is run by a subsidiary of Green Resources, Lango Forestry Company (LFC). LFC plant 90% *pinus carribea hondurensis*, and 9% various eucalyptus species on the plantation (Green Resources 2012). The overall purpose with this plantation is to grow trees for sawn timber, utility pole production and carbon sequestration under the A/R CDM afforestation methodology. Pine trees grown for sawlogs are cultivated with 20-year rotations, and 160 hectares of this wood have gained resources from SPGS grants. The eucalyptus trees are grown with 10-year rotations and are used for utility poles.

⁶ Encroachment level is a term used by NFA to define how much land that is inhabited within the central forest reserves. Hence, encroachment means illegal settlement/illegal occupation of land. The word does not say anything about the socio-economic situation of the people living off the land, nor does it say anything about how long the settlements have been in the CFR.

Figure 2: Map showing the location of Kachung Forest Reserve in Uganda⁷



Source: Google.com

2.4.5 Certifications

Kachung got the Forest Stewardship Council (FSC) certificate and the Climate, Community and Biodiversity Alliance Standard validation (CCBA) in 2011. In 2012 they got CDM certification. It was the first of GAS projects to get A/R CDM certification. The Certified Emission Reductions (CERs) are sold to the Swedish Energy Agency (SEA), and is supposed to be the longest carbon transaction deal in the world lasting from 2012-2032; it is worth more than \$4 million. The project is estimated to deliver 30,000 tCO₂e carbon credits in 2012 and 240 000 in 2017 (Green Resources 2012). The company has managed to attain two high standard certifications they did not obtain in Bukaleba. This stems, according to interview respondents, from the fact that more effort put into community relations. Furthermore, villages in the area where Kachung is located borders the forests. In Bukaleba they are placed within the plantation. NFA defines the encroachment levels to be significantly lower (10,03%). Hence, conflict over land is lower in Kachung than in Bukaleba.

⁷ The red circle represents the approximate location of Kachung CFR.

Figure 3: Overview Bukaleba and Kachung Central Forest Reserves

	Bukaleba	Kachung
Name of subsidiary	Busoga Forestry Company	Lango Forestry Company
Carbon Standard	VCS	A/R CDM
Carbon credits sold	For sale	Sold to the Swedish Energy Agency
Other certifications	FSC	FCS+CCB
Villages in-/outside the CFR	Inside	Outside
Area in hectares	9165	2670
Plantable area in ha	Ca. 4500	Ca. 2100
Location in Uganda	East	North
Community land	500 ha	No reliable information obtained
Level of encroachment in the plantation'	49,67 %	10,03 %

' Encroachment are all activities defined as illegal in Central Forest Reserves by NFA

3.0 The Carbon Economy and the Emergence of Carbon Markets

This section is a literature review explaining the background for the development of carbon markets. It starts with a short analysis on the issue of global warming and its significance, before proceeding to explain the relationship between climate change and forestry. The next section focuses on the emergence of carbon markets with special attention on the voluntary carbon market and the Verified Carbon Standard, and the regulatory Clean Development Mechanism. The last section focus on how the market works in practice with focus on banking, price mechanisms, certifications and incentives of the relevant actors. Since the thesis focuses specifically on a carbon forestry project, examples from forestry are provided in the different sections.

3.1 Global Warming

Increasing CO₂-levels may affect the biosphere directly, but the main cause for concern is the effect the CO₂ has on greenhouse gases (GHG) contributing to warming our planet too quickly (Swingland 2003). Scientists and researchers across the globe acknowledge that the human made emission of climate gases, including the release of carbon, into the atmosphere is disrupting severely the natural state of our planet. Skeptics, on the other hand, argue that the global warming is a part of the natural variability in the planet's temperature. Most scientists do not support the last view anymore (Bayon, Hawn and Hamilton 2007).

The greenhouse gases let the sunlight into the Earth's atmosphere, but it hinders heat released from the sun's warming of the planet to get back out. Six GHGs are commonly included in carbon credits: CO₂, nitrus oxide, methane, sulfur hexafluoride, hydro fluorocarbons, and perfluorocarbons. GHG pollutions are traded in carbon credits equal to one metric ton of CO₂ reduction (Bayon, Hawn and Hamilton 2007). The current GHG emissions are 20% higher than year 2000 measures. Before the end of the 19th century, our planet had been cooling down since about year 1000, and the temperatures have risen about 0,6 degrees Celsius the last 150 years (Alfsen 2001). Throughout the same period, carbon emissions

have also increased sharply. Since mid 18th century, there has been an increase of 31% CO₂ in the atmosphere, believed to be accountable for 60% of the GHG-induced global warming (Swingland 2003).

The goal of not warming our planet more than 2 degrees Celsius by 2020 will not be met with today's emission rates. The work on diminishing GHGs got negatively affected by the economic downturn in 2008 and 2009, but in spite of crisis in the Eurozone and difficulties in the United State's economy, the focus of reducing pollution is now picked up again (Höhne et al. 2012). Technically, it is possible to meet the two-degree target by 2020; the challenge is the present pace of action.

One understands why there is a tremendously large focus on minimizing the current and future carbon emissions viewing the numbers above. One of the urgent opportunities, which embrace the market and business Green Resources operate within, include biosphere management. Companies can engage in this by preventing deforestation, and committing in reforestation/afforestation of unused land, and land unsuitable for agricultural use.

3.2 Climate Change and Forestry

Forests are estimated to have covered about 57 million km², or almost nine times the size of Russia, before humans engaged in agricultural activities (Goldewijk 2001, referred to in Swingland 2003). Before the agricultural revolution 8000 years ago, forests accounted for disclosure of more than twice the amount of carbon in the preindustrial atmosphere, and circulating 10% of all atmospheric CO₂ every year through photosynthesis (Swingland 2003).

The human impact on carbon emissions escalated during the industrial revolution, and by 1900 approximately 20-30% of the planet's original forest area had been lost, accounting for an increase of about 45% more atmospheric CO₂ since 1850 (Swingland 2003). Since the major industrialization of the oil industry emerged, carbon emissions from fossil fuels surpassed the emissions from deforestation. After the energy industry (25,9%), the second largest emitting sector is the remaining industry (19,4%). Land-change and deforestation of tropical forests,

however, still contributes about 15-20% of today's human induced carbon emissions and is the third largest emitting sector (Bellassen et al. 2008; Werf et al. 2009)⁸. These numbers are disputed. In 2008 some researchers recalculated emissions from deforestation, and found that emission rates were around 12%, which is considerably lower (Werf et al. 2009). In 2010, there was a decrease of 15% in GHGs from forestry (Höhne et al. 2012). Nevertheless, forestation programs and forestation management is acknowledged to play a significant role in combating climate change and the increasing emissions of CO₂ (Swingland 2003).

The different literature reviewed show that land-use, land-use change and forestry (LULUCF) activities are seen as important for global climate change mitigation. These activities include forest activities. The forest carbon market was worth 237 million USD at its peak in 2011. Values increased by 33%, while transaction volumes declined with 22% from 2010 (Peters-Stanley, Hamilton and Yin 2012).

3.3 The Emergence of Carbon Markets

Carbon markets were created as a response to the recognition that global warming is a fact. In 1997, 37 industrialized countries and the European Community organized a summit in Kyoto to reduce emissions from climate gasses. The public debate in the Kyoto negotiations focused on how to make a global market for trading carbon credits in order to reduce human activity induced climate change. With the objective that one ton of a greenhouse gas emitted anywhere in the world affect every single country; a global market would be a desirable outcome giving everyone an incentive to reduce their emissions.

By end 2012 five major carbon markets existed

1. The European Union's Emission Trading System (EU ETS)
2. The Clean Development Mechanism (CDM)
3. The Regional Greenhouse Gas Initiative (RGGI) northeastern United States

⁸ The numbers do not take into account the carbon emissions caused by degradation of forests. Werf et.al (2009) state that deforestation is the second largest anthropogenic source of carbon dioxide to the atmosphere.

-
4. New Zealand's Emission Trading Scheme
 5. Voluntary markets
- (Newell, Pizer and Raimi 2013)

Carbon prices in all markets have declined since 2008 due to global recession. Despite financial turbulence, carbon markets are by far the largest environmental market in the world, both in terms of volume and market value (Newell, Pizer and Raimi 2013).

Carbon dioxide is an intangible product. The nature of the commodity demand integrity and value stated by how they are defined, represented and guaranteed (Merger and Pistorius 2011). WWF (2008) states that the quality of forestry carbon projects depends on whether they are:

- Real
- Supplementary
- Quantifiable
- Independently verifiable
- Perpetual
- Unique
- If they have sustainable development benefits

Information asymmetry between the seller and buyer are especially a problem in carbon markets. In general, low quality carbon credits are cheaper to develop than those of higher quality. If there is too little focus on quality in the market there are considerable risk for opportunistic behavior of the project developers (Merger and Pistorius 2011). A consequence may be that high-quality projects lose their competitiveness to the lower quality projects, as buyers will purchase the low-cost carbon credits. This assumption is in accordance with rational choice theory⁹, and leads to a "race-to-the-bottom" because the purchaser is not aware of the differences in quality on the products. The global financial instruments enhanced under Kyoto include CDM and the parallel voluntary carbon markets.

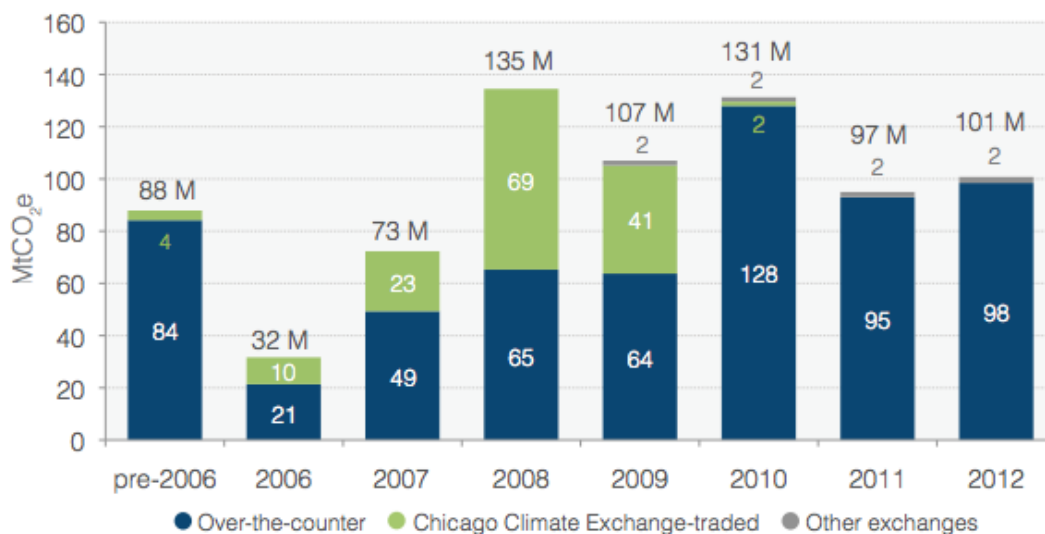
⁹ The rational choice perspective is presented in the theory chapter.

3.4 Voluntary Carbon Markets

Voluntary carbon markets (VCMs) existed prior to the 1997 Kyoto negotiations, but grew alongside the regulatory market after it was created. VCMs are noticeably smaller than the Clean Development Mechanism (CDM) with 0.1% of the value and 0.02% of the volume in the global carbon market (Peters-Stanley et al. 2011). While there has been a decline in the regulatory framework market, voluntary markets have faced growth: from 2009 to 2010 the market grew by 34%. Forty-five percent of these credits were land based, and 29% were related to the Reducing Emissions from Deforestation and Forest Degradation (REDD)¹⁰ carbon market showing that forest-based projects are an important part of the VMCs (Peters-Stanley et al. 2011). In terms of financial value, VCMs have grown rapidly with an increase from \$43 million revenues in 2002 to a peak of \$705 million in 2008. Similar to other carbon markets and for the same reasons, the voluntary market has decreased in market value and issued credits equivalent to 95 million metric tons worth \$572 million in 2011 (Newell, Pizer and Raimi 2013, 131).

¹⁰ REDD is an effort initiated by the United Nations to create a financial value for the carbon stored in forests. The idea is to offer incentives for developing countries to reduce emissions from forested lands and invest in low carbon projects. REDD+, the extension of REDD includes preservation and sustainable management of forests.

Figure 4: Historical offset demand by transacted volume, all voluntary carbon markets



Note: Based on 763MtCO₂e of offsets transacted and reported to Ecosystem Marketplace over seven survey years.

Source: Forest Trends' Ecosystem Marketplace (Peters-Stanley and Yin 2013)

Historically, many voluntary organizations occupied with environment were engaged in developing VCM-projects. The share of non-profit initiatives, however, has decreased compared to for-profit; especially after 2005. Today, 85% of the VCM are occupied by corporate initiatives, compared to 30% before 2002 (Peters-Stanley et al. 2011). Many organizations offer these credits and there are no overall institutionalized standard in the market for certification and monitoring. A consequence is that standards for evaluation and monitoring of the greenhouse gases are less rigid than for example CDM. Benefits and disadvantages come with such a system: on one side it reduces bureaucracy, but on the other side it could lead to certification of credits that do not deliver the listed benefits (Benessaiah 2012).

A result of the lacking regulation of the VCMs is that prices have tended to stay at a lower level than CDM credits. Another consequence is a lack of legitimacy of the standards. However, pressure from institutional environment on standards safeguards a minimum quality on the carbon credits and serve as an insurance mechanism for the reliability of standards (Merger and Pistorius 2011). Efforts to improve increased carbon quality have therefore been taken. Standards and registers have been developed to ensure that double counting does not occur and

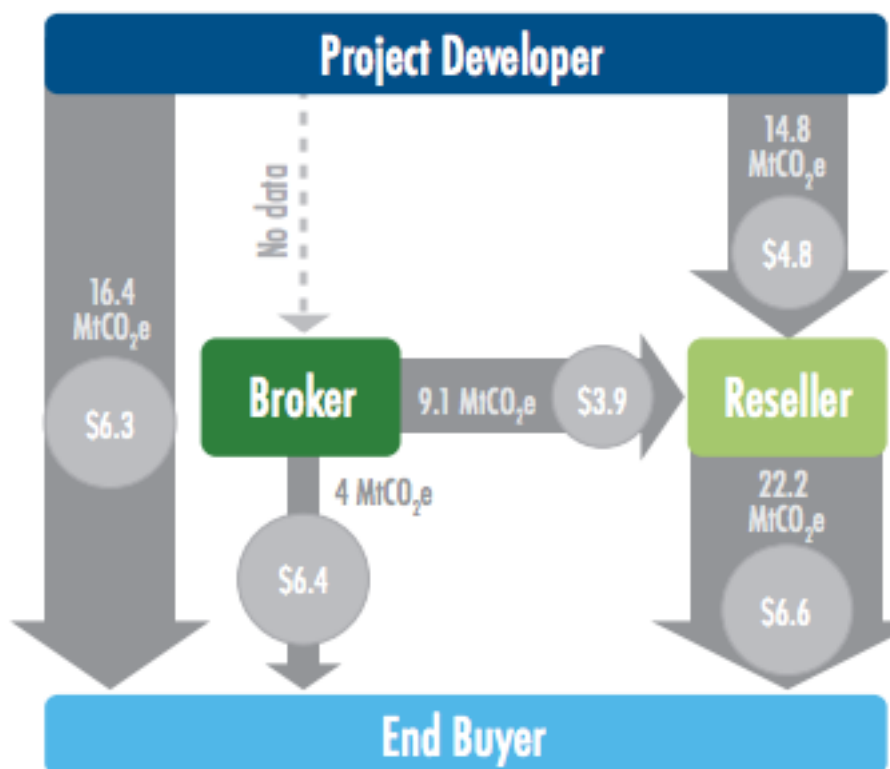
to establish methodologies and rules (Benessaiah 2012). Third-party certification is seen as a fundamental factor for market functionality as it offers quality assurance mechanisms to hamper moral hazard and information asymmetry (Merger and Pistorius 2011). Transaction costs are also decreased as less self-monitoring of the product bought is necessary. Project creators demand standards that are well defined and easily applicable to the lowest cost possible. The aim is to get a high potential to attain good prices on the carbon. Buyers want that standards are legitimate, credible and that no public criticism occurs after they have purchased certified carbon credits (Merger and Pistorius 2011).

3.4.1 Carbon Forestry in the Voluntary Markets

The over-the-counter (OTC) voluntary market comprises the largest amount of forestry-based carbon credit transactions. The background is mainly that the Emission Trading Scheme (ETS) of the European Union has chosen not to include forestry in its framework (Merger and Pistorius 2011). EU's choice is based on the complexity of forestry credits with regards to uncertainties related to land tenure systems and because such activities target a variety of stakeholders (European Union 2008). Furthermore, many developing countries lack sufficient monitoring systems. Hence, methodological issues such as liability and permanence are insufficiently addressed. The last issue EU address is the problem of permanent credits. This means that Afforestation/Reforestation (A/R) CDM credits have to be replaced after a certain period of time, and that a provider of credits can go out of the market. If that happens, another body needs to take on the responsibility to guarantee environmental integrity (European Union 2008).

Another common trade option in this market is direct purchase from one provider. The OTC voluntary market is characterized by a variety of different actors originating from different contexts. The Voluntary Emission Reduction Credits (VERs) are generated on a project basis and trade of the credits happen on a voluntary and individual basis. There are no international body controlling the trade, nor does it exist any universally accepted rules and regulations controlling the quality of the carbon credits (Merger and Pistorius 2011).

Figure 5: Transacted volume and average price by buyer and seller types in the OTC market in 2012



Notes: Based on 324 organizations reporting 66 MtCO₂e associated with business roles and buyer types.

Source: Forest Trends' Ecosystem Marketplace (Peters-Stanley and Yin 2013)

As mentioned above, criticism of the market finds its arguments within this context. Much attention has been given to the legitimacy of forest carbon credits in the media and other public arenas. The discussion often focuses on whether the forest carbon credits harm peasant people and environment. Measurement, monitoring and verification of forest carbon stocks in addition to satisfactorily handling of forestry-specific uncertainties such as lastingness and leakage in forest carbon projects are often subject to discussion (Merger and Pistorius 2011). Carbon credits from forestry are complex products, and it can be hard for the customer to understand what they are actually purchasing.

NGOs have developed certification schemes the last years, but none have succeeded in gathering all aspects a standard should include, such as social and environmental aspects, monitoring, validation and verification standards, in addition to registration of VERs. The Gold Standard is the one closest to fulfilling

all the criteria. These standards are increasingly important, but most forestry carbon companies need certification from different organizations in order to cover all aspects needed to gain trustworthiness and transparency in the market.

3.4.2 The Verified Carbon Standard

The Verified Carbon Standard (VCS) was an initiative taken by a collection of business and environmental leaders with the aim of improving quality assurance in voluntary carbon markets. The first VCS requirements were defined in 2005 by a team of global carbon market experts from the International Emission Trading Association (IETA) and the World Economic Forum. It is a NGO located in Washington, and Det Norske Veritas (DNV) verifies many of the projects under this certification.

A variety of documents and verifications take place to gain VCS certification. This includes several registration documents; project description, validation report registration representation, and validation representation. The project description includes project starting date, scale, crediting period, baseline scenario, additionality and methodology deviations, in addition to promises of socio-economic development for local communities (Busoga Forestry Company Co. Ltd and Green Resources 2012). An external validator, in Green Resources' case, Det Norske Veritas (DNV), carries out the validation report. The purpose of this validation is to have a third party securing proper project design and compliance with relevant VCS criteria (Decq and Espejo 2012). The two last documents are defining concepts and stating who the involved actors in the process are. In addition to registration documents, issuance documents including a monitoring report, issuance representation, verification report and verification representation are needed. The last set of reports is made to verify that project operates in line with the descriptions and criteria in the first set of documents.

To gain VCS certification, any methodology developed under the UN CDM can be used (Verified Carbon Standard 2013). In addition, VCS list fourteen different methodologies for forestry on their home page. The documents needed in the process include information about the projects methodology, criteria, process, findings and so on. To gain VCS is a detailed process, and involved stakeholders

are interviewed. Reviewing the verification report of Green Resources, it becomes clear that the company's management and the NFA are interviewed (Decq and Espejo 2012). Other stakeholders, including local NGOs, local environmental offices and the rural population settled in and alongside the plantation, do not seem to be consulted in the process. This is different from the CDM certification process.

The quality of the research conducted in relation to VCS verification may be the reason why the standard is so successful in the voluntary carbon market. VCS kept its place as number one among independent standards in 2011 with 28% market share. In 2010 most of the VCS credits traded stemmed from REDD projects, but in 2011 also VCS Afforestation/Reforestation and Improved Forest Management (IFM) projects proved important. Both A/R CDM credits and American Carbon Registry (ACR) forest carbon projects sold at record volumes (Peters-Stanley, Hamilton and Yin 2012). This may show that demand for certified forestry credits are present in the market. The average price for VCS projects was 5.2 USD in 2012 (Peters-Stanley and Yin 2013). OTC credits from forestry in general increased from \$4.2/tCO₂e in 2009 to \$5.6/tCO₂e in 2010 (Diaz, Hamilton and Peters-Stanley 2011).

3.5 The Regulatory Market: the Clean Development Mechanism

The Clean Development Mechanism was set up as part of the Kyoto Protocol. The background for this initiative was dissatisfaction with the Joint Implementation (JI) concept. The JI projects allow industrialized countries to set up carbon reducing projects in other industrialized countries¹¹. JI excluded the developing countries from the first commitment period, making it challenging for them when they also had to commit to emission reductions. CDM has its own market for certified emission reductions (CER) undertaken by developing countries that can be used for compliance in other programs (Newell, Pizer and Raimi 2013).

The CDM is not a cap-and-trade system, but an instrument to convert emission reduction efforts in emerging economies into credits that can be used to balance capped emissions somewhere else. It was created to offer additional flexibility for

¹¹ Referred to as Annex 1-countries in the Kyoto Protocol.

industrialized countries that wanted to meet their specified obligations under the Kyoto Protocol. In 2011, about 300 tons of offsets were issued under the CDM making it the second largest market for carbon credits after the EU ETS (Newell, Pizer and Raimi 2013). Credits generated through the CDM is called Certified Emission Reductions (CER) and more than 6200 projects had been approved and more than one billion offset credits had been issued in the whole market by 2011 (Newell, Pizer and Raimi 2013).

The EU ETS has been a major purchaser of CERs, but they exclude certain types of credits as for example A/R CDM credits (Newell, Pizer and Raimi 2013). The main reasons is the problem of non-permanence and other risks related to forestry activities. This is also the reason why carbon credits generated from A/R CDM activities are not regular CERs. Credits obtained through forestry are defined as short-term credits (tCERs) and long-term credits (ICERs), and these have different durations of validity. Generally, few afforestation/reforestation CDM projects have been implemented to forestry projects in developing countries during the first commitment period of the Kyoto Protocol. By May 2011 22 A/R CDM projects were registered compared with over 3000 CDM registered energy projects (UNFCCC 2011b in Yamanoshita and Amano (2012)).

By February 2013, eight such projects were registered in Uganda. Lack of finances, competing existing commitments of public staff and insufficient employment within the Designated National Authority (DNA) have made the approval process for CDM in Uganda slow (Peskest, Schreckenber and Brown 2011). The National Environmental Management Authority (NEMA) is involved in the authorization process for CDM projects. They make the Environmental Impact Assessment (EIA) guidelines the District Environment Officers (DEOs) use in the approval process of CDM. The offices working on these issues generally have low capacity to assess the projects making the process slow and less meaningful in practice. Given the long-term perspective on tree plantations and the complicated conditions in many rural areas with poor communities, projects that do not include local stakeholders have a strong possibility of failing (Boyd, Gutierrez and Chang 2007). The CDM was developed with the dual goal of sustainable development for developing countries and reductions of greenhouse gas emissions in the most cost effective way possible (Benessaiah 2012). These

synergies exist in theory, but they are limited, and by some even presented as contradictory, in practice.

Financial, institutional and administrative problems were found in many A/R CDM project developments. Two sources of problems were

1. Complex rules
2. Prices on expiring temporary credits

(Dargusch, Harrison and S.Thomas 2010).

Before credits can be generated and sold, it is a lengthy process to register such projects. The administration costs are quite high and this hinders many actors from engaging in the market. Strict rules and regulations have to be met and all A/R CDM projects have to be approved by the CDM Executive Board in Bonn, Germany. A Product Design Document (PDD) has to be developed by the project developers themselves. The document must consist of estimates of GHG mitigation potential, an additionality test, description of the baseline, and the presentation of the public stakeholder consultation. To gain CDM approval, the local public has to be properly consulted (through local governments, NGOs, households and so on) in order to give them a chance to express possible concerns about the project (Point Carbon and Perspectives 2008). Additionality is another central concern to get approval. The project document must prove that the project would not have been realized to sequester the same amount without the ability to sell climate quotas through CDM. It is worth mentioning that the two criteria mentioned here are subject to criticism as it is e.g. easy to fix numbers.

Despite the bureaucracy linked to the CDM certification process, the international market for temporary credits from A/R CDM projects created exceptional market value in 2011. The reason is the high volume of credits contracted before the end of the Kyoto Protocol's first period (Peters-Stanley, Hamilton and Yin 2012). Generally, CDM projects cannot have started before December 31st 1999. The result is lack of approval of many projects because they started at an earlier phase. They therefore have to sell their credits in the voluntary markets.

3.6 How does Carbon Markets Work in Practice?

When a buyer purchases carbon it takes place in a single transaction where the customer gets permanent ownership to the carbon. This structure poses a risk for sellers and buyers, as forests are biological assets (Bigsby 2009). The most common risks linked to forestry are fires, winds and pests. All these occurrences may reduce the amount of stored carbon, and can expose the forest owner of reduced accountability for the carbon they have sold, but no longer have. Risk is also linked to the nature of emerging markets. Carbon finance is a new creation that is subject to changing legislation, technology innovations and climate change science (Bigsby 2009). Risk and uncertainty affect prices negatively. Future price changes are negative for forest owners that may jeopardize their future liability, as forest loss may be more costly than the carbon money can cover. The risk posed to buyers is that they may not pay the correct price for the product they are purchasing.

Dealing with intangible products, carbon trade entails a defined carbon asset. Chicago Climate Exchange created a financial instrument defined as 1 metric tons of CO₂. When carbon is traded agreements are built around increases of 100 metric tons of CO₂ (Bigsby 2009). A mechanism for converting carbon sequestration from forests into a measure of carbon that meets the specific definition of a carbon asset is necessary to realize a financial asset that can be sold in the market. The complexity of the construction of these products is very high, and various measurement methods and regulations exist, and comparison to advanced financial instruments and institutions can be drawn.

The process include calculations of CO₂ equivalents, a set time frame stating how long the asset is under contract, and a plan over the forest management that results in the CO₂ equivalence (Bigsby 2009). The project developer is obliged to undertake a long-standing commitment to maintain a forest. Common requirements are commitment to a long-term forest estate plan to monitor harvest and reforestation activities. Restrictions on species chosen are also common. Together, this limits the wanted forester to be one with a normally structured forest with regular harvest, or one that never cuts down the trees (Bigsby 2009).

3.6.1 The Role of Banking and Brokers

The length of the commitment periods is root to some of the constraints of the carbon markets. Infinite banking and to a lesser extent, borrowing, are permitted within the commitment periods. The emission cap for a given period is fixed, but there is insecurity about emission caps for future commitment periods (Fankhauser and Hepburn 2010). Permitting banking and borrowing leads to flexibility and may even out prices and costs with increasing cost effectiveness and without negatively affecting the climate (Fell, MacKenzie and Pizer 2012). Banking carbon allowances address the problem of uncertain costs because no trading between periods forces actors to handle shocks straight away. Despite clear benefits of allowing banking, there are also some disadvantages. Banking connects expectations over time so that present prices are affected by expected future prices. The government's commitment to their carbon policy and the public's perception of their commitment also influence prices (Newell, Pizer and Raimi 2013).

Another important role include the role of a broker. The broker matches specific sequestration requirements the buyer has to the owner fitting his needs. He/she is paid for being the intermediary but does not own carbon credits in any sense (Bigsby 2009). Brokers are not required and some buyers purchase credits directly from the provider. However, brokers may limit transaction costs for customers and serve as a reliable option in securing good carbon credits. Examples of brokers in the market involve:

1. Trexler Climate and Energy Services
2. Natsource
3. EcoSecurities
4. CO₂e
5. Carbon TradeXchange

(Taiyab 2006, 15)

3.6.2 Price Mechanisms

Two basic mechanisms of all goods apply to the carbon market; first of all, willingness to pay for a good is limited. Second, the costs of mitigation are considerable. Cost-effectiveness in carbon markets is therefore essential for it to

work properly. One alternative that helps reduce costs is to allow for flexibility between different policy instruments (Fankhauser and Hepburn 2010). The price on carbon is a function of supply and demand. Price volatility is argued to be a natural part of the changing fundamentals in the market.

Following market transactions Peters-Stanley, Hamilton and Yin (2012) found that prices followed general market principles. The prices increased as credits moved up the value chain from project developers all the way to the end users. There was a distinction between the regulated and the voluntary markets; in voluntary markets, developers traded the largest volumes directly with end-users to prices below average, and smaller volumes to secondary markets for a somewhat higher price than average.

Prices are also a function of policies set by governments and supranational institutions. There are a few options when it comes to market-based mechanisms to carbon mitigation. One option is carbon pricing through taxes; another is quantity-based mechanism as the trade- and cap-scheme we have today. Some suggest that combinations of these two mechanisms would be a viable option to make the market more effective than it is today (Fankhauser and Hepburn 2010). A tax system is interminably elastic, while an allowance system is inelastic as the amount of allowances are inelastic. By using a hybrid of the two systems, policy makers could create a desired supply curve fitting the international market for climate quotas.

The fact that emission caps for a given period is fixed, in addition to insecurity about emission caps for future commitment periods, influence prices significantly. This makes the prices less stable than they would normally be if investors could foresee endurance in the market despite sequentially divided periods negotiated through climate negotiations. Short periods allow governments the flexibility to form their policies after changes in research on climate change and technology developments. They also allow periods to coincide with electoral cycles (Fankhauser and Hepburn 2010). Both too low and too high prices may suggest that the market design is not sufficiently efficient (Fankhauser and Hepburn 2010).

Prices in forest carbon projects in 2011 exceeded prices twice as high as the year before. Domestic-only markets drove the prices, and may not reflect the price and value achieved in the international market. In general, the average price in this market is a reflection of diverse prices varying greatly from less than \$1/tCO₂e to more than \$100/tCO₂e (Peters-Stanley, Hamilton and Yin 2012).

Figure 6: EUA and CER prices 2008-2013



Source: Redd-monitor.org (Lang 2013)

3.6.3 The Importance of Certifications

The risks of non-permanence and leakage associated with carbon forestry projects make sound certification of projects important. Other significant factors are consideration of biodiversity and local population, as forestry carbon projects demand large areas of land. A selection of different standards, protocols and verification methods exist to regulate carbon offsets. Some of these are:

1. CDM/JI Standard – set up under the Kyoto Protocol by international regulatory authorities.
2. The Gold Standard – created by several NGOs for energy projects.

-
3. The Climate, Community and Biodiversity (CCB) Standards – created by many NGOs and private sector for land-based carbon projects.
 4. Self-developed standards – formed by individual providers of VERs.
 5. Labeling Schemes – developed by some providers in the market.
- (Taiyab 2006, 9)

Since the different certifications cover different aspects, there is often useful to have more than one certification in a project. Twenty-nine percent of the credits sold in 2011 had standards such as the Climate, Community and Biodiversity Alliance Standards (CCB), and projects in this classification got higher prices in the market (Peters-Stanley, Hamilton and Yin 2012). Independent standards presented different prices, and prices were in general determined by project attributes: the type, the project and the stage the project had reached at time of transaction. Generally, highly recognized certifications are the Forest Stewardship Council (FSC), CDM, CCBA and the Voluntary Carbon Standard (VCS). Higher prices indicate that the willingness to pay increase as companies and private persons perceive certifications as insurance that they are buying a high-quality product.

Despite the quality reassurance certifications are seen to give, some remain skeptical towards the use of these. There is an ongoing discussion about the legitimacy of the certification arrangement, and many are skeptical that certifications deliver all listed co-benefits and environmental effects. A common argument related to this issue is that companies pay verifiers to obtain standards and certifications. This again means that the providers of verifications rely on companies' business models to sell their products. A report made by the World Wildlife Fund (WWF) found that one fifth of the Certified Emission Reduction (CER) in the primary CDM market came from “non-additional” projects that never should have been approved. The reason is that the projects would have been realized without the extra income that is generated from sales of carbon credits. One of the main verifiers in the CDM market, SGS, got suspended temporarily in 2009 by the CDM Executive Board because they were unable to prove that several projects were properly audited (Murray 2009). In other words, they could not prove that all projects fulfilled the additionality requirement that is an important precondition for obtaining CDM certification.

3.6.4 Incentives and Motives Driving the Carbon Markets

The idea of creating a carbon market in the first place came both from corporate and political initiators. Incentives to purchase carbon credits range from the search for profit maximization to more altruistic motivations. Speculation in order to gain profits exists in all markets, and financial instruments are constructed in a way that makes sale and resale possible.

The carbon retail market is small and disintegrated. Retailers are predominantly based in Australia, Europe and the U.S., and are estimated to be around 30-40 globally (Taiyab 2006). Research shows that providers of carbon credits in the Voluntary Carbon Markets consist of a diverse collection of institutions ranging from non profit-initiatives to for-profit companies interested in promoting environmental and social concerns (Bayon, Hawn and Hamilton 2007; Taiyab 2006). It is clear that most private companies engage in carbon projects in order to earn profits. Even though they want financial returns on their investments, they can also have altruistic motives.

The markets' customers can be divided into five categories:

1. Businesses
2. Individuals and celebrities
3. Governments
4. Non-profit organizations
5. International conferences and events

(Taiyab 2006)

They all engage in carbon offsetting with different aims. On the purchaser side, a variety of actors choose to engage in VCMs for different reasons such as marketing, a response to an increased focus on Corporate Social Responsibility (CSR) and green technology, increased environmental reporting, and eventual changes in policies imposed by governments (Hamilton et al. 2010; Taiyab 2006)

Related to the regulatory market you find the motivation of compliance obligation. Many countries committed themselves to reduce their climate gas emissions under the Kyoto Protocol I and II. Hence, they have two options:

1. Cut pollution domestically.
2. Buy climate quotas to make up for the domestic pollution surpassing their obligation goals.

In addition, you also find the same incentives as in voluntary markets.

Most forest carbon transactions happen in voluntary markets and show that the main motivation for buying offsets are CSR goals. Buyers motivated by resale and investment bought one forth of the credits. Compliance market's customers have the same incentives. In addition, many bought credits with expectation of future regulation after the first Kyoto Protocol's commitment period (Peters-Stanley, Hamilton and Yin 2012).

4.0 Neoliberalism and Institutionalism

The first subsection in this chapter briefly explains the main neoliberal arguments for a market solution to the climate change problem. Next, some of the controversies using such a theory to combat the problem are discussed. The second subsection focus on institutionalism. Property rights are given attention because it is an important part of institutionalizing a market. Rational choice and historical institutionalism are used to explain the creation of carbon markets. To get a critical view on new institutionalism, critical institutionalism is presented briefly. Lastly, commercialization of the market in the view of Karl Polanyi is explained.

4.1 Neoliberalism

Neoliberalism represents a reassertion of Adam Smith's liberal political economy. It has been the dominant political economy ideology in the second half of the twentieth century, especially in the U.S. and Britain, and many think of the policies Regan and Thatcher advocated for and implemented in the 1980s. Their economic agenda was dominated by deregulation of financial markets, privatization, weakening of institutions for social protection, weakening of labor unions, opening up of international markets and so on.

Milton Friedman, one of the most prominent scholars within neoliberal thinking, built on Smith's arguments in his economic theory. Although the liberal ideal of a society remained in focus, the acknowledgement that this ideal could not be reached by market forces alone, and was therefore supplemented by some government regulation. One of Friedman's main arguments is that any constraints on freedom of trade reduce the well being for some individuals by denying them the opportunity to improve their situation (Clarke 2005). Hence, neoliberalism can be described as "restructuring of the world to facilitate the spread of free markets" (Igoe and Brockington 2007, 433). According to this definition, neoliberalism is about privatization and commodification of markets and their products. The tradition is associated with deregulation, and diminished influence by the state and its capacity to regulate. Neoliberals tend to view the economy as forever expanding and is in line with the globalization we see today, with increased free trade, removal of customs barriers, trade unions etc. However, if a market does

not exist, states or international institutions must create it. In this perspective, neoliberal policies are revising preceding relationships between markets, states and civil societies (Heynen et al. 2007).

Neoliberals emphasize that living standards of the employed population have increased as a result of capitalist accumulation (Clarke 2005). Proponents of neoliberalism emphasize that creation of new and free markets, which focus on environmental issues, can provide new types of resources into projects diminishing global warming. The A/R CDM is an example of a policy that focuses on the poorer parts of the world. Here, governments lack resources to deal with problems of climate change. Moreover, the neoliberal notion promise increased democracy, and to protect rural population and their property rights. One last relevant aspect is promises to promote sustainable and environmentally friendly practices as profitable (Igoe and Brockington 2007). Green Resources is an example of a company that operates within this win-win narrative.

Despite his critical view on neoliberalism, Harvey (2005, 2) describe the theory in general terms

“A theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade”.

This view on neoliberalism is in line with the political arguments for creating a carbon market. International trade and global climate change are linked closely together in the world's carbon markets. Hence, carbon markets are seen as one of the last and most ambitious expressions of neoliberalism. The main argument for a market-based solution to climate change relies on the idea that it is the most economically efficient solution to achieve lower GHG emissions. A related idea is that when costs for polluting are paid, informed entrepreneurs will adapt to accurate price signals by changing investment away from environmentally damaging technologies towards environmentally friendly solutions (Lohmann 2009). Not all paint the same rosy picture of this economic theory. Some case studies investigating commercial carbon forestry projects have found that rural

people have been displaced due to this activity (Prudham 2009).

Another critic of neoliberalism is Noam Chomsky (1999). He writes that neoliberalism defines the political economic paradigm of our time. He states that policies and processes are organized in a way that allows a handful of very rich people to control as much as possible of the social life to augment individual profits. With concern to carbon markets, one interpretation is that neoliberalism promotes the market of green services through structures that are abstract in nature for local contexts, and turns it into a product that can be sold somewhere else. With regard to carbon credits, the market is often built on an uneven relationship between the North and South, where private companies buy what previously belonged to the community, and promote their activities through sustainable development, productivity, and preservation values (Lovell, Bulkeley and Liverman 2009).

Whether or not one agrees with the neoliberal idea of creating a market solution to reduce GHGs, it certainly reflects transformation of governance. Markets, privatization, commercialization and commodification have become central elements of environmental regulation (Prudham 2009). The neoliberalization of international climate policy through policies such as emissions trading has led to a substantial reformation of governance competencies between supranational, national and non-state participants (Bailey 2007). This will be discussed more in the next section about institutionalism.

4.2 Institutionalism

Common questions are asked across the fields of international relations, economics and political science. These include:

1. Why do rational states engage in the formation of international institutions that would represent restrictions on national freedom of action?
2. How do institutions influence individual behavior, and how does individual behavior affect institutions?
(Hall and Taylor 1996; Grieco 1988)

The answer to these questions is central in order to understand how and why carbon markets as an institution were created. Further, it is reasonable to assume that Green Resources and other actors' behavior in the market is influenced by the legal framework set by the international community, national governments, civil society and so forth. The section below aims to provide a brief introduction to institutional theory together with an analysis on the creation of carbon markets. Elements from North's (1984) New Institutionalism, including both historical and rational choice institutionalism, are presented in order to get a broader picture of the topic. After this, a view on institutionalism that is different or critical to North's institutions will be presented. This school of thought is called "Critical Institutionalism" (Hall et al. 2013).

Property rights are important in all institutional theories because rules lay the foundation for institutional behavior. Environmental problems are related to overexploitation of public goods and stem from incompletely defined property rights (Libecap 2008). In order for a market to function a foundation of rules and monitoring within the institutionalized market must occur. This is related to transferability, ownership and use of products (Rose-Ackerman 1985). The precondition for a market transaction to occur is that the seller is willing to give up the entitlement and a purchaser is willing to buy the product. Carbon markets are special because the products sold are intangible. There exist many intangible products, commonly referred to as services in the market place. What differs in carbon markets is that the buyer does not get any direct benefit from the acquisition. A government meets the goals in the Kyoto Protocol, and a business achieves goodwill in the market presenting themselves as a "green or socially responsible company".

The aspect of ownership within the property rights framework, and a basic precondition directly linked to carbon forestry projects, is access to land areas. A titleholder of property rights has the right to act in particular ways. In relation to forestry, an owner of land has the right to manage the area according to his wishes within the existing legal framework. This implies that the activity of a landholder may not be for the direct benefit of others not holding the entitlement. "Property rights convey the right to benefit and harm oneself or others" (Demsetz 1967, 347). Consequently, property rights define how persons may be benefited or

harmful by certain actions. This acknowledgement leads to the close link between property rights and externalities discussed a bit further down.

North (1984) define institutions as “the rules of the game in a society, or more formally...a series of constraints on behavior taking form of principles and regulations”. Steinmo (2008) writes that institutionalism emphasize the role institutions play in shaping behavior. Institutionalism offers a good framework for studying the political creation of carbon markets and how it manifests itself in a specific forestry project. Institutional theory gives attention to real world questions, and focus on the way in which institutions structure and form behavior and outcomes (Steinmo 2008). More specifically, they focus on links between political authority and markets (Fligstein and Sweet 2002). A fundamental subject in all institutional analysis is how institutions affect the behavior of individuals (Hall and Taylor 1996). When institutions and government structures develop in markets, they influence the economic activity. The development of new markets is not a new phenomenon. The importance of market-based solutions, however, is argued to have grown: creating markets of rights to be exchanged with greater efficiency now solves problems that were before believed to belong to the polity (Tordjman 2004). Market and political arenas can develop alongside each other, and this is seen to be the case in the carbon markets. Fligstein and Sweet (2002, 1207) emphasize that “a central insight in institution theory is that markets cannot exist without authoritative rules to guide the interactions between economic actors”. In order for a market to work provision of property rights, governance structures and rules of exchange must be set by the state or other public authorities. Supranational institutions like the UN, and national governments play a central role in facilitating economic growth by providing a legal framework, social stability and regulation of class struggles.

The process of economic development is related to the “emergence and consolidation of particular symbiotic relationships that form between rule structures, governmental organizations, and economic actors” (Fligstein and Sweet 2002, 1207). In theory, companies are able to operate in markets without any judicial system. In practice, states get involved as they set and enforce legal framework economic actors must follow. The academic literature typically discusses that institutional arrangements that promote economic growth are

preferred, while unwanted institutional arrangements produce rent seeking and lack of economic development (Fligstein and Sweet 2002). The idea behind CDM was to enhance economic growth in the countries that needed it most, and at the same time diminish emission of climate gases. The additional verification standards in the voluntary markets aim to do the same, but are considered based on a less rigid system, as they are somewhat easier to obtain¹². Carbon markets and their institutional structures, however, are discussed intensively in some milieus, as some think they are producing unwanted side effects. These can be seen as externalities.

Externalities can be defined as side effects of an industrial or commercial activity that affect other actors without being reflected in the cost of the project. Hence, it represents non-priced social and economical benefits and disadvantages related to an activity. A central point is that externalities do not directly affect the decision maker. Externalities may effect people outside the market, and are central to the neo-classical criticism of market organization¹³ (Buchanan and Stubblebine 1962). In relation to carbon forests externalities designate all non-carbon impacts. Negative externalities can be decreased access to natural resources for the local population, monoculture plantations and fires. Positive externalities may include increased biodiversity, erosion protection and recreation. Generally, the value of externalities is difficult to assess (Simonet, Bouculat and Olivera 2012).

4.2.1 Historical Institutionalism

Historical institutionalism embraces the view that political outcomes are both a product of rule following and interest maximizing among nation states and other interest groups (Steinmo 2008). Historical institutionalists define institutions as “the formal and informal procedures, routines, norms and conventions embedded in the organizational structure of the polity or political economy” (Hall and Taylor 1996, 938).

¹² The differences between the standards will be discussed in light of the two forestry plantations visited in Uganda.

¹³ In economic theory external effects exist in consumption whenever consumption of one actor influences consumption of another actor. This means that no business operate without influencing other actors or stakeholders affected by the market.

Some features separate theorists within historical institutionalism from other forms of institutionalism. The first is the broad view they have of the relationship between institutions and individual behavior. There exist two social ontologies describing individuals and institutions in relation to each other. The first is the calculus approach. The calculus approach is quite similar to the rational choice institutional tradition described under, and those who adopt this view look at individual behavior as instrumental and based on strategic calculation. Individuals seek to maximize their goals to obtain maximum benefit, and their preferences are exogenously given. Institutions provide certainty about other actor's behavior by provision of information, enforcement mechanisms for agreements etc. The main point is that actors behavior are influenced by their expectations of other actors' behavior (Hall and Taylor 1996). In this view, no actor would sacrifice more economically and politically than others in order to achieve the goals of reduced emissions in climate change negotiations.

The contrasting approach is termed the cultural approach, and emphasize that individual behavior is bounded by an individual's worldview. Actors are not seen as utility maximizers, but rather utility satisfiers. Individuals are not entirely irrational or non-purposive, but tend to turn to established routines and familiar patterns of behavior to achieve their goals. The individuals' actions depend on the analysis of a situation, and not on instrumental calculations alone. According to this approach, institutions highly influence actors' identities, self-image and preferences. They also provide individuals with some strategic information (ibid). The United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and other institutional arrangements have most likely influenced some of the participants' attitudes towards climate change and their efforts to deal with the situation. On the other hand, national and subnational institutions have done the same.

Historical institutionalism also emphasizes power asymmetries associated with the formation and development in institutions. Theoreticians within this tradition have concentrated much on the way institutions allocate power disproportionately across social groups (Hall and Taylor 1996). For instance, the creation of the Clean Development Mechanism (CDM) can be seen as a result from a power battle between some industrialized countries in the north and developing countries

in the south. An important aspect of the Kyoto Protocol was the understandable refusal of developing countries to take on emission caps on the one side, and the Clinton Administration and Norwegian government's belief that it is less costly to reduce climate gas emissions in developing parts of the world on the other side (MacKenzie 2009). Carbon markets, and in specific carbon forestry projects have met a lot of criticism with regards to asymmetrical power relations stemming from institutional arrangements. One of them is "land grabbing" from peasants in the third world. Inappropriate acquisition of land and resources for environmental purposes, such as carbon forestry, is generally referred to as "green grabbing". The term builds on neocolonial resource estrangement in the name of the environment, and often refers to actions displacing the rural population in an area (Fairhead, Leach and Scoones 2012).

In line with the tradition's name, historical institutionalists focus on the role of historical development and view social causation as path dependent (Thelen 1999). Political events, like the UNFCCC's Kyoto Protocol in 1997, occurred in a historical context where national leaders and scientists around the world acknowledged the problem of global climate change. They gathered in a summit to find a solution to the problem. The United States' Clinton Administration was the main advocate for implementation of a market-based solution. They had good experience with their creation of a sulphur-dioxide trading scheme established in 1995. The initiative resulted in cheaper and flexible efforts in reducing the emissions (MacKenzie 2009). Creation of carbon markets was something world leaders could gather around.

4.2.2 Rational Choice Institutionalism

With regards to the creation of carbon markets one also finds clear features in the negotiation process that are clearly related to the tradition of rational choice theorists. Rational choice institutionalism steer our attention to the role of strategic interaction between actors that are important to the determination of political outcomes (Hall and Taylor 1996, 951). This perspective can be defined "as an analysis of the choices made by rational actors under conditions of interdependence" (Immergut 1998, 12). Similar to historical institutionalists, they are absorbed by cross-national coalition behavior and the development of political

institutions. There are two ways to think about institutions within the rational choice tradition. The first view institutions as

“exogenous constraints, or as an exogenously given game form...An institution is a script that names the actors, their respective behavioral repertoires, the sequence in which the actors choose from them, the information they possess when they make their selections, and the outcome resulting from the combination of actor choices. Once we add actor evaluations of outcomes to this mix – actor preferences – we transform the game form into a game” (Shepsle 2006, 24).

In this view the creation of carbon markets is influenced and constrained by the involved institutions in the process, not necessarily the involved actors. The institutions steer information access, when participants can make their choices and so on. Carbon markets hence reflects what Shepsle (1979) terms as *structure-induced equilibrium*.

The second view on institutions within this tradition does not take institutions as exogenously given. The involved actors provide the “rules of the game”, meaning that the players set the rules. Institutions reflect the willingness actors have to “engage with one another according to particular patterns and procedures” (Shepsle 2006, 25). In the Kyoto Protocol, industrialized countries undertook a binding commitment to reduce their greenhouse gas emissions to agreed quantities in the period of 2008-2012. The reference-level agreed upon was reductions from 1990-levels, and is from a game-theoretical perspective one of the problems with the agreement. All countries have self-interest in others to maximize their reductions, but it is economically costly for a nation to limit their own reductions. The result is a tragedy of the commons-situation as described in Hardin’s work (1968), where global warming continues at a higher pace than wished for because no one wants to bear the cost of reducing their own emissions. Another parallel can be drawn to the famous prisoner’s dilemma, where actors do not cooperate even though it appears that it is in their best interest to do so. The end result is that all actors are worse off than they could have been if they had cooperated. The suboptimal outcome is neither an expression of participants’ true preferences, nor does the game “gather their preferences into a coherent collective outcome”

(Immergut 1998, 13). There is no doubt that the collective action dilemma highly influenced the Kyoto negotiations' end result.

Despite game theoretical problems, the quotas agreed upon got institutionalized into a cap and trade system where first world countries can trade carbon credits, called Assigned Amount Units (AAU) (Hagem and Holtmark 2009). Perhaps more important was the emergence of the project-based schemes Joint Implementation (JI), and especially the Clean Development Mechanism (CDM). Certifications such as CDM and JI were created in the regulatory market, and alongside several voluntary carbon standards evolved. The standards in both markets are important with regards to transaction costs, and the relationship between agents and principals. It helps customers in the market identify differences in quality and type, and diminish the information asymmetry problem due to third-party certification. Because Green Resources has one CDM and one VCS project in Uganda, this is the focus in my investigation of the regulated and voluntary carbon markets.

Figure 7: Comparison Rational Choice and Historical Institutionalism

	Rational Choice Institutionalism	Historical Institutionalism
Scientific world view	Methodological individualism; optimizing and strategic behavior	Modified egoism; agency constrained or constructed by common agreement
Typical research design	Casual illustrations of hypotheses, macro-quantitative tests	Historical sociology, case studies
Time horizon	Short term	Long term
Definition of institutions	Rules, procedures	Informal and formal rules
Role of institutions for human action	Intervening variable. Situational constraint and opportunity	Intervening variable. Grown constraint and opportunity
Preference formation	Exogenous to the model or decision-theoretic explanation	Endogenous. Creation of institutions affects preferences
Creation of institutions	Distributional conflict, reduction of transaction costs or collective dilemma as driving force	Delegation; self-maintaining and potentially expansive
Evolution of institutions	Bargaining process, evolutionary selection	Contingent processes with path dependency and unintended consequences

(Aspinwall and Schneider 2000, 7)

4.2.3 Critical Institutionalism

The challenging view to new institutionalism view institutions as formed in a necessary improvisation to challenges met in people's daily lives. Cleaver (2012) term this as "Critical Institutionalism". It challenges the rational choice view, emphasizing that institutions are complex and intertwined in everyday social life (Hall et al. 2013). An important aspect is the use of old routines and "know how" in new situations, or to adapt new arrangements to fit in social contexts. Even though institutions originally were made for simple purposes and with clear goals,

institutional bricolage is an uneven and dynamic process. The process must consist of familiar routines, accepted logics and must socially fit. Legitimation is achieved through reinvention of “authoritative meaning that “leaks” from one institutional domain to another” (Cleaver 2012, 2).

The interplay between traditional and new, formal and informal arrangements are also important (Hall et al. 2013, 6). In line with this view, institutions are shaped consciously and non-consciously. All people have both conscious and non-conscious inner psychological motivations that shape behavior. We are also influenced by tradition, everyday routines and our moral worldview. Visible and invisible power relations influence the authoritative process of bricolage. Individual actors exercise different levels of influence in institutional creation. This inequality in power often stem from their social positions and influence formation of institutional rules (Cleaver 2012).

The traditional and critical schools are not completely rivaling in their views. Traditional scholars emphasize efficiency and the health of the commons, while critical institutionalists focus on socio-economic equality and poverty reduction. Rules are at the center in both traditions. According to North’s tradition, rules exist to exclude outsiders and regulate use of resources. In Cleaver’s view, rules are there to enhance common access to resources. Where the traditional institutionalism emphasize rule making and the rules formal role, critical institutionalism look at differences between rules and practice. An example may be differences in the demands a certification requires, such as the Clean Development Mechanism and Voluntary Carbon Standard, and actual practice. Path dependency is important in historical institutionalism whereas the institutional bricolage-view emphasize structural historical events (Hall et al. 2013).

A typical critical institutionalist would view actors in carbon markets as heterogeneous. Moreover, they would seek to understand how a market actually function. In order to comprehend a market it is not enough to only look at the formal rules. Some operate in the voluntary, others in the compliance market. They all have different motivation and influence. Some are in the market to enhance their corporate social responsibility-profiles, others are in it to comply

with the Kyoto Protocol. An energy company operates in another way than a forestry company, perhaps also with different goals. With regards to forestry, standards would affect stakeholders in different ways in different places. A central question is whether creation of new institutions leads to unintended results (Lesorogol 2010). If all were listed here, the list would be long.

Figure 8: Comparison New Institutionalism and Critical Institutionalism

	New Institutional Economics	Critical Institutionalism
Linkages between institutions	Formal/public institutions in nested layers with horizontal and vertical linkages	Blurring of boundaries and of scales, blending of institutional logics and forms (e.g. Formal/informal)
Formation of institutions	Institutions formed through design and crafting/design principles characterize robust institutions	Institutions pieced together through processes of practice, improvisation and adaptation
Decision making happens	Decision-making and negotiations mainly conducted in public fora	Decision-making and negotiations embedded in everyday life, shaped by history and politics
Agency is shaped by	"Bounded rationality" models of agency as strategic and purposeful - individuals as resource appropriators	Agency shaped consciously and non-consciously - individuals with complex social identities
Behavior is shaped by	Behavior shaped by incentives, rules, sanctions.	Behavior shaped by societal structures, norms and practices, individual creativity.
Results of institutionalism	Institutions can be crafted to produce efficient resource management outcomes.	Institutional functioning may produce social inclusion or exclusion.

(Cleaver 2012, 16)

4.3 The Role of Commercialization in Carbon Markets

Karl Polanyi questioned economists' view that "the existence of price-creating markets is natural" (Didry and Vincensini 2011, 3). Polanyi emphasized that commercialization of productive factors and money is among the essential components in the creation of an economic market. In order for agents in a market to be able to pursue profits through exchange, productive factors and money must be "free" to be bought and sold (Sánchez-Andrés and March-Poquet 2002). This means that actors in a market must be able to exchange the product continuously. Furthermore, exchange relation should cover productive factors that are important

for social reproduction. This means that commercialization in market creation should contribute to e.g. employment.

Polanyi's (1957) institutional theory emphasize that exchange relations in a market economic instrument within a social context, such as carbon markets, is dependent and determined by the existence of political willingness where states direct their attention toward such transformation. He also addresses the problem of what he calls fictitious commodities, which are labor, land and money. These elements are essential for industry, must be organized in markets, and are vital for the economic system to function. However, they are not commodities according to the empirical definition; none of them are produced for sale. With increasing industrial complexity fictitious commodities were made available for purchase. Through globalization, markets spread all over the world and the types of goods exchanged grew rapidly. Alongside the globalization of commodity exchange, a network of policies and measures was integrated in powerful institutions designed to monitor the action of markets relative to land, labor and money (Polanyi 1957). Carbon markets are a creation where land, or nature, is exchanged through financial and intergovernmental institutions.

4.4 The Use of the Theories in the Analysis

One of the main problems addressed in political economy is how we learn through the institutional regimes we have. Creating a market is a difficult process and market dysfunctions as e.g. plummeting prices illustrate this. Moreover, creation of new mechanisms, such certification arrangements, helps actors limit risk.

Institutions not directly linked to carbon markets will influence the outcome of forestry carbon projects. Supranational institutional arrangements function alongside national and local governments and regulations. Different institutional arrangements may have competing motivations and incentives. These institutions again may be influenced by Green Resources' policies and the certifications they aim to get. This may create non-intended side effects as critics has pinpointed. It may influence local communities and the biodiversity in an area (or even a country). The chapter "key findings" will be used to highlight different institutional arrangements and how they affect stakeholders in the market. They

will also be used to partly explain the outcome of Green Resources projects in Uganda.

5.0 Study Area

This chapter presents a country profile of Uganda. It explains the country's environmental challenges and the role of forestry in order for the readers to grasp the context in which Green Resources operate. I link the environmental challenges to the role of an increasing population, before analyzing the economic potential for carbon forestry in the country. Finally, a brief presentation of the political and administrative structure, especially focused on the forestry sector in the country, is given.

5.1 Country Profile: Uganda

Uganda is a continental country in East-Africa. It borders to South-Sudan in the north, DR Congo in the west, Kenya in the east, and Rwanda and Tanzania to the south. The country is blessed with substantial natural resources, including regular rainfall, fertile soils, small deposits of copper, gold and other minerals, and recently discovered oil (Oxford Analytica 2011b). There are few overseas export opportunities in the country, but the location alongside Lake Victoria and the White Nile makes it possible to export products, such as timber, to neighboring countries. The demand for timber in the region is tremendously large, and the pace of deforestation activities is a vast problem.

This chapter will start by introducing the study area, and explain why forestry is important in the battle against climate change for the country. Thereafter, the role of an increasing population, economics and politics is presented in the light of environmental concerns.

5.1.1 Forestry in Uganda

Plantations are important for the country because they are seen to contribute to hamper the pressure on the natural forests. Since 1990, Uganda has lost 40% of its forest cover (World Bank 2012), and National Forestry Authority (2009) estimates an annual loss in forests of 1.9%¹⁴. The recommended forest cover for the country to keep a stable ecological system is 5.9 million ha, or twice the area

¹⁴ This number seems conservative reviewing other reports. Estimates of 2.5% have been found while doing research.

of Albania, and the current forest cover is about 3 million ha (World Bank 2012). Deforestation activities are also linked to degraded¹⁵ water resources. In this regard, forests' most important contribution to the hydrological balance of watershed is related to maintenance of high water quality (Hamilton 2008).

Uganda is considered one of the least developed countries in the world, and the local population highly depends on wood products such as firewood and charcoal in their daily lives. In addition, the pace of the construction industry is rising rapidly increasing the need for timber products. As a result, Ugandan timber prices are among the highest in the region (Green Resources 2012).

The governmental bureaus linked to forestry in Uganda have suffered from severe corruption scandals. NFA was originally seen as reliable and received a great deal of funding from industrialized countries, and especially Norway. After a big corruption scandal came forth, the funding stopped. The result is that NFA suffers from a liquidity crunch and political interference per se. Moreover, community engagement in forestry management is low (World Bank 2012).

The National Forestry Authority (NFA), the National Environment Management Authority (NEMA), and other governmental institutions depend on foreign investments to rise the planting pace, as they lack resources to combat the deforestation problems themselves. Green Resources and other foreign companies are therefore welcomed by the Ugandan government to carry out their activities in the country. Carbon forestry activities demand large land areas. Most investors, including GRAS, obtain customary land through lease (Oxford Analytica 2011a). The NFA manages Central Forest Reserves (CFRs), and both GRAS plantations are placed within such reserves. The first CFRs were set aside for forest activities in the country already in 1932, during British rule. By law, no other activities are allowed conducted in the areas. It is NFA's task to make sure that the land is free from settlement, agricultural activities and grazing cattle. Despite the rules in Uganda's Forestry Act, there are settlements within Bukaleba forest reserve, and

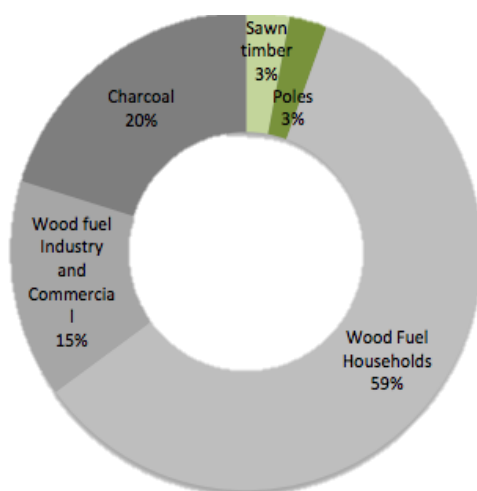
¹⁵ Degraded can be a difficult word to use because it depends on the perception of the person using the term. In this context degraded water resources refers to polluted drinking water.

alongside Kachung forest¹⁶. The problem of settlement in CFRs is common for investors committing business in an area-demanding sector, and private companies often consider acquisition of land with a clean title to be one of the biggest challenges. The result is challenging conditions for the company, in addition to the rural population settled in the areas.

5.1.2 Demographics: The Role of an Increasing Population

Uganda's fast growing population of 3.3% is the key driver for environmental change in the country (NEMA 2010; Dobronogov et al. 2011). It highly affects the availability and renewability of natural resources, and there are tremendous land pressures related to the fact that 85% lives from the agricultural sector. The need for food, together with inefficient and poor agricultural practices is seen as one driver that degrades soils¹⁷. Additionally, removal of trees for wood-fuel is high, and 90% of Ugandans use firewood or charcoal as their main source of energy (World Bank 2012).

Figure 9: Causes of deforestation



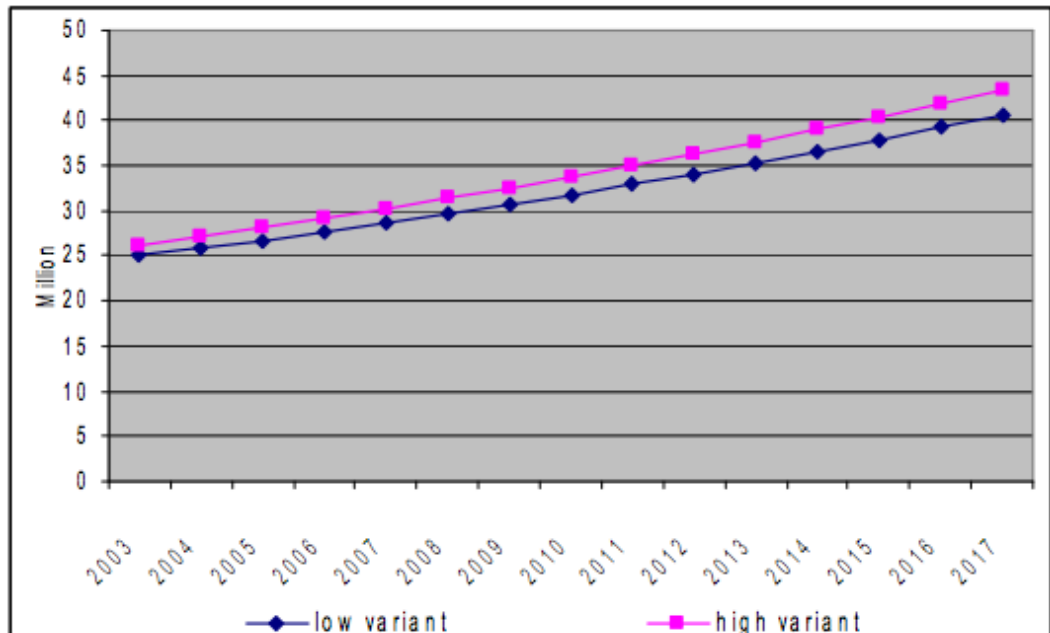
Source: UBOS 2010; NFA 2006-2007 in World Bank 2012.

¹⁶ There are settlements within most Central Forest Reserves in Uganda. A few are not inhabited, but many have "encroachment levels" of a 100%. This information was given to me during my visits at NFA.

¹⁷ Efficiency in agricultural practice is a relative term. Depending on how you define efficiency industrial or small-scale farming is the most efficient. In terms of working hours, industrialized agricultural practices are more efficient. If you measure how much food a farmer gets out of one hectare of land, small-scale agriculture is more efficient. For an article addressing this issue read Gerald Leach (1975) article "Energy and food production."

Even though the report referred to above cite wood fuel as one of the major sources for deforestation, others have more conservative estimates. Angelsen and Kaimowitz (1999) emphasize that this reason for deforestation is bigger in Africa than elsewhere, but underline that the largest source of degradation of woodland is expansion of cropped areas and pastures. Logging and open-pit mining are also worth mentioning. Resource use grows alongside people's aspirations to improve their lives, and one of the results related to this study is a high deforestation level. Population growth and prosperity level are closely related to the country's outlooks for development and well being of its people. A steady growth towards becoming a middle-income country depends on healthy management of the environment and natural resources. Uganda's population increased from 9.5 million in 1969 to an estimated 32.9 million in 2011 (NEMA 2010), and the current population growth rate is estimated at 3.32% (Central Intelligence Agency 2013)¹⁸.

Figure 10: The expected mid-year population growth in Uganda¹⁹



(UBOS 2007)

¹⁸ Uganda's population has not been counted in many years, and numbers are based on estimates.

¹⁹ A chart presenting historical population growth from 1948 until 2002 is in the appendix.

5.1.3 Economics of Forestry and the Potential of Carbon Finance

Degradation of environmental and natural resources is a drain for Uganda's economy. Soil erosion and nutrient depletion has in some areas led to fatal landslides, and wetland areas have declined by 30% resulting in severe floods. Fish stocks has declined and 40% of the forest cover is gone (World Bank 2012). However, GDP has recovered from the disastrous regime of Idi Amin in the 1970s. Uganda has faced a rapid economic growth in the 1990s and 2000s, with a growth of 9.3% from 2001-2008. In 2011, the growth rate had fallen to 3.4% (World Bank 2013). Inflation rates fell from 13.4% in 2009 to 7.3% in 2010 (Oxford Analytica 2011a), but reached 23.5% in 2012 (World Bank 2013). Uganda was one of the fastest growing countries in the region, but now lags behind due to global economic turbulence combined with slippages in fiscal and monetary policies. There is evidence that there have been political and public willingness to sacrifice environmental assets to achieve increased growth. Environmental resources are key to income for the rural population and for the nation as a whole in terms of revenue from natural resource extraction (NEMA 2010, 2). Forestry contributes 5.7% to Uganda's GDP and is an important sector in terms of economy (National Forestry Authority 2009). The value of carbon storage in Uganda's current forests is estimated to 1.2 billion USD (World Bank 2012). Possibilities to get some portion of this amount from sales worldwide exist in the application of Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+) programs, Clean Development Mechanism and voluntary carbon markets²⁰. Weak infrastructure, poor financial services to the private sector, and corruption and lack of competence in public sector are major constraints to the country's economical growth. These factors may also serve as a hinder for foreign investors and decrease their profitability. However, after the full liberalization of the country's economy in 1997 financial risks remain quite low. Foreign investors are generally welcomed (Oxford Analytica 2011a). The Investment Code 1991 is a law governing investments in Uganda. Under this act the Uganda Investment Authority (UIA) was created to facilitate the procedures for companies interested in investing in the country. The idea is that all investors

²⁰ Uganda is working on a national REDD+ strategy. They also have eight CDM certified projects (information attained from the Climate Change Unit in Ministry of Water and Environment (MWE) 2013).

have to go through the UIA, but it is likely that practice differs from rules (Oxford Analytica 2011b).

5.1.4 Political and Administrative Structure

The political system is fragmented and consist of 33 parties (UNDP 2013). Opposition parties remain fragmented, and the ruling party meet increased public frustration with Museveni's growing authoritarianism (Oxford Analytica 2011a). Nevertheless, Uganda has clear agricultural policies, and NFA is mandated to control Central Forest Reserves and lease land to foreign investors. Private sector investment has increased as a result of NFA's strategy to promote public-private partnerships through lease of CFRs. In addition to many small-scale private investors, three large foreign companies lease land areas: one of them is Green Resources.

The Sawlog Production Grant Scheme (SPGS) is an initiative taken by the Ugandan government. The agency provides investment incentives in the forestry sector through financial support and technical assistance. They fund establishment of timber plantations and give training to small-scale actors in the country's forestry sector. The Norwegian government and the European Union have funded SPGS, but the funding period is soon expiring²¹.

Green Resources has got funding for 1000 ha of their forests from this initiative. Other institutions involved in forestry in the country are the Forest Sector Support Department (FSSD) and District Forestry Services (DFS). The sectors' progress has been slow due to inefficient public administration and high corruption levels. Allegations of corruption, together with rapid deforestation and a mismanaged public sector led to withdrawal of donor support to the sector (World Bank 2012). Norad was among the actors withdrawing funding to NFA after a corruption

²¹ Norway stopped its funding in the fall 2012 as written in the chapter about Green Resources. Helle Biseth, a former employee at the Norwegian Embassy in Kampala, and now employed by the Norwegian Agency for Development Cooperation (Norad), expressed that Norway would be hesitant to fund the project again because it is a project by the Ugandan government. Due to a large (non-forestry related) corruption scandal, all state-to-state aid from Norway to Uganda is frozen. EU seem to focus on building infrastructure for Uganda, and there is large insecurity of whether they will continue their funding in the next period.

scandal. Another problem related to inefficient management of environmental and natural resources is lack of funding. Moreover, the sector needs to develop transparency, accountability and public involvement in cooperative management, in addition to securing its funding and inefficiencies (World Bank 2012).

6.0 Research Methods and Design

6.1 Methodology

The main problem discussed in this thesis is:

What are the challenges of forestry carbon markets, and are they reflected in Green Resources' projects in Uganda?

The research strategy adopted in this thesis is mainly qualitative. Consequently, the thesis has been based on an inductive research approach as a rigid use of theories from the start on, may lead to superfluous limitations and to incorrect conclusions of the phenomena studied (Stenbacka 2001). By selecting Green Resources' plantations in Uganda as a case study of a carbon forestry project as the main objective for the paper, some aspects has been included in the thesis, and others naturally excluded.

6.1.1 Epistemological and Ontological Approaches

Epistemology is known as the theory of knowledge. Discourses in epistemology discuss the social and philosophical conditions for acceptable knowledge (Bryman 2012). A central problem in epistemology is establishing when we know and when we do not know something. As opposed to positivism commonly used in a quantitative research approach, interpretivism is normally used in qualitative research. Interpretivism is based on an understanding that "a strategy is required that respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action" (Bryman 2012, 30). Hence, qualitative data is a suitable choice because it makes it easier to get a more detailed and in-depth picture of a phenomenon than quantitative data.

The topic of research in this thesis is founded on the idea that anthropogenic global warming exists. When governments and other institutions cooperate to find a solution to this problem, and e.g. construct carbon markets, they simultaneously acknowledge the scientific relevance of the phenomenon. A central epistemological question in this context is what sort of knowledge that allows us

to draw that conclusion. Together with this, the ontological position taken was one of constructionism. It challenges the view that sees organizations and other social entities as pre-given. Constructionism implies that social phenomena are influenced by external factors, and that they are “produced through social interaction and are in constant state of revision” (Bryman 2008, 19). The theoretical chapter is a part of this category of research and is required since it provides an explanation on carbon markets origin, what drives the market, in addition to laying the foundation for reviewing institutional benefits and failures. The theoretical part also forms part of the generalizing criteria for judging qualitative research.

6.2 Research Design

Research design is “a framework for collecting and analyzing data” (Bryman 2012, 46) and within the field of political economy there are several to choose from. For the purpose of this paper a case study design was adopted. The background for this choice is that the study aims to entail an in-depth study to understand complex issues and experiences around a specific case. A case study may involve several cases, but for the purpose and scope of this study, one case was chosen. An abbreviated definition of case studies given by Yin (2009, 18) is that case studies are: “An empirical inquiry about a contemporary phenomenon, set within its real-world context – especially when the boundaries between phenomenon and context are not clearly evident.” There exist different types of case studies, and the one chosen in this paper is what (Bryman 2012) refers to as an exemplifying case. The concept of exemplification is used because such cases offer a “suitable context for certain research questions to be answered” (Bryman 2012, 70).

Green Resources’ forestry carbon project is the case and main unit of analysis in the thesis. It was chosen because of its uniqueness as an organization operating in a relatively new and highly politically constructed market. The company is one of few large-scale commercial forestry companies in Uganda, and the largest in Africa. It is supported by the Norwegian government through Norad and Norfund, and may represent a desirable model for how political institutions want to combat the global warming problem. GRAS is also distinctive because it operates within

both the voluntary and the regulated carbon market. Visiting both plantations laid an interesting basis for comparing the two markets and to see whether there exist differences in the way the company operates. It also helped me understand the complexities of the different institutional arrangements they work under, and if these arrangements are conflicting. Collection of both primary and secondary data from investors and customers of the company contributed to an understanding of the interorganizational partnerships. The case is a supreme way in looking at the way carbon markets operate on the ground and investigate institutional benefits and failures. It is important to mention that the study is limited to one geographic area and sector by researching a carbon forestry project.

6.2.1 Generalization

Many academics claim that generalization from a study is important in science in order for a research project to have some value. This has been debated in academic writings, and case studies have often been criticized for not having a generalizable value. In this regard it is important to remember that most studies cannot generalize to a whole population or different contexts (Gillham 2010). Such generalization is not the purpose of this analysis as the case is unique. Yin (2012) emphasize that it is possible to generalize analytically, but not statistically from a case study. “Analytic generalization from a case study depends on the theoretical framework to establish a logic that might be applicable to other situations” (Yin 2012, 18).

The point of choosing a case study method is to relate findings to literature and theories, rather than generalizing to other situations and institutions. “Cases embody causal processes operating in microcosm” (Walton 1992, 122). They demonstrate how general social dynamics take form and produce results in particular settings. By studying a carbon forestry project in Uganda, I go from studying a tiny piece of the carbon markets in relation to the market as a whole. The project is based on theoretical generality reviewing institutionalism, neoliberalism and carbon markets. In this respect, I use the theories to highlight my findings. I also look into local factors influencing the outcome of Green Resources’ carbon forestry projects. The study is influenced by situational groundedness (Harper 1992). With situational groundedness comes the matter of

complexity. The aim of a case study, including this one, is to grasp a complex picture of a specific case. This goal is often in conflict with the one of generality (Ragin 1987).

The case study of GRAS is interesting in this regard as carbon credits from forestry projects is a debated field. The findings provide indications of whether carbon credits from forestry projects are a viable and sustainable alternative in the future. Moreover, it shows the institutional costs and benefits at micro level in Uganda, in addition to insights in thoughts of customers and investors in the market. It is interesting to see how the largest carbon forestry company in Africa operates. This may provide insight into political, environmental and economic aspects of such a solution to climate change. There is a possibility that forestry projects in certain parts of the world face similar challenges.

Most importantly, carbon markets prove to be one of the newest politically constructed markets in the world. It is recognized as a financial instrument and comparisons with regards to the construction of other new financial inventions can be drawn²². New markets will develop and some knowledge from the construction of this market might prove applicable in new situations. As mentioned above, the case of Uganda is unique in many ways. The company's operations in Uganda are running, and there are not any plans of expanding the scope of these due to difficulties experienced in the existing ones. This is not the case for the operations in Tanzania, and the operations in Mozambique are seen as top priority to expand. Green Resources has its own procedures in running their business, making it difficult to generalize fully to other firms in the same segment. However, this case study may help gaining a more complete picture on the topic researched.

The presence of similar forestry and carbon-offset companies operating in Uganda offers an opportunity to do a comparative study of GRAS and other companies' operations. Since GRAS has two plantations in Uganda, the choice fell on investigating these more thoroughly. I also chose to look at the investors and

²² The creation of financial markets and new financial instruments has drawn a lot attention from the public after the outburst of the financial crisis in 2008. This is often used as an example of how difficult it can be to create, monitor and regulate new markets.

customers of this specific company, and thereby excluded others. The choice was also based on time and money constraints.

6.2.3 Transparency

Reliability is often claimed to be necessary for a study to have some value. A study is reliable when the “operations of a study, such as data collection procedures, can be repeated with the same results” (Yin 2009, 40). In the case of GRAS’ specific carbon forestry project, I see it more important to emphasize transparency. Transparency is important in qualitative research because it makes it easier to understand what I actually did and how I arrived at my conclusions (Bryman and Bell 2011). Most interviews are transcribed, and all interview questions are written down in order to make it easier to grasp how the study was conducted. Moreover, type of organizations and people interviewed are expressed clearly. Few studies are conducted within the exact same topic as this thesis. However, other studies have investigated parts of Green Resources and the carbon markets’ aspects, and have found similar patterns and results as in this paper.

6.3 Data Collection

The investigation of contexts and complex conditions is an important part to understand a case. Consequently, the relevant case study data are likely to come from various sources of relevance (Yin 2012). Due to the research strategy, methods and design of this study, data collection came from primary and secondary sources. The research conducted in this study stems from fieldwork carried out in Uganda in 2013, where I performed semi-structured interviews, more informal conversations, document reviews and direct observation. After Uganda, semi-structured interviews were conducted in Norway with key persons from the Financial and Environmental Ministries, Norad, Norfund, researchers working with climate change and carbon markets, journalists, GRAS’ public investors and customers, and NGOs. Documents were collected for review on views of the company studied. Additionally, literature review on the market and company were conducted from Internet, reports, books, brochures and other interesting documents. I chose these methods because it fits the objective and purpose of the study; in addition to meeting the standards of construct validity.

6.3.1 Interviews

Open-ended or semi-structured interviews can often offer richer and more in-depth material than data from questionnaires. They sometimes last in conversational form for several hours and consist of conversations with different people during a whole day (Yin 2012). Semi-structured interviews are good because they consist of standardized questions as well as a more flexible format, ultimately leading to more open interviews that allow interviewees to give their own reflections. During the seven-day fieldwork in the plantations, I took notes and recordings. The format of this type of interviews allowed the case study participants to reason around reality and think about situations, not simply answer the questions that I asked. To ensure that some of the key questions were answered, I chose to use different interview guides for different purposes and interview objects. The result was more in-depth knowledge and understanding of the phenomenon studied.

Bias may arise in interview situation due to poorly articulated questions (Yin 2009). The questions that I used in the interviews in this paper were chosen as a result of extensive literature review on the field, reports about the company, and own observations and experiences. Therefore, they should be sufficiently thought through. Second, response bias may arise from the respondents as they wish to give another impression of the situation than is the case. This may stem from reflexivity of the interviewer, a wish to make a situation look more beneficial or fear of sanctions in some form. Another form of response bias may occur because of rosy retrospective memories and simply poor recall. To obstruct bias occurring in the analysis I used various contradictory sources, and time was given to the interviewees to think through different situations. Seven days, however, is a short period of time, and it is possible that some respondents gave me answers based on tactical evaluations.

The interview strategy differed in different situations. In the villages some interviews took place with several participants due to convenience and understanding of the collective perception of this case. There were always two-three main speakers, but it allowed them to get input from the others in their

native languages to make sure that the topics were properly addressed. This contributed to a greater understanding of the benefits and inconveniences carbon plantations give the local people. Moreover, it gave me insight in what rural people can win and gain when foreign investors invest in their local sphere. Not all people are aware of what resources they actually hold, especially not what it is worth. Further, they may not have insight in what economic benefits they are missing because of their lack of resources. The last point of interest is the knowledge I obtained about the peoples' general living conditions, and how they get expressed when global entrepreneurs conduct business in their areas. The use of a case study method with interviews helps to explain this background.

Since the case appertain institutional benefits and costs in a carbon forestry project, it was important to visit the National Forestry Authority (NFA), local environmental authorities, Green Resources' office in Jinja, non-governmental organizations, journalists and researchers to get a complete picture of the importance of forestry carbon projects in Uganda, and the risks it comes with. Most of the interviews were conducted at offices with one interviewee, and some of them were conducted in collaboration with Hanne Dihle whom I travelled to Uganda with. My partner and I did all the plantation fieldwork together as it was easier and less costly for both of us. She was writing about Green Resources' impact on local societies in Uganda, and hence had another agenda and angle on her work than me.

6.3.2 Direct Observation

Doing direct observations in a field setting is one of the most distinctive features in case studies, and were conducted to supplement the interviews with villagers (Yin 2012). The main goal of visiting GRAS' plantations was to get a holistic, neutral and factual view on their business and how it affected the environment around them. Documentation of institutional failures and benefits was materialized in photos and digital recordings. Generally, problems may arise when relying on direct observations. If a meeting or visit is announced, people can adjust their behavior and customize their routines to give an impression beneficial for them. We overcame this problem by not announcing our visits before arriving at the villages. The consequence was that the local people did not have enough

time to adjust their daily lives significantly. We did, however, get feedback from one of the villages that it could have been useful for them to get a notice in advance so that they could think through the plantations issues and benefits to better answer our interview questions.

6.3.3 Document Review

I used information collected in different channels, such as newspapers, company reports and official reports, in the study. This data has mainly been qualitative, but with some numbers and figures. The most important use of documents in case studies is to document and widen evidence from other resources (Yin 2009). Archival data can be biased or subject to other limitations (Yin 2012). It is important to remember that every researcher has limitations in their work. This has been evident when interviewing informants that have written about the company earlier. Still, reviewing resources written by different authors from sources with different views on the subject help combat the problem and make the picture more balanced.

6.4 Challenges in Conducting Qualitative Research and Ethical Considerations

Researching a topic offers great challenges related to the chosen design and practicalities. The most common criticism of qualitative research is its subjective character. The researcher should ideally act neutrally and face the topic with an open mind. Whether this is possible is discussable, as every person naturally is influenced by her own perceptions and understandings of topics. To remain objective it is therefore important to challenge own thoughts and investigate contradictory indications (Yin 2012). Collecting data material from a variety of sources with diverse views on both the company and the market helped me overcome the problem. Another critique is the one about generalization and weaknesses related to observation and interviews that are discussed above. In addition to the methodological challenges some practical obstacles occurred.

Generally, I used the best data material available within the given timeframe I had to perform this study. Obstacles that occurred during the data collection hindered

me in getting hold of all material desired. Hence, the thesis got a different angle than I initiated in my preliminary thesis²³. Nevertheless, I carried out more than fifty interviews in both Norway and Uganda. When searching for informants I did my best to choose people from different segments and sectors. I approached people from the governments in Uganda and Norway, rural people living in or right outside of the plantations investigated, carbon markets analysts, Norwegian and Ugandan researchers, NGOs and journalists, Green Resources offices in London and Uganda, and GRAS' customers and their investors. Some of the informants declined my inquiry, but many said yes. Moreover, I used a variety of documents and observation to triangulate my data and get a complementary picture of the research topic.

6.4.1 Information Access

The first and most important limiting the substance in my thesis was Green Resources' head office reluctance to cooperate and hand out information. It is not a secret that it is challenging to engage in forestry carbon business in Uganda, and that business leaders face tremendous time constraints. However, transparency is important in such a sector. On the one hand, Green Resources does not do themselves a favor holding back information for students, researchers, NGOs and journalists interested in their company because of criticism they have faced earlier. The company operates in a developing country where many reviewers of their business will be engaged in how they conduct their business. Investigations from local actors in Uganda, in addition to international research will be carried out. That said, GRAS might have different incentives for holding back information, ranging from deviation between stated and actual business practices, to lack of resources. Furthermore, holding back information may be a strategy to minimize their costs of consequences appearing from criticism they may face. Dealing with criticism is a time consuming process, and it may influence their budgets in a variety of ways.

Surprisingly, it proved difficult to get hold of the private investors and customers. All private investors approached chose to decline my inquiry about an interview about their motivation for investing in the market, and their evaluation of Green

²³ The preliminary thesis is attached at the back of this document.

Resources. One may assume that the companies have different reasons for choosing not to cooperate. Perhaps the most obvious is risk of handing out information. All companies have different strategies when investing, and they may suffer economic losses by handing out information they perceive as sensible. Another is time constraint. Only speculating, a third reason may be that there exist an agreement with Green Resources that no one is supposed to hand out information to others about their business in any way.

The same problems did not occur in relation to the public sector or with any of the researchers, NGOs and journalists. There are different reasons for that. First of all, the public sector has disclosure requirements demanding them to hand out information to the public. Additionally, they may be interested in getting new perspectives and inputs they may obtain during an interview session. The last point is obviously one reason why the NGOs and journalists chose to cooperate. A last motive can be one of pure altruism. People like to help others and think it is nice to help researchers that conduct their studies.

6.4.2 Time Constraints

Another challenge was time constraints. One month was spent in Uganda, and that is limiting in order to understand the scope of the complexity related to institutional benefits and disadvantages in forestry carbon markets. “African time” is a well-deserved description of why one month is short and it took a lot of time to arrange and conduct interviews. Yet, the guide we used on the plantations was highly flexible and adjusted himself effectively so that much could be done within a short period. Arranging some of the meetings before actually travelling down to Kampala, in addition to being two cooperating in arranging meetings, proved helpful to overcome the time crunch. That said all institutions and persons approached in Uganda chose to participate in the study.

6.4.3 Language Barriers and the Use of a Local Guide

Language was another challenge. Since Uganda is a former British colony many have knowledge of English, but in a few cases an interpreter was needed. Due to advice from another researcher, a local radio journalist was used as guide, driver

and interpreter. He had a Masters degree in Journalism and had done extensive journalistic research on the plantation in Bukaleba for Uganda Radio Network. The advantage in using him was that he knew the community, who to talk to and how to approach the different people. Moreover his command of English was very good and he had done similar assignments before. One disadvantage in using him was that he had his points of view on the situation. However, he acted neutrally and introduced people with different perspectives on the topic. He was less familiar with the plantation and surroundings in Kachung, but he had some contacts and knew enough of the Leb-Lango, the local language, to ask his way around. As the local languages differ between the two areas of where the plantations are located locals in villages with knowledge of English also functioned as interpreters. In this respect a disadvantage is that misunderstandings may arise as well as misinterpretations. The problem was overcome by asking questions if anything was unclear and crosschecking by asking the questions again. I took notes and recordings to highlight the discussed topics of interest. Most of these recordings are transcribed and those that are not have been listened to afterwards at several occasions to identify common topics and other elements of interest. The stay in Uganda lasted four weeks in February 2013 and allowed for enough time to get an overview of the chosen case. After returning to Norway further interviews were conducted with representatives from the above-mentioned institutions.

6.4.4 Ethics

During fieldwork it was especially important to play with open cards. Interviewees in both Norway and Uganda were informed about the purpose of the study and their right to remain anonymous. Furthermore, I put emphasis on interviewees participating on the basis of informed consent. It was not the first time visitors, such as researchers and journalists, came to the area to investigate the impact the company placed on local villagers in Bukaleba and Kachung. In addition, some knew our local guide because of his frequent visits to the area. It is possible that this eased the job to get hold of volunteer informants. Some villagers had expectations about the contribution of the research, and a few shared a hope that it could help improve their situation. It was important to explain that the research was a master thesis, and that it would be published in an academic

database. Hence, the impact is limited compared to other forms of publication.

Informants were further informed that the thesis would be distributed electronically to the interested interviewees.

Whether small gifts should be distributed to informants or not is a debated field. Some emphasize that respondents use their spare time to answer your questions, and therefore should get a small compensation. I chose not to distribute gifts to the informants. There are two reasons for this. The first is based upon a wish that the interviewees would speak out of free will. This issue is not of importance in Norway or in any of the governmental institutions in Uganda, but the people in the villages are poor. Distributing gifts could lead to participation of people not relevant for the study. Additionally it could make participants that originally did not want to participate do so in order to get the benefit. Perhaps most importantly, giving gifts is controversial because it may lead the informants to give the researcher the answers they believe you want. Nevertheless, one local village chief got a small amount of money after the interview because he asked for it. Even though informants generally did not get any gifts, most people were willing to take their time for an interview. It seemed like the villagers wanted to contribute and that it was particularly important for them to express how they wanted their relationship with GRAS to improve.

7.0 Key Findings

Based on the theoretical considerations outlined in the previous chapters, this chapter describes and discusses the findings and results from the research conducted in Uganda and Norway. The analysis is based on the best material I was able to obtain on the topic. Carbon forest markets cover many interesting aspects, but I had stick to answering a limited set of research questions. Therefore, many noteworthy aspects of the market and Green Resources as a case are excluded from the analysis. My findings are based on observations, interviews and literature found during the process I have spent on writing the thesis. Consequently, these limitations of the study need to be considered when reading the analysis. The first section aims to answer three of these research questions:

1. Why has carbon forestry projects been more successful in voluntary than regulatory carbon markets?
2. What influence prices in the two markets? Are there any differences between the voluntary and regulatory markets?
3. What role do certifications play in voluntary and compliance carbon markets?

Going through these mechanisms, one sees that the voluntary and compliance carbon markets to a great extent are influenced by the same dynamics. Features of new institutionalism, with focus on policy processes, highly influence market outcomes. However, critical institutionalism and notions from neoliberal thinking is also important to explain how carbon markets are functioning.

The creation of carbon markets has effects on macro- and micro level. It is important to look into and learn from the outcome of market processes at both levels. Economic theory does sometimes work in a market situation. However, they do not always include the costs of micro-level effects. The next two sections looks more into Green Resources as a case, and aims to answer the last research question

4. What socio-economic influence can carbon forestry projects have on local populations? Do other institutional arrangements influence how a carbon forestry company works?

7.1 The Success of Carbon Forestry in the Voluntary Carbon Market Relative to the Compliance Carbon Market

In terms of value and volume, carbon forestry projects have been more successful in voluntary than in the compliance markets. There are a variety of reasons for this, but the most important is regulatory constraints from the international community. Rational choice institutionalism draw our attention to the role of strategic interaction between actors that is important to the determination of political outcomes (Hall and Taylor 1996, 951). Hence, political outcomes are a result “of the choices made by rational actors under interdependence” (Immergut 1998, 12). Inclusion of forestry in carbon markets can be seen as a result of processes similar to the ones described by rational choice institutionalists.

The Clean Development Mechanism was made as a result of climate negotiations. Therefore, governments with different views on commodification of carbon influence the outcome. Different perspectives on the creation of a global carbon market clash. International negotiations with the focus on forestry carbon projects were introduced with the presentation of the REDD+ mechanism in 2008. An estimated 3000 billion tons of CO₂ equivalents are stored in forests across the world. Between 5 to 10 billion tons are released every year from deforestation and degradation of woodlands (Simonet, Bouculat and Olivera 2012, 2). Some governments, including Norway, believe that a forest carbon market comprising REDD+ can be a viable and efficient alternative to combat climate change. Other states, especially South-American countries such as Bolivia, dislike the thought of institutionalizing “mother nature” into a market²⁴. In addition to local beliefs, the skepticism may be explained by historic political path dependency. A large share of South America has been supportive of socialist ideologies, and this is evident even today. In climate debates, different cultures and mindsets can be clearly observed, and is an important feature when creating international markets²⁵.

There are also other disagreements between countries related to carbon forestry activities. Some view it as a good solution to the climate problem, while others see it as a sovereignty problem that the international community is to monitor

²⁴ Ivar Jørgensen, Norad

²⁵ Ibid

land-based activities in a country. Furthermore, skepticism towards foreign investment in the sector exists. This issue is closely related to the development of REDD and the inclusion of REDD under the CDM. One country that is supportive of REDD is Norway. Norway is also one of the largest contributors to the REDD budget²⁶. Brazilian politicians are skeptical towards the idea that countries should get paid to preserve and plant forests²⁷. This is related to sovereignty issues, because it allows for other states (and businesses) to go into a country and purchase or rent a piece of land for a certain period of time. Generally, Brazil has been one of the countries highly engaged in the CDM market. They are, however, hesitant to include Land-use, land-use change and forestry (LULUCF) activities.

Rational choice institutionalism emphasize that exogenous constraints set for carbon forestry projects influence project developers' behavior and decisions in the market. In other words, carbon forestry markets are influenced and constrained by the involved institutions in the process, not necessarily the involved actors. A result is few carbon forestry projects certified under the Clean Development Mechanism; only 0.8% of all CDM projects are forestry projects (Simonet, Bouculat and Olivera 2012). One of the reasons for this is that restrictions were put on forestry carbon credits in the Kyoto negotiations. Currently, only forestry projects recognized as afforestation/reforestation projects are included in CDM. One reason for the constraint is that it can be harder to control forestry projects than for example energy projects. You find the problem of defining baselines in both project types, but with forestry you also have the problem of permanence²⁸. Also, some claim it is easier to provoke land conflicts with local populations because forestry projects require vast areas of land. Therefore, forest projects are politically more delicate²⁹. Green Resources' project in Bukaleba Central Forest Reserve is one project that has been subject to such criticism³⁰.

A different problem for A/R CDM is that the demand is low. The main reason for this is that credits under this certification is not recognized and sold in the largest

²⁶ Mugumya Nyinio Xavier, NFA

²⁷ Endre Tvinnereim, University of Bergen

²⁸ Asbjørn Torvanger, CICERO

²⁹ Ibid

³⁰ This land conflict is discussed in the second section of the analysis.

carbon trade scheme that exist, namely the EU ETS³¹. A press release from the EU show that they do not want to include forestry credits into their trading scheme because national policies aimed at reducing deforestation are likely to target different stakeholders. Furthermore, they emphasize that land tenure rights are often unclear. Both of these issues are related to the work on reducing deforestation (European Union 2008). Another obstacle for the A/R CDM market is temporary credits. Temporary credits make the projects less attractive³². When actors purchase temporary Certified Emission Reductions (tCER), they will have to renew the credits purchased after a certain period. A result is lower prices for A/R CDM than for other CDM credit, which again makes it less attractive to invest in these projects³³. tCERs bought after 2010 can be used in the next commitment period that lasts until 2020. The ones bought before this will have to be renewed or replaced in the second period³⁴.

Temporary credits and complex rules are the sources of financial, administrative and institutional problems connected to CDM. Nevertheless, rules and monitoring lay the foundation for institutionalizing carbon markets. This is related to transferability, ownership and use of the products (Rose-Ackerman 1985). A set of rules and systems of monitoring are set up in both the regulatory and the voluntary carbon markets.

Since the international negotiations, carbon forestry projects have been quite successful in voluntary carbon markets. Carbon forest projects are often divided in three project types; avoided deforestation and degradation (REDD), Improved Forest Management (IFM) and Afforestation/Reforestation (A/R). Green Resources operate mainly within the A/R segment. Carbon credits from REDD projects are currently included in the voluntary carbon market, and is the main prospective source for forestry carbon finance. In 2010, 45% of all credits sold in voluntary markets were related to land-based projects, 29% were related to REDD projects (Peters-Stanley et al. 2011). One reason why more forestry projects have

³¹ Frank Melum, Point Carbon, Asbjørn Torvanger, CICERO, Endre Tvinnereim, University of Bergen, and Peer Stiansen, CDM Executive Board/Norwegian Ministry of Environment

³² Arild Angelsen, Norwegian University of Life Sciences and Peer Stiansen, CDM Executive Board/ Norwegian Ministry of Environment

³³ Peer Stiansen

³⁴ Ibid

participated in the voluntary carbon market has been simpler reporting requirements³⁵. Green Resources state in their company report that “the requirements for each market are quite different” (Green Resources 2012, 34). This does not necessarily say anything about the quality of these projects³⁶.

CDM projects were thought to dominate the carbon forestry market, but the voluntary has shown better long-term prospects. Forestry carbon projects provide a large opportunity for Africa, but are viewed to be the most difficult CDM projects to implement. In terms of volume and number of projects, forest carbon succeeds better in voluntary markets than in regulatory. This might change. Often voluntary carbon markets serve as a testing ground for future compliance markets. Or as critical institutionalists would put it “institutions are pieced together through processes of practice, improvisation and adaption” (Cleaver 2012, 16). Some regional carbon markets have already recognized and integrated forest projects. Examples are New Zealand, New South Wales (Greenhouse Gas Reduction Scheme) in the United States and Eastern Canada (GGRS). It is expected that California and Australia will follow the same trend (Simonet, Bouculat and Olivera 2012).

By February 2013, eight A/R CDM projects, in addition a variety of voluntary projects were registered³⁷. Moreover, the Ugandan National Forestry Authority (NFA) has prepared a REDD Readiness Preparation Proposal handed in to the Forest Carbon Partnership Facility in 2011. They are currently working on guidelines for subnational activities and a few pilots have been established³⁸. Other options for engagement in carbon markets are engagement in the voluntary and regulatory markets. Three multinational companies are engaged in carbon forestry in Uganda: Green Resources from Norway, British New Forests Company and German Global Woods. Global Woods has obtained the voluntary Carbon Fix Standard. New Forests Company got CDM in one of their forests in

³⁵ Frank Melum, Point Carbon

³⁶ Ibid

³⁷ Information from NEMA’s Climate Change Unit

³⁸ Mugumya Nyinio Xavier, NFA

2011³⁹. Green Resources is engaged in both the VCM and CDM markets in Bukaleba and Kachung, respectively (Green Resources 2012). They state “carbon finance is an integral revenue stream for all Green Resources’ projects...Green Resources is regarded as world leader in forestry based carbon” (Green Resources 2012, 21).

Regulatory constraints and different cultural views forest carbon projects in the climate negotiations are the main reasons why carbon projects have been more successful in the voluntary carbon market. In addition, a variety of other mechanisms summarized in the figure below, help explain the relative success of carbon forestry in voluntary compared to regulatory carbon markets.

³⁹ Information attained MWE, Climate Change Unit. Confirmed here:
<http://cdm.unfccc.int/Projects/Validation/DB/1OB7JARSHK055XMN54ITN69SBK1ZH1/view.html>

Figure 11: Summary of differences between the voluntary and regulatory carbon markets

	Voluntary Carbon Market	Regulatory Carbon Market
Carbon forestry's relative success	High	Low
Forestry as share of the market	Ca. 45%	ca. 0,8%
Regulated mainly by...	Market mechanisms	International regulations
Prices are a function of	Trends in the society	Policies set by governments
Certifications	Voluntary, but necessary to express product quality	Mandatory
Inclusion of REDD	Yes	No
Customer base	Mainly private/NGO	Mainly public
Development costs	High/depending on the standard	Very high
Limitation of type of forest project	No	Yes, only A/R is included
Level of bureaucracy	Moderate	High
Transparency of validation process	Low (VCS)	High
Focus on sustainable development	No (VCS)	Yes
Strong focus and well-developed methods for measurement of carbon capture	Yes (VCS)	Yes
External validators	Yes (VCS)	Yes

7.2 Price Mechanisms in the two Carbon Markets

Both the voluntary and compliance carbon markets' prices are primarily influenced by demand and supply⁴⁰. Demand and supply in the markets are influenced by many factors, and there are a few differences between voluntary and compliance markets. These are presented after the brief reminder of the necessary preconditions of commodification of products.

Karl Polanyi questioned economists' view that "the existence of price-creating markets is natural" (Didry and Vincensini 2011, 3). He emphasized that commercialization of productive factors and money is among the essential components in the creation of an economic market. In order for agents in a market to be able to pursue profits through exchange, productive factors and money must be "free" to be bought and sold (Sánchez-Andrés and March-Poquet 2002). Commodification of carbon forest credits is therefore essential for this market to function. Linked to the process of commodifying forest carbon credits (and credits from other projects), governance systems created for other purposes have been incorporated in the market (Boyd, Boykoff and Newell 2011). These systems influence carbon prices in the market.

On average, Certified Emission Reductions (CERs) have been more expensive than VERs. The reason why CDM currently is cheaper than voluntary carbon credits is that CDM has larger volumes than expected. At the same time, the demand for the credits has gone down. CDM prices hit record low levels in 2012, and you could buy a CER for 0,60 Euro in December 2012. The highest price was slightly above 5 Euros. In comparison, the average price was 8,3 Euros in 2011, and 9,2 Euros in 2010 (Statens Energimyndighet 2013). Forest credits in the CDM market have generally been cheaper than other CDM projects. This has led to a reluctance of investment in these projects compared to other⁴¹.

Moreover, the fact that emission caps for a given period is fixed, in addition to insecurity about emission caps for future commitment periods, influence prices significantly. This makes the prices less stable than they would normally be if

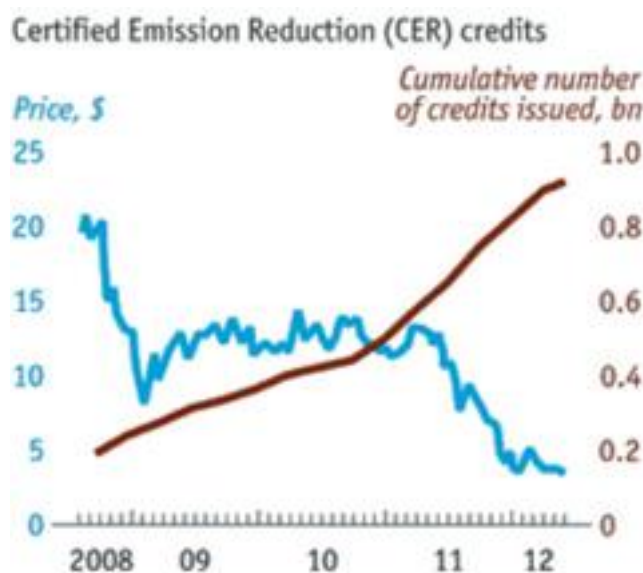
⁴⁰ All researchers and market analysts interviewed in the thesis.

⁴¹ Peer Stiansen, CDM Executive Board/ Norwegian Ministry of Environment

investors could foresee endurance in the market despite sequentially divided periods negotiated through climate negotiations.

One of the main reasons behind the market failure related to CDM was that the mechanism was launched during a period of economic growth in the industrialized part of the world. Before the outbreak of the financial crisis in 2008, there was a demand for Certified Emission Reductions (CERs). When the crisis broke out, this demand plummeted. Since it takes time to verify and validate CDM projects, many projects that were initiated before the crisis, could not deliver the CERs before after the crisis hit⁴². This contributed to an overflow of CERs in the market at a time where the demand had gone down.

Figure 12: Demonstration on how demand has gone down at the same time as supply has gone up in the CDM market



Source: CDM Policy Dialogue (Lang 2012)

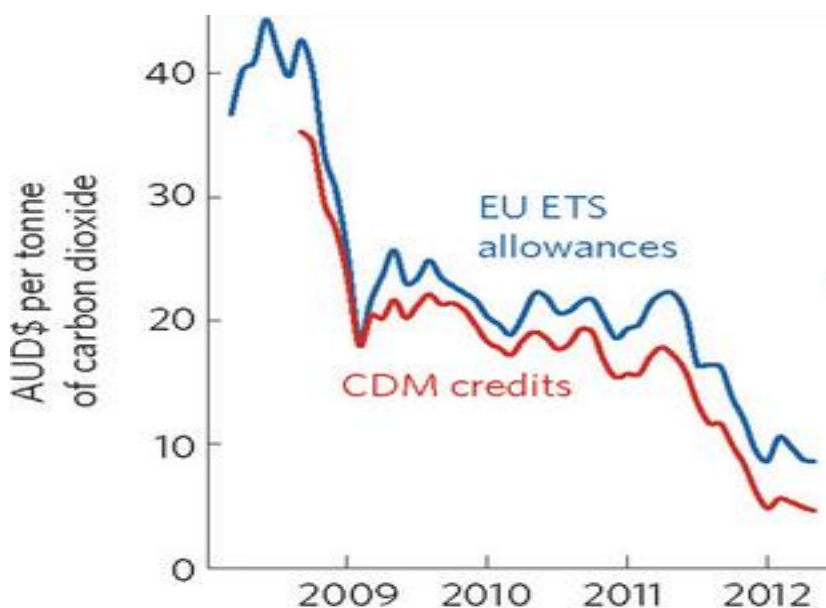
The largest market, EU ETS, has been steering the prices. Generally, CDM prices have been a bit lower because of the bureaucracy related to the verification/validation process⁴³. The CDM Executive Board has accomplished some changes in the system to ease the bureaucracy⁴⁴.

⁴² Endre Tvinnereim, University of Bergen

⁴³ Ibid

⁴⁴ Peer Stiansen, CDM Executive Board/ Norwegian Ministry of Environment and Endre Tvinnereim

Figure 13: Historical CDM and EU ETS prices confirming the statement above



Source: Jotzo (2012)⁴⁵

Another reason for low CDM prices is that Kyoto 2 is not more ambitious with regards to its goals and achievements than Kyoto 1⁴⁶. One of the markets demanding fewer credits is as mentioned above, the European. The financial crisis is not the only factor reducing demand in this area. Because prices are a function of policies set by governments, the EU 2020 goals with focus on renewable energy influence the price mechanism⁴⁷. EU has built the largest institution in the carbon market and will reform this in 2013. Inclusion of forestry credits will be evaluated after 2020. Therefore, CDM A/R prices are likely to remain low.

Despite the creation of the carbon markets' largest institutions, EU's policies undermine the functioning of the current market. The reason is that they steer their politics into a "low carbon" economy⁴⁸. A revision of their current carbon trade scheme is therefore necessary for it to function. EU's focus on development of renewable energy projects, in addition to new ways to reduce emissions in the industry, explains a large share of the decreased demand in the market⁴⁹. The two last points can be seen to be in line with the neoliberal argument that informed

⁴⁵ NB! Prices are given in Australian Dollars. The figure is cut since the Australian market is not a focus in this thesis.

⁴⁶ Frank Melum, Point Carbon

⁴⁷ Sigurd Klakeg, Norwegian Ministry of Finance

⁴⁸ Sigurd Klakeg

⁴⁹ Endre Tvinnereim, University of Bergen

entrepreneurs will adapt to accurate price signals by shifting investment away from environmentally harmful to environmentally beneficial business solutions (Lohmann 2009). Moreover, it may show that behavior in the market is shaped by incentives, rules and sanctions as new institutionalists emphasize. In this view, the carbon market is serving its purpose in giving incentives to reduce emissions and steer investments towards greener technologies. This leads, however, to a demand for politically renew the premises for the market to function properly. On the other hand, a shift in investments may be a result of changes in policies.

One policy change made by the CDM Executive Board is exclusion of credits from certain project types. The exclusion of HFC (hydro fluorocarbon) projects from CDM has contributed to lower prices because is led to a rapid increase of such credits in the market before their expiration. These credits cannot be sold or bought anymore⁵⁰. Many of the HFC projects were implemented early in the CDM era because of the large environmental effect these projects had. Many of these projects were realized in India and China. Examples of such projects are the Gujarat Fluorochemicals Ltd in India and Jiangsu Meilan Chemical CO Ltd in China (Climate Connect 2013). An exclusion of HFC CDM credits may be a step towards “greening” of compliance markets and can be viewed as a positive step for the mechanism (Simonet, Bouculat and Olivera 2012). The goal with CDM is to find the cheapest and most cost saving method to reduce carbon emissions. The focus on efficiency in reductions channeled resources into certain emission reducing projects. Hence, new institutional theorists focus on behavior in a market is shaped by incentives fit. A consequence is that it takes attention away from other projects⁵¹.

Increased supply and decreased demand, in addition to the abovementioned factors certainly show that there is a need for a revision of international regulations in the CDM market in order to make it function. The set of laws and regulations first initiated in the Kyoto negotiations do not hold if the current market is to function.

⁵⁰ Endre Tvinnereim, University of Bergen

⁵¹ Ibid

One of the main problems, however, stem from the same negotiations. By 2012, “Annex 1”⁵² countries accepted binding constraints meaning that they agreed to buy emission credits when their emissions were higher than the 5,2% reduction from the 1990 levels. After the dissolution of the Soviet Union emission reductions in former Soviet states were diminished by 40% due to disclosure of many polluting factories (Bond 2012). This lead to excess permits where these states could sell credits in the market without actually lowering their own emissions. In that respect, Russia is the most important country⁵³. Because of the excess credits from Eastern Europe the supply is artificially high, and leads to lower prices. Some of the excess credits commonly referred to as “hot air”, from Russia, will not be sold in Kyoto 2. The reason is that Russia chose not to sign the agreement.

Despite plummeting CDM prices, there has been increased demand for African-sourced credits. This may show that the global demand is differentiated demand between different continents and regions. Some actors pay more for forest carbon credits in compliance markets relative to other projects⁵⁴, and forest-based credits has grown to the second largest source of purchased credits in the voluntary carbon market. Green Resources has one CDM certified plantation in Kachung and one certified under the Voluntary Carbon Standard (VCS) in Bukaleba. GRAS’ managing director in Uganda, Isaac Kapalaga, confirmed that prices in the CDM market currently are lower than in voluntary⁵⁵. Despite this, the company got higher than average prices for CDM in 2012, while their VCS credits was sold for average prices (Green Resources 2012). Nevertheless, it is more economically beneficial for investors to invest in the best certifications in the voluntary carbon market offers, compared to the regulatory. Even though prices decreased in the voluntary carbon market after the outburst of the financial crisis in 2008, they seem to be more stable than in the compliance market. One of the reasons for this is that customers’ motivation to purchase credits in this market differs from the main motivation in the regulatory market.

⁵² Industrialized countries

⁵³ Asbjørn Torvanger, CICERO

⁵⁴ Peer Stiansen, CDM Executive Board/ Norwegian Ministry of Environment

⁵⁵ Isaac Kapalaga, GRAS

Most public actors primarily buy certifications through the UN system in order to fulfill their obligations under the Kyoto Protocol⁵⁶. Even though they can purchase Verified Emission Reductions (VERs) in the voluntary market, many governments do not engage in this. This can be seen as a consequence of the rules, incentives and sanctions that lay the foundation for compliance markets. Another reason for this is that CDM certification is seen to offer quality reassurances⁵⁷. When emissions are reduced due to lowered economic activity, public actors naturally demand fewer credits than normal. Hence, demand for CERs goes down.

The customer base is slightly different in the voluntary market⁵⁸. A significant share of the purchase of VERs in this market stems from businesses, non-profit organizations and individuals. Hence, the motivation stems from other sources than obligation under the Kyoto Protocol. Most forest carbon transactions happen in voluntary markets and show that the main motivations for buying offsets are CSR goals and marketing. Behavior in this market may therefore be influenced more by social structures and individual creativity. The motivation probably differs between non-profit actors and for-profit actors as well.

Prices in carbon markets follow general market principles. The prices increase as credits move up the value chain from project developers all the way to the end users (Peters-Stanley, Hamilton and Yin 2012). There was a distinction between the regulated and the voluntary markets; in voluntary markets, developers traded the largest volumes directly with end-users to prices below average, and smaller volumes to secondary markets for a somewhat higher price than average.

Compared to CDM, where there is one certification for forestry projects (A/R CDM), there are many forestry certifications in the voluntary markets. A consequence is more competition on quality, and not only prices. There exist a few “gourmet” alternatives in the market that are highly recognized^{59,60}. If the

⁵⁶ Endre Tvinnereim, University of Bergen and Asbjørn Torvanger, CICERO

⁵⁷ Sigurd Klakeg, Norwegian Ministry of Finance

⁵⁸ All consumers of carbon credits can purchase credits in both the voluntary and regulated carbon markets. I choose to link different customer types to the different markets because it is relevant to explain price changes in the different markets.

⁵⁹ Endre Tvinnereim

⁶⁰ Certifications indicating the quality of the VERs are discussed under the section “The Importance of Certifications”.

market did not pay for the higher quality products the providers of such projects would lose their competitiveness. In accordance with rational choice theory, this would lead to a “race-to-the-bottom” because the customer is not aware of quality differences with regards to socio-economic impact and rigidity of carbon storage. The high recognition of the best alternatives in the market also shows that branding is important. Social inclusion of these certification mechanisms in the market is therefore key for it to function. In order to gain value in public relations work, it is necessary to show use of the best certifications. Nevertheless, higher prices in the voluntary market may reflect that the existing certifications are seen as reliable, and that the market is actually functioning.

Demand and supply primarily drive the prices in both the regulatory and voluntary carbon markets. Distinctions in regulatory constraints, customer base and inclusion of forestry-based credits in the two frameworks affect prices differently.

7.3 The Role of Certifications

Certification is a requirement in compliance markets, and an increasing necessity in voluntary markets. Increased focus on carbon certifications, and additional certifications reassuring that the carbon credits purchased stem from a socially and environmentally responsible driven company, may be a consequence of “the rules of the game in the society” (North 1984). Increased focus on such aspects from the media, NGOs and other civil society groups possibly make certification of carbon forestry credits a necessity to survive in the market. The reason is that customers want reassurance that they purchase a quality product. Since individuals engaging in the markets seek to maximize their goals to obtain maximum benefit through sales of credits. Hence, their preferences to certify their credits are exogenously given. The main point of rational choice and calculus historical institutionalists, is that actors’ behavior are influenced by their expectations of other actors’ behavior (Hall and Taylor 1996).

Risks of non-permanence and leakage associated with carbon forestry projects make sound certification of projects important. Other noteworthy factors are consideration of biodiversity and local population, as forestry carbon projects demand large areas of land. The voluntary carbon market was formerly seen as a

“wild west”. As Karl Polanyi (1957) wrote, a laissez-faire market approach will eventually lead to a demand for reintroduction of frameworks of social control. This shows that property rights and institutional rules are required to ensure a well-functioning market. Certifications are important because of the complexity and intangible feature of the product. The issue of information asymmetry and moral hazard between sellers and buyers is especially a problem in carbon markets. When buying CERs or VERs, you buy “the absence of invisible emissions”⁶¹.

Historical Institutionalists’ focus on path dependence can help explaining the increase in certification demands. First, a regulatory carbon market was made. The voluntary already existed, but was by and large seen as a “wild west” of different credits that were not as reliable as those the regulatory framework offered. A result was increased focus on standards in this sector.

Since GRAS’ carbon credits either are sold quite recently or are for sale, it is hard to prove whether the company will fulfill this goal and contribute to increased sustainability in the areas in which they are operating. Green Resources’ plantations are mainly certified by CDM, VCS and CCB standards. They state that third-party auditors have reviewed their plantations thirteen times, and eight of these evaluations are publicly available. GRAS has also had more than twenty socio-economic and environmental impact evaluations performed by consultants (Green Resources 2012). Information on why not all these reports are available is not given. Their public lenders, Norfund and Finnfund had consultants investigating the company’s business before they gave GRAS the loans. Even though Norfund forwarded a list of hundred points of improvement GRAS, they evaluate the company as “best in class” within their sector⁶². Nevertheless, the company heavily emphasizes their various carbon certifications and their additional standards, such as FCS, and it is clear that third-party certification is important in the market. They even claim that “achieving higher than market average carbon credit prices for CDM and around average for VCS projects, demonstrate the high-quality credits from our projects” (Green Resources 2012, 33).

⁶¹ Endre Tvinnereim, University of Bergen

⁶² Tim Lund, Norfund

Third-party certification is important in carbon markets, as it is in other business sectors; to avoid that people that evaluate the projects has self-interest in the project. This is essential in order to secure that the quality of issued credits are comparable to other similar projects⁶³. Despite this, a discussion has evolved around different project types. One reason for this is that it is easier to verify how many tons of CO₂ that are reduced than to evaluate influence on local circumstances and sustainable development^{64,65}. A benefit with certification is that these are independent actors that are responsible for their actions. This means that they can lose their accreditation as a validator of projects if they approve poor projects⁶⁶. Hence, third-party verification leads to increased integrity of a project. This demand is linked to the issue of additionality and baseline.

The relationship between validators and project developers can also be viewed as problematic and incidents show that opportunistic behavior does exist in the market. In 2009 the largest validator of CDM credits, SGS, got temporarily suspended after the board got information that the company could not prove that several projects were properly audited (Murray 2009). Generally, a problem similar to rating bureaus in the financial industry exists: namely that validators are dependent upon payments from the companies they verify.

An issue related to VCMs is that it lacks international regulations. It is a bit more “buyer be aware”. With CDM you know that the product you buy has been through a standardized validation and verification process. A few “gourmet standards” have been developed in the voluntary market⁶⁷. The Gold Standard, backed by more than eighty civil society groups, is one of them. The Gold Standard can be issued to CDM, JI and voluntary projects. For large-scale Gold Standard projects the requirements are the same as for CDM (Carbon Connect 2013). The extension of the Gold Standard to include forestry credits may enhance the market.

⁶³ Frank Melum, Point Carbon

⁶⁴ This point is discussed more in the part about market controversies.

⁶⁵ Frank Melum

⁶⁶ Ibid

⁶⁷ Endre Tvinnereim, University of Bergen

A combination of public, private and hybrid governance structures work together to make carbon markets function. A variety of lawyers, regulators, accountants, auditors and project developers are involved in different processes of verifying e.g. CDM projects. Some voluntary standards, such as the Voluntary Carbon Standard, follow the same pattern. The combination of all these governance processes may all together lead to a governance deficit stemming from lack of transparency and the ability to easily get an overview of the market (Boyd, Boykoff and Newell 2011). Many actors in the market, in particular government actors, therefore execute additional revision of projects before they buy credits.

The Norwegian Ministry of Finance only purchase the UN certified quotas, AAU, JI and CDM⁶⁸. First and foremost, this is done because Norway needs to fulfill the requirements set by the Kyoto Protocol and the additional targets they set for themselves⁶⁹. In addition to buying credits in the regulatory markets, the Ministry of Finance also checks the reputation of the companies they purchase credits from. This is done in order to secure the highest quality, and to avoid controversial projects and actors. They consult the Ministry's Council of Ethics and NGOs engaged in the market⁷⁰. Other European actors also do further investigations, while other countries do not. It is done to secure the actor's reputations⁷¹.

When the Norwegian Ministry of Finance wrote a contract with Green Resources to buy Certified Emission Reductions (CERs) from one of their projects in Tanzania, they sent consultants and one representative from the ministry down to the plantation in order to take a closer look at the project⁷². The project met the required standards at the time, but the ministry had to cancel the deal in September 2012 because Green Resources did not obtain the certification in time⁷³. A/R CDM credits from the Kachung project was sold to the Swedish Energy Agency. SEA state that Kachung is a "win-win" project that is good for both the environment and the local population living in the surrounding area (Statens Energimyndighet 2012).

⁶⁸ Sigurd Klakeg, Ministry of Finance Norway

⁶⁹ Peer Stiansen, CDM Executive Board/ Norwegian Ministry of Environment

⁷⁰ Sigurd Klakeg

⁷¹ Endre Tvinnereim, University of Bergen

⁷² Sigurd Klakeg

⁷³ Ibid

The focus on externalities in forest carbon markets leads to an increased demand for quality reassurance through certification arrangements. Generating carbon credits of high quality that includes social and environmental impacts on forestry projects are more costly for project developers. Research shows that offset buyers are increasingly cautious of what is commonly referred to as “greenwashing”⁷⁴. Ecosystem Marketplace’s 2011 report (Peters-Stanley et al. 2011), state that almost all voluntary forestry credits are certified by a third party. The Voluntary Carbon Standard (VCS), attained by GRAS in Bukaleba, had a 54% market share in 2010. The standard focus on strong carbon accounting, and does not focus specifically on co-benefits from plantations. It does support a no-harm policy regarding social and environmental externalities. Naomi Swickard, referred to in Simonet, Bouculat and Olivera (2012, 12) confirms this:

“The VCS is a carbon standard, so it does not absolutely require additional co-benefits, but it does require that projects looking to issue VCS credits identify potential negative environmental and socio-economic impacts and take all steps to mitigate them”.

This statement fit the situation in Bukaleba⁷⁵ where GRAS has not the Carbon Community and Biodiversity (CCB) Standard additional to the VCS⁷⁶. The Bukaleba VCS documents do not show any direct contact with the villagers in the process except a district council speaker and a chairman LC3 in Bukatube sub county (Decq and Espejo 2012). A combination of CCB and VCS is quite common in carbon forests where co-benefits for the rural population are proven. Given the long-term perspective on tree plantations and the complicated conditions in many rural areas with poor communities, projects that do not include local stakeholders have a strong possibility of failing (Boyd, Gutierrez and Chang 2007). CCB is seen to focus more on social and environmental benefits of a project more than quantification of projects. Consequently, it serves as a good supplement to e.g. VCS or A/R CDM. The achievement of A/R CDM and CCB in Kachung can be seen to confirm the findings about differences in conflict and

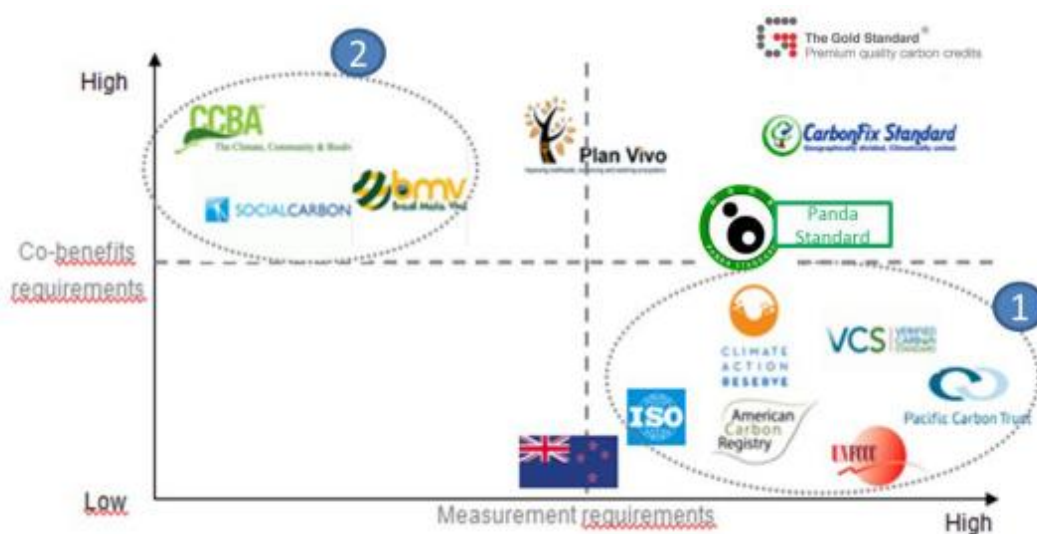
⁷⁴ Frank Melum, Point Carbon

⁷⁵ The situation in Bukaleba is described in short below.

⁷⁶ Discussed in the next section

CSR levels in Bukaleba and Kachung. However, a recent study found big gaps between the CCB Standards' requirements and issues highlighted in project developers' project design documents. This shows that “despite the institutionalization of requirements for facilitating e.g. procedural justice, many designs fail to demonstrate their adherence to the standard” (Suiseeya and Caplow 2013, 8). Three of the projects researched in this study are projects validated for Green Resources.

Figure 14: Standards mapping



Source: Astrium Services and CEC (found in Simonet, Bouculat and Olivera (2012))

Project developers and credit buyers have different motives and emphasize different aspects when purchasing/developing carbon credits. Although partly motivated by altruism, most project developers engaged in forest carbon markets aim to maximize their returns. Green Resources' state that they want to:

“reinvest 100% of the carbon income in further tree planting into the African villages where the carbon revenues were originally generated, thereby continuing to provide significant employment and development.”

(Green Resources 2013)

What is certain is that different certification standards allow for different behavior among project developers in the carbon forestry business. They may also manifest different difficulties plantation owners face with regards to conflict levels between companies and peasant populations.

A/R CDM certification is a prerequisite to operate within the compliance market. In the voluntary carbon market, the necessity of third-party certification has increased a lot. Stronger focus on socio-economic co-benefits for rural populations and the risk of leakage and non-permanence are the main explanations for the increased focus.

Figure 15: Key findings and their relation to theory

Findings	Best suited theory
Markets is created by a combination of rules and markets forces	Neoliberalism
Regulatory constraints hinders the forestry carbon market to develop	Rational Choice Institutionalism
Constraints are exogenous of the market	Rational Choice Institutionalism
Different views on commodification of forestry carbon credits rooted in historical trends and political views	Critical Institutionalism/Historical Institutionalism
Monitoring of carbon forests can be difficult relative to energy projects	Critical institutionalism (gap rules vs. practice)
Low prices due to regulatory constraints (CDM)	Rational Choice Institutionalism
Lacking recognition of A/R CDM in EU ETS=low demand	Rational Choice Institutionalism
National governments reluctance to include forestry is based on a fear of differences between rules and practice	Critical Institutionalism
Inclusion of forestry credits in regional regulatory frameworks	Critical Institutionalism
Increased use of certifications in voluntary carbon markets	Critical Institutionalism

7.4 Carbon Forestry Projects and Socio-Economic Influence

Green Resources' two projects in Uganda show that carbon forest plantations can have noteworthy socio-economic influence on local population's lives, both positively and negatively. Consequently, globally structured markets have

implications on a local level. Moreover, GRAS' behavior as an organization is influenced by other institutional arrangements than the ones related to the international carbon markets.

As mentioned in the first analysis section, one of the problems with carbon forestry projects is related to the potential of land conflicts with local populations. In that respect, one can critically ask if this contributes to sustainable development, which is one of the requirements of CDM⁷⁷. Historical institutionalists have proposed that different institutional arrangements within the carbon forestry market allocate power disproportionately across social groups (Hall and Taylor 1996). Forest carbon credits, especially in the voluntary markets, are often criticized for their legitimacy when it comes to environmental benefits and treatment of peasant populations (Merger and Pistorius 2011). As an opposing theory to this criticism, neoliberals emphasize that living standards of the employed population have increased as a result of capitalist accumulation (Clarke 2005). Moreover, the neoliberal notion promises increased democracy, and to protect rural population and their property rights.

Trade-offs between carbon plantations and externalities differs in different projects, and needs to be looked at case-by-case (Simonet, Bouculat and Olivera 2012). Projects that benefit local populations, and e.g. share carbon revenues with local populations and give access to firewood etc., are generally more successful in Sub-Saharan Africa (Reynolds 2012). Despite the short period spent in Green Resources' carbon plantations, it became clear that they face some challenges regarding the rural populations in Bukaleba. Except some reported start-up problems, Kachung did not show the same signs. In Bukaleba Forest Reserve (BFR), people felt more threatened by the company's business⁷⁸. Many villagers felt they were not welcome to stay by the company. This was confirmed in interviews conducted in Bukaleba, Nakalanga and to some extent in Walumbe.

⁷⁷ Asbjørn Torvanger, CICERO

⁷⁸ Differences in the relationship between the company and villagers in the two plantations are also confirmed in the interview with Karl Solberg, one of the former investors in Norwegian Afforestation Group.

The people in Walumbe were slightly more positive and emphasized that they wanted to cooperate with the company⁷⁹.

Green Resources' field office close to Bukaleba village also expressed that they had experienced conflicts in the plantation. The senior plantation manager expressed that the conflict level had been at its peak between 2009 and 2012, but that they are “manageable bumps”. The company experienced some mass destruction on the plantations.

“It is sometimes understandable because the people are pushed to the wall as the forest is taking place. They have nowhere else to go. They used the area as farmland, and now it is taken back to forestry. It is never easy. We lost about 50 hectares in a fire in 2009. In 2011 we had 40 ha cut down by communities”.

(Teddy Nsamba, 13.02.2013)

The company further express that some of the problems they experience are not related to the villages.

“Sometimes people come from the outside to make claims”.

(Teddy Nsamba, 13.02.2013)

The difficulties GRAS faces in relation to Bukaleba may stem from geographical and demographical matters. While the villages in Bukaleba are placed within the actual forest reserve, the ones in Kachung are placed in the outskirts. Moreover, institutional arrangements in Uganda proved central for some of the activities that GRAS forbids, and that the rural population was dissatisfied with. Both forest reserves were defined as degraded⁸⁰ woodlands where villagers used to cultivate and had animals grazing.

⁷⁹ Based on interviews conducted with various respondents in all three villages within the forest reserve.

⁸⁰ The term “degraded” is a bit misleading. Trees had not covered the areas in many years, but people used the grasslands for grazing animals and some agricultural practices.

People in Kachung have access to land outside of the plantation. In Bukaleba they need to move far away if their animals are to graze outside of the plantation. It became clear during interviews with people and local politicians in Bukaleba that people had been asked to move from the forest reserve. The local political leaders in Bukaleba claim that they do not have any problems with Green Resources per se. The management of Green Resources express that they do not engage in involuntary displacement of people:

“One of our policies is that we do not encourage, and don’t get involved in involuntary displacement of people”

(Isaac Kapalaga, 13.02.2013)

However, I got the impression that there had been some conflicts over land in the plantation. Local politicians stated that people first:

“...Were chased out of this place...there is a lot pressure from the community, but we told them that this place is not yours. It was for the government, and the government decided to give it to the BFC. So they went on and slowly started listening. BFC is giving something, like the service delivery and health center support...they also allowed some intercropping...some still grow crops in the forest.”

(Interview with Sajjabi Aggry, referring to the former situation in Bukaleba. 11.02.2013).

BFC has in Bukaleba approached local politicians to influence people to move⁸¹. This is confirmed during the interview with the head mistress in Bukaleba:

“For the community they promised some packages as they send them away. We don’t know when, but they promised...you get money and go.”

(Interview 12.02.2013)

This movement of people is according to GRAS happening on a voluntary basis.

⁸¹ Sajjabi Aggry, Parish Chief neighboring parish to Bukaleba.

It seems like communication problems was the main challenge in the beginning when the company entered the forest reserve. Because of a cattle farm set up during Idi Amin's rule, people had moved into the reserve in the seventies⁸². Others had come later. Nevertheless, the result is that many of the villagers have been living their whole lives in the reserve. When a company enters with insufficient information they will meet problems. No one gave the impression that the company forced people out of Bukaleba, but the plantation business does seem to jeopardize the people's sustenance within the forest reserve. Critical institutionalists view markets and their preconditions as heterogeneous (Lesorogol 2010). This is definitely the case in GR's Uganda operations. Even though unintended, the business has to some extent influenced people's lives in one of their plantations negatively.

Despite a few issues in the start up, none of the respondents in Kachung gave us the impression that the company's activities intrude on their daily lives and threaten their livelihoods. Most of the respondents described the situation as good, and people generally appreciate what the company is doing. One of the Storekeepers at LFC told us that:

“So far there are not any conflicts. Only in the beginning when they where opening this land for the forest plantation...there was this scenario of evicting people in the plantation because they were cultivating in the plantation...and grazing. But these days the problem is no longer there.”

(Interview 15.02.2013)

Two headmen working in Kachung further verify this:

“The relationship is good...very good...we appreciate what the company is doing. The company has constructed a health unit. And they are protecting spring water...and provided seedlings for free. It's done through the local leaders. We have a community development officer, who is in charge of all these programs.”

(Interview 15.02.2013)

⁸² Anne Kari Garberg, FIVH and Apili Stella Maris, GRAS

One of LFC's field supervisors further confirms a change in the situation in Kachung and that the relationship is good:

“You see, this place was owned by the government. Most of the area was not planted, so the communities around used to graze their animals within the area, and they used to cultivate, even though they were not supposed to. But they were not residing. So they thought it would be like that forever, they did not think the government would give it to other people to do the planting of the trees. So their attitude was that they could use it for the grazing of their animals, digging, cultivating. So when they tried to make them stop they thought they were being chased away from the area, which was already a government land in fact, gazetted by the government. So later they learned, they were talked to, they mobilized the communities, talked to them and they came to understand. That's why they are now friendly.”

(Interview 16.02.2013)

Despite the positive influence respondents stated that GRAS' activities give, a few respondents in Kachung emphasize that certain aspects of their lives has become more difficult. One of the issues they emphasize is lack of places to graze their animals. The Australian researcher Kirsten Lyons (2012) found that people in Kachung felt that they were “squeezed” off the land because of the trees. However, the people in Bukaleba were generally more negative, did not see many benefits from the company and felt threatened by their activities. Although pinpointing a few negative side effects not directly related to the company's business, many respondents in Kachung underlined benefits LFC had brought with them:

“We have seen the benefits. The income improves the standard of living for the people. There is always monthly income from the plantation work. There is also a negative side of it because workers only concentrate on the plantation work, abandoning their own work, like food crop production. So at times it also leads to famine...”

He further explained that the lack of own cultivation did not stem from the fact that land was taken away. This seemed not to be a problem in Kachung:

“I would say the relationship is good. Cause the people living here work here. According to me the existence of this company has even improved the people’s livelihood.”

(Storekeeper Kachung, 15.02.2013)

The impression given by the company’s workers was confirmed in the villages surrounding Kachung:

“The community wanted to know why the company was coming to plant trees without notifying the community around...and that was caused the conflict, cause they where not aware...The relationship with the company is good now because they has been giving some facilities to the community, like a health center, seedling and wells.”

“The most difficult situation is that we are not allowed to take our cattle to graze in the forest.”

(Vice LC1 Apeti’a Village, 16.02.2013)

Viewing the differences between the two plantations and the problems Green Resources and the rural populations face, it becomes clear that carbon forestry projects can lead to land conflicts with local populations⁸³. This finding is related to issues of property rights where a right to conduct certain activities in certain areas may provoke conflicts. It also shows that carbon forestry projects can contribute to sustainable development in line with neoliberal argumentation. Neoliberals emphasize that a consequence of capitalist accumulation, such as the one we see in forest carbon markets, is increased living standards of the employed population (Clarke 2005). Historical institutionalists have suggested that some institutional arrangements within forestry carbon markets allocate power disproportionately across different social groups. This is also evident in the

⁸³ Anne Kari Garberg, FIVH, also confirms the conflict in Bukaleba. She did many of the same observations as I did during her visits to the plantation. Additionally, Dr. Kirsten Lyons from the University of Queensland writes about negative impact in both plantations.

plantations, and both theories can be seen to complement each other in this context. What effect a project gives depends on companies' approaches and practices. Demography of an area and community development activities may also influence level of conflict in carbon forestry projects.

7.4.1 Community Development

Green Resources state that they contribute to socio-economic development by providing employment in the regions they operate. Moreover, they engage in various community development activities, such as education of girls, construction of maternity wards, HIV/AIDS sensitivity programs, seedling provision and tree planting education to communities⁸⁴. They promise more development as the company starts to earn money:

“We are committed to spend 10% of our carbon revenue to our community development activities. Currently, we try to implement community activities; tree planting, health activities, maintenance of community roads...people have free access to our plantations to pick firewood for cooking. Some of them go ahead and even cut firewood for sale...”

(Isaac Kapalaga, 13.02.2013)

GRAS' also emphasize that community development is prioritized even though the company has scarce financial resources

“Even when we don't have money to pay salaries, I save a few thousand dollars for medical supplies to the health center, which most of our workers and the communities use.”

(Isaac Kapalaga, 13.02.2013)

The statement may imply that GRAS prioritizes some of their community activities before paying their workers⁸⁵. A local nurse at the GRAS' and Norad-financed health clinic in Nkombe Village support this statement and says they regularly get medical supplies. Although GRAS has a community development

⁸⁴ Apili Stella Maris, Teddy Nsamba and Isaac Kapalaga, GRAS

⁸⁵ The worker that had quitted his job at GRAS said that he sometimes got his wage later than agreed upon in his contract.

program and heavily promote this at their webpage and other company material, villagers in Bukaleba forest reserve claim the benefits are lacking, and leaves an impression that they feel more threatened than benefitted by the company's activities⁸⁶. The company's development officers seem to have been more successful in promoting the various initiatives the company has taken. This achievement may be explained by the size of the area, which is one-fourth of Bukaleba, in addition to the fact that none of the villages are placed within the central forest reserve⁸⁷.

Carbon forestry projects are found to have both positive and negative socio-economic influences on local populations. There are indications that GRAS' work in Bukaleba impacts peasant populations negatively, mainly due to lack of land for cultivation. The impression is better in Kachung, where it seems like their activities have contributed to increased living standards. The company does work to improve the relationship with the local people both places and the situation may change. However, it is important to keep in mind that the world is experienced with "different eyes" depending on where one belongs in a social hierarchy.

Figure 16: Summary of factors that possibly influence conflict levels in the CFRs

	Kachung	Bukaleba
Villages are placed	Outside the CFR	Inside the CFR
Reported conflicts between villages	No	Yes
Political interference	Not reported	Reported during election periods
Allowance of grazing in CFR	No	No
Allowance of cropping between the plantation trees	No	No
Construction of health facilities	Yes	Yes
Participation in the tree planting programme	Yes	Yes
Road maintenance	Yes	Yes, but in poor condition during our field trip
Water access	Yes, in five villages	Yes, renovation of an old one and to boreholes

⁸⁶ LC1 Nakalanga, Aldon Walumkamba, Uganda Radio Network, and other participants at the interview sessions in the three villages in the Bukaleba plantation.

⁸⁷ Villagers in Kachung, in addition to workers of the company state that they benefit from the community development programs GRAS have set up in their communities.

7.5 Local Institutional Arrangements and their Influence on Carbon Forestry Projects

International rules and government regulations frame how businesses in carbon markets operate. Moreover, informal host country and sponsor preferences also shape a projects outcome and behavior. A gap often exists between abstract rules and concrete actions. In North's new institutional theory, rules exist to exclude outsiders and regulate use of resources. Uganda's Central Forest Reserves (CFRs) are set up with a legal framework that excludes people from living, cultivating and breeding grazing animals in the areas. This is written in Uganda's Forestry Act⁸⁸. The first ones were set aside for forestry during British rule in 1932⁸⁹. Green Resources operate under these preconditions and hence follow the law⁹⁰. GRAS' license in Uganda is for a period of 49 years because the country has a policy not to give foreigners longer agreements. NFA is the body that hands out and authorizes these agreements⁹¹, and lease land to private investors at a cost between 6,600 and 22,300 USX (or between 2,6 and 8,7 USD) per hectare per year. The agreement is revised every year, and currently GR pays 6,600 USX per hectare per year in Kachung. In Bukaleba they pay 9900 USX per hectare per year⁹². Payments depend on distance from Kampala, where you come from and what species you plant⁹³.

Political risks related to land areas in Uganda, such as CFRs are based in the fact that people have moved into the reserves even though they were not intended to in the first place⁹⁴. The local people are aware that the land they live off is government land gazetted for forestry:

⁸⁸ Jimmy Ouna, NFA

⁸⁹ Kabi Maxwell, NFA

⁹⁰ Teddy Nsamba, GRAS

⁹¹ Isaac Kapalaga, GRAS and Pathias Karekona, Uganda Broadcasting Corporation

⁹² Teddy Nsamba

⁹³ Interview with Land Management Specialist at NFA, Rashid Ssekitto.

⁹⁴ Ivar Jørgensen, Norad

“In Bukaleba, there previously was a farm for animals...I think it stopped being active in the early ‘80s...Then NFA took back its land and gave it to Busoga Forestry Company.”

(Sajjabi Aggry, 11.02.2013)

NFA define “encroachment” as cultivation, settlements and grazing within forest reserves. It is NFA’s responsibility to make sure that the CFRs are free from such activities. This is almost impossible due to high encroachment levels and politics in the country that contradicts the mandate NFA is given⁹⁵. A report prepared by NFA shows almost 50% illegal settlement in Bukaleba, and 10% in Kachung⁹⁶. Because of the settlement in the plantations, GRAS divides their plantations into different zones. They try to plant on parts of the area that are not inhabited by local populations first⁹⁷.

Steinmo (2008) emphasizes the role institutions play in shaping behavior. Further, a titleholder of the property rights, in this case GRAS, has the right to manage the area according to the company’s wishes within the legal framework. People in both Kachung and Bukaleba mentioned that some of their biggest challenges with the company’s business were the prohibition of having animals grazing and cropping in the forest reserves⁹⁸. NFA and SPGS, the latter who support GRAS financially, prohibit these forms of activities in their guidelines.

“SPGS follow the guidelines from NFA as well, and one of them is no grazing in the plantations.”

(Charles Odeke, 21.02.2013)

The close link between regulations and externalities may explain some of the restraints NFA put on forest reserves. NFA’s mandate is to protect the national forests, and they have leased out land to GRAS in order to achieve this goal. A main point with externalities is that they do not directly affect the decision maker (Buchanan and Stubblebine 1962). GRAS’ activities contribute to lower pressure on deforestation of natural forests in the region, but have some unwanted side

⁹⁵ Jimmy Ouna, NFA

⁹⁶ I was not allowed to attach this document in my thesis.

⁹⁷ Ivar Jørgensen, Norad

⁹⁸ Someone in all villages both in Kachung and Bukaleba mentioned this.

effects. In fact, the plantation contributes to multiple externalities; monoculture, decreased access to natural resources for the local population and fires. Incidents of fire release much CO² into the atmosphere, and are one of the risks directly related to the legitimacy of sold carbon credits. Evidence found supports that the company has experienced some cases of fire⁹⁹:

“An intended forest fire happened once...because they promised to give community land...”

(Worker 32, 12.02.2013)

At the same time it may contribute to uphold biodiversity in other areas outside the plantations, and protects the shorelines of Lake Victoria and the wetlands in Dokolo District from erosion¹⁰⁰.

Environmental problems, such as deforestation and degradation of woodland, are related to overexploitation of public goods and stem from incompletely defined property rights (Libecap 2008). To add on that, it may also stem from lack of resources to enforce the law. Although Green Resources is running and owning the plantation, they do not own the land. NFA as the owner of CFRs is responsible for removal of encroachers¹⁰¹. This does not mean that it is right for GRAS to disclaim their responsibility in relation to the issues they face with the peasant populations. It is easy for the company to make referrals to NFA etc. when these problems are addressed¹⁰². Land pressure and illegal activities in the plantations are mentioned to be the second largest challenge the company face¹⁰³. One of the illegal activities is related to a NGO called Arise Africa. They have built a school on a large piece of the land that is licensed to GRAS¹⁰⁴. Moreover, the settlements within Bukaleba Forest Reserve are by legal definition illegal. Whether or not one should do something with the illegal settlement is a question of where human

⁹⁹ Incidents of fire are also experienced in the other countries where GRAS operate.

¹⁰⁰ Rajab Epilla, Dokolo District Environmental Office

¹⁰¹ Jimmy Ouna, NFA

¹⁰² Anne Kari Garberg, FIVH

¹⁰³ Isaac Kapalaga, GRAS

¹⁰⁴ Pathias Karekona, Uganda Broadcasting Association and Isaac Kapalaga, GRAS

rights start. Is it ok to remove people who have been living in an area for thirty years?

Blurring boundaries and blending of formal logics between rules in carbon markets and local rules make GRAS' work in Uganda difficult. GRAS behave in accordance to regulations and laws set by governmental agencies when denying activities such as grazing and cropping between their trees. At the same time, they try to comply with international rules set by governments and other actors in carbon markets. It is not possible to conclude whether or not the company would have followed the same practice without these rules. Nevertheless, rules made by governments and followed by GRAS influence conflict levels in Kachung and Bukaleba, although the level of conflicts also is influenced by other factors. This shows that carbon forestry in practice is highly influenced by societal structures, norms and practices. Critical institutionalists emphasize that institutional functioning may produce social inclusion or exclusion.

Both national and international regulations influence carbon forestry projects on the ground. Some of these regulations seem to be in conflict because of conflicting goals.

8.0 Conclusion

Forestry carbon markets face many challenges, such as plummeting carbon prices, especially in the compliance market. This shows that the present institutionalizing of the market has been slightly unsuccessful. It also shows that there is a need for a revision of the international regulations laying the foundation for the market.

The challenges the CDM market face with regards to forestry is related to restrictions on type of forestry projects and rigid monitoring systems, making A/R CDM the most difficult projects to implement for project developers. Because of the less rigid international monitoring, voluntary carbon markets with focus on forestry have been a far greater success. The voluntary market's failures have been pointed out by a variety of groups in the international civil society. A result is increased focus on third-party certifications of carbon forestry projects.

Moreover, different incentives among actors in the two markets drive the markets forward along slightly different paths, and explain why the voluntary has succeeded.

Creation of carbon markets affect people at all levels in society, and success is relative to how it is measured. Green Resources as a case shows that forestry credits are attractive in the market. Their compliance to market demands of certifications may partly explain this. However, their projects do not only represent a "sunshine story". Conflicts between the company and local communities, in line with arguments against carbon forestry inclusion into the regulatory carbon market, are present in their Bukaleba plantation¹⁰⁵. Ambiguities about sustainable development from their carbon projects are evident. There is room for improvement at several points, and it would be interesting to conduct further investigations of GRAS and other similar actors in the market when their revenue streams starts flowing.

Carbon markets are still under construction and are far from perfect, and the knowledge one obtains reviewing the markets can be used to form the future market regulation. None of the theories presented in the thesis can alone explain the functioning and outcomes of carbon markets. This implies that neither institutional, nor neoliberal theories alone can explain the process of developing a

¹⁰⁵ There are ambiguities about their plantation in Kachung as well, but it seems to run more "smoothly" than GRAS' operation in Bukaleba.

market. However, the limitation of this study implies that this statement needs further investigation.

International market regulations influence local conditions: the picture is taken of a local person walking among the plantation trees



(Private photo, Kachung)

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10.0 Appendices

APPENDIX 1: LIST OF INTERVIEWS CONDUCTED IN UGANDA

Interview 1. Kampala. Pathias Karekona. Journalist, Uganda Broadcasting Association. 09.02.2013.

Interview 2. Bukaleba. Health Center Nurse at a facility close to the Bukaleba Plantation. Sponsored by Green Resources in cooperation with Norad. 11.02.2013.

Interview 3. Bukaleba. Health Center Founding Member. 11.02.2013.

Interview 4. Walumbe Village. Town Council. 11.02.2013.

Interview 5. Bukaleba. Mudbu Gumbaya Albert. Local Chairman 2. 11.02.2013.

Interview 6. Bukaleba. Sajjab Aggry. Parish Chief neighboring parish. 11.02.2013.

Interview 7. Nakalanga Village.. Town Council including the Local Chief. 11.02.2013.

Interview 8. Bukaleba. Two representatives from Bukatobe Safe Firewood. Local NGO engaged in environment and fruit tree planting. 11.02.2013

Interview 9. Bukaleba Village in Bukaleba Forest Reserve. Head mistress at the school. 12.02.2013.

Interview 10. Bukaleba Village. Worker 32 years old (slasher¹⁰⁶) for Green Resources' Busoga Forestry Company. 12.02.2013.

¹⁰⁶ Slashers are the workers that clear areas between the trees and that clear areas for vegetation that hinders planting of trees.

Interview 11. Bukaleba Village. Worker 51 years old. Guard for GR BFC.
12.02.2013.

Interview 12. Bukaleba Village and around the plantation. Former employee at BFC. 12.02.2013.

Interview 13. Bukaleba Village. Foreman for BFC. 12.02.2013.

Interview 14. Mayuge District. Environmental office. 12.02.2013.

Interview 15. Mayuge District. District Planner's Office. 13.02.2013.

Interview 16. Bukaleba, BFC Field Office. Teddy Nsamba. Senior Forest Manager, BFC. 13.02.2013.

Interview 17. Jinja. Isaac Kapalaga. Managing Director Green Resources Uganda.
13.02.2013.

Interview 18. Kachung Field Office. Group of workers for Lango Forestry Company. 15.02.2013.

Interview 19. Dokolo District. Rajab Epilla. District Environment and Natural Resources Officer. 15.02.2013.

Interview 20. Lira. Apili Stella Maris. Plantation Manager LFC. 15.02.2013.

Interview 21. Kachung. Teacher at a local school. 16.02.2013.

Interview 22. Kachung. Villagers. 16.02.2013.

Interview 23. Booster Agengi Village. Worker for the local water company.
16.02.2013.

Interview 24. Booster Agengi Village. Supervisor LFC. 16.02.2013.

Interview 25. Booster Agengi Village. 3 Casual workers LFC. 16.02.2013.

Interview 26. Abenyonya'b Village. Town Council including ex-worker, Village Chief and other locals. 16.02.2013.

Interview 27. Apetita Village. Village Council including Chairman, Vice Chairman and other locals. 16.02.2013.

Interview 28. Kampala. Kabi Maxwell. Forest Utilization Specialist, National Forestry Authority (NFA). 19.02.2013.

Interview 29. Kampala. Rashid Ssekitto. Land Management Specialist, NFA. 19.02.2013.

Interview 30. Kampala. Kristin T. Wæringsaasen, Energy Counsellor, and Mary Mabweijano, Senior Programme Officer at the Royal Norwegian Embassy. 20.02.2013.

Interview 31. Charlie Langan. Forestry Carbon Consultant, Uganda Carbon Bureau. 20.02.2013.

Interview 32. Kampala. Charles Odeke. Plantation Officer, Sawlog Production Grant Scheme. 21.02.2013.

Interview 33. Kampala. Jimmy Ouna. Encroachment Prevention Specialist, NFA. 28.02.2013.

Interview 34. Kampala. Patrick Byagaba. Researcher/Lecturer, Makerere University, School of Forestry, Environmental and Geographical Science. 01.03.2013.

Interview 35. Kampala. Xavier Nyindo Mugumya. Coordinator Climate Change, NFA.

APPENDIX 2: LIST OF INTERVIEWS CONDUCTED IN NORWAY

Interview 1. Oslo. Helle Biseth. Senior Advisor. The Department of Climate, Energy and Environment. Norad. 11.03.2013.

Interview 2. Oslo. Anne Kari Garberg. Journalist and Researcher. The Department of Ethics, Trade and Industry, Future of Our Hands (FIVH). 14.03.2013.

Interview 3. Oslo. Sigurd Klakeg. Deputy Director General. Economic Policy Department, The Ministry of Finance Norway. 14.03.2013.

Interview 4. Oslo. Elin Ersdal. Head of Department Industrial Partnerships. Norfund. 14.03.2013.

Interview 5. Oslo. Tim Ivar Bernhard Lund. Senior Sustainability Advisor, Norfund. 15.03.2013.

Interview 6. Oslo. Brita Næss. Senior Advisor, The Department of Economic Development, Energy, Gender and Governance, Section for Private Sector Development, Norad. 15.03.2013.

Interview 7. Oslo. Ivar Jørgensen. Profession Director, The Department for Climate, Energy and Environment. Norad. 19.03.2013.

Interview 8. Oslo. Arild Angelsen. Professor in Development and Environmental Economics, the Department of Economics and Resource Management, University of Life Sciences. 02.04.2013.

Interview 9. Asbjørn Torvanger. Senior Research Fellow, Center for International Climate and Environmental Research. 04.04.2013.

Interview 10. Bergen. Endre Tvinnereim. Researcher II, Faculty of Social Sciences (Rokkansenteret), University of Bergen. 05.04.2013.

Interview 11. Oslo. Liv Røhnebæk Bjergene. Former journalist, Bistandsaktuelt (now employed at Faktotum Informasjon AS). 09.04.2013.

Interview 12. Oslo. Peer Stiansen. Senior Advisor and CDM Executive Board Member . Department of Climate. 11.04.2013.

Interview 13. Ås. Karl Solberg. One of the founders of Norwegian Afforestation Group¹⁰⁷. 06.06.2013.

Interview 14. Oslo. Frank Melum. Senior Analyst, Point Carbon. 20.06.2013.

¹⁰⁷ Norwegian Afforestation Group leased the area where Kachung forest is today and started planting trees. Green Resources bought this company in 2007.

APPENDIX 3: INTERVIEW GUIDE FOR THE VILLAGES

1. How long have you been living in this area?
2. Do you work for Green Resources?
3. Do many in this village work for GRAS?
4. How is your relationship to the company?
5. How do you view your future if you stay in this area?
6. How has the GRAS' presence affected your access to natural resources?
7. Has the relationship gotten better/worse during the last years? Why?
8. How is the communication between GRAS and the village?
9. Does GRAS approach key persons in your village to inform you about their business and its development?
10. Have you ever met someone from the management of the company?
11. Has GRAS' existence in the forest reserve affected your life in any way?
12. Has GRAS informed you about the benefits and negative consequences their business has on your lives?
13. Has GRAS promised the communities any future benefits? What have they done for the villages so far?
14. Do you know about their carbon projects?
15. Has the company explained the benefits of plantations in the area?

APPENDIX 4: INTERVIEW GUIDE FOR PLANTATION WORKERS GRAS

1. What is your position in the company?
2. How long have you been working for the company?
3. Are you from this area?
4. What kind of education do you have?
5. Are there any opportunities for promotion within the company?
6. Does GRAS offer any education programs for their workers?
7. Do you like working for GRAS?
8. How is your salary?
9. Can you tell me about your normal working day?
10. How many hours do you work every day?
11. How many days do you work every week?
12. Do you get any form for transportation from the company?
13. Do you get any pension benefits when you retire?
14. Are any of the workers organized in unions?
15. Do you get the equipment you need for your work from the company?
16. Do you have a written company?
17. Do your colleagues have contracts?
18. How is the communication between you and the management?
19. Have you ever met anyone from the London office?
20. How would you describe the relationship between the company and the villages?
21. Is working for GRAS viewed as a good job? Is it socially accepted?

APPENDIX 5: INTERVIEW WITH GRAS' MANAGEMENT IN UGANDA

1. How is the relationship between the company and the villages?
2. What have you done so far in terms of support to the villages?
3. How important is the community activities/support you provide?
4. How do you evaluate the wage level you operate with?
5. How do you decide the wage level?
6. How do you choose whom to employ?
7. What is the company's biggest challenge in Uganda?
8. Do you have any plans on expanding the business in the country?
9. How did you acquire the forest reserves?
10. How long is the lease?
11. Can you tell me about your different business operations?
12. More specifically, can you tell me about the carbon certification process?
13. Why do you engage in both the voluntary and compliance market in Uganda?
14. With regards to your carbon projects, what is the difference between Kachung and Bukaleba?
15. What species do you plant, and why?

APPENDIX 6: INTERVIEW GUIDE NFA/SPGS/MAKERERE UNIVERISTY

1. History on forestry in Uganda.
2. Why are plantations important for the country?
3. What benefits do they provide?
4. How is the focus on climate change in the country?
5. Do you know anything about carbon forestry projects?
6. What is the history of such projects in Uganda?
7. How many carbon forestry projects do you have in the country?
8. Can you tell me about the process of CDM and REDD in the country?
9. How is the process where NFA give licenses of land to foreign investors?
10. How did you evaluate GRAS in this process?
11. What is the land rent in a plantation project in the country?
12. What are the typical challenges forestry companies faces in Uganda?
13. Plantations in Uganda are mostly monocultures, what risks do monocultures impose on the environment? Do they provide any benefits?
14. What do you know about GRAS' projects in Kachung and Bukaleba?
15. GRAS has experienced some trouble with the local populations, especially in Bukaleba. What do you know about this?
16. Why do you support GRAS' work?
17. How much have you supported their plantations with?
18. What are the potential risks in allowing foreign investor into the Uganda?

APPENDIX 7: INTERVIEW GUIDE RESEARCHERS

1. Why are intermediates, such as brokers, used in voluntary carbon trade? Is it necessary?
2. What are the problems voluntary carbon markets faces?
3. Are there any specific problems related to carbon forestry projects in voluntary carbon markets?
4. Is third-party certification of carbon credits common in the voluntary carbon markets? How is the quality of these?
5. How long is the process in getting third party certifications in the voluntary market?
6. Why is certification important in the voluntary market? Are there any problems with this certification?
7. How can certifications and achievements of standards lead to credibility and accept in the market?
8. Do carbon forestry projects normally have more than one certification to cover social, environmental and economic aspects?
9. Which hindrances exist in carbon markets for CDM and voluntary carbon credits generated from forestry projects?
10. What influences the carbon prices? Why is CDM currently cheaper than voluntary market credits?
11. What are the problems with temporary forestry carbon credits? Why are these temporary?
12. What are the problems with CDM?
13. Why have so few forestry projects chosen to try to get CDM certification?
14. How does the sales- and purchase process function? Are there differences between regulatory and voluntary carbon markets?
15. What kind of motives exists among the markets' customers? What about the providers of credits?
16. Do you know Green Resources?

**APPENDIX 8: INTERVIEW GUIDE NORWEGIAN GOVERNMENTAL
MINISTRIES AND AGENCIES****Norad/Norfund**

1. What kind of projects do you fund? Do you have a specific focus on forestry?
2. How do you evaluate the projects you fund?
3. How do you evaluate GRAS?
4. How do you evaluate GRAS work in Uganda? What is different in their operations in Uganda in comparison to the ones in Tanzania and Mozambique?
5. How do you view their carbon business?
6. Do you consult NGOs focusing on relevant fields when during evaluations?
7. What happens if a company you fund stop following your requirements? Do you give any sanctions?
8. When a company/project you fund does not fulfill your requirements, what do you do?
9. Why are Norway engaged in carbon forest activities?

Ministry of Finance

1. How do you evaluate carbon projects when you purchase carbon credits?
2. Can you describe the process when you signed the contract with GRAS?
3. Why did you choose to purchase their credits?
4. Why did you go back on the contract? What happened?
5. Do you consult NGOs or other sources focusing on relevant fields when during evaluations?
6. Do you purchase any carbon credits in voluntary markets? Why/why not?
7. Do other governments purchase voluntary credits?
8. Do other public actors in Norway buy voluntary carbon credits?
9. What influence the prices in the market?
10. What role do certifications have?
11. How do you view the future of carbon markets?

APPENDIX 9: THE CDM PROJECT CYCLE¹⁰⁸

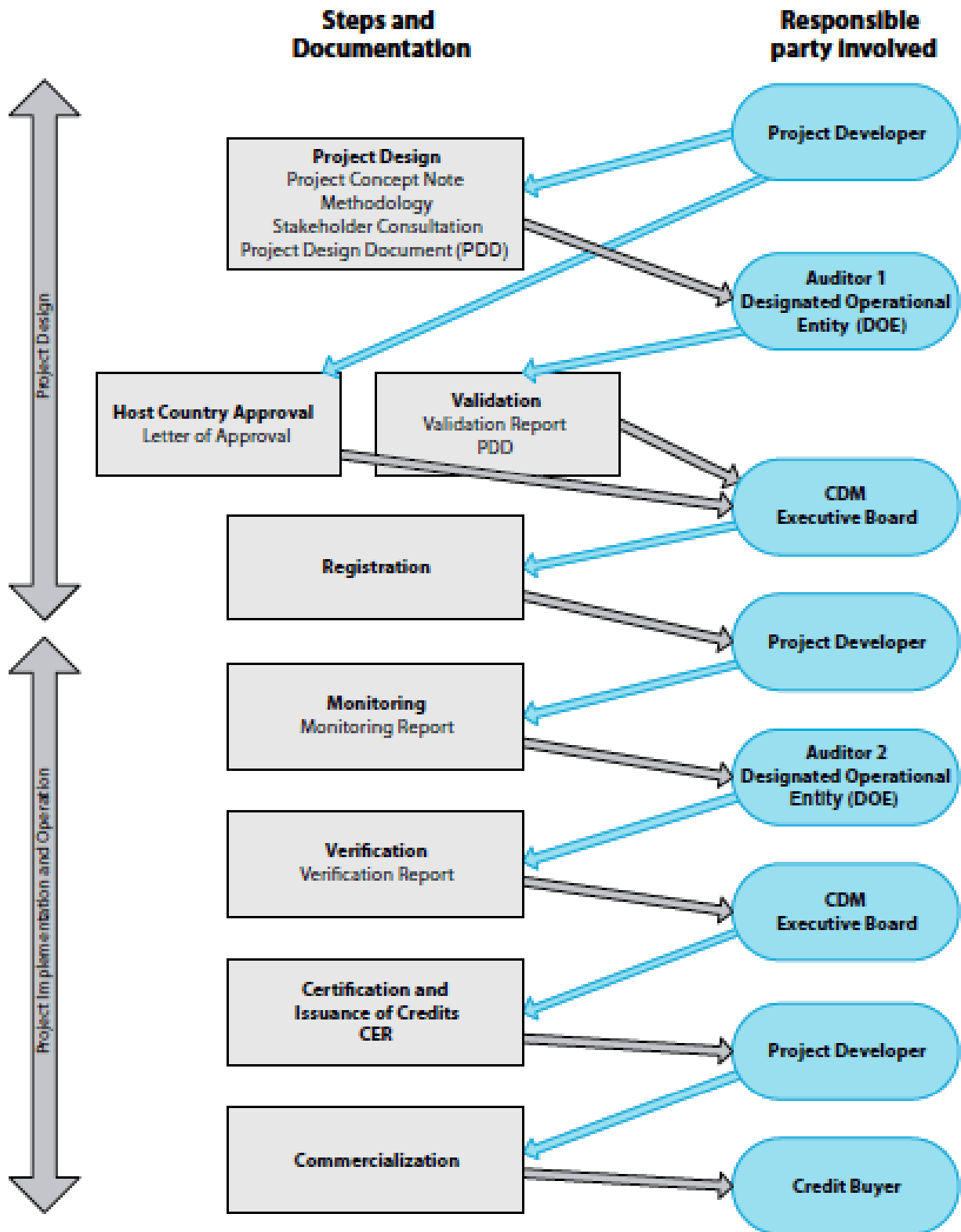
1. Project participants are investors and implementers from industrialized and developing countries. They:
 - Design and implement the project.
 - Present the monitoring plan including measurement, baseline construction and leakage evaluation.

2. Operational Entities: legal entities accredited by the CDM Executive Board in Bonn, Germany:
 - Validate the proposed CDM activities
 - Verify and certify the emission reductions/removals in accordance with the monitoring plan.

3. CDM Executive Board: Composed of ten members designated by and under the authority of the Conference of Parties (COP), six of them coming from developing countries.
 - Approves methodologies and definition of project limits.
 - Determines accreditation of operational entities.
 - Registers the certified project.
 - Issues CERs with a unique serial number to the project participants

¹⁰⁸ Source: FAO <http://www.fao.org/docrep/005/ac836e/AC836E06.htm>, 24.07.13

APPENDIX 10: CDM PROJECT CYCLE MODEL¹⁰⁹



¹⁰⁹ Source: Carbon Offset Research and Education (CORE): How to Implement Offset Projects: <http://www.co2offsetresearch.org/consumer/ProjectCycle.html>, access date 24.07.13

APPENDIX 11: THE VCS PROJECT CYCLE¹¹⁰

1. Choose a methodology
 - This can be an existing VCS methodology or one developed under an approved GHG program such as CDM.
 - If an applicable methodology does not exist, project developers are welcome to propose their own.

2. Describe and list project
 - Project developers must open an account with a VCS registry and submit a project description for listing on the VCS Project Pipeline.

3. Validate Project Description
 - A project gets listed on the project pipeline.
 - Develop a complete project description using the VCS template
 - Have the project validated by an approved validation/verification body (VVB) (for example Det Norske Veritas (DNV)).
 - The PD can be developed before, during or after project design and implementation.

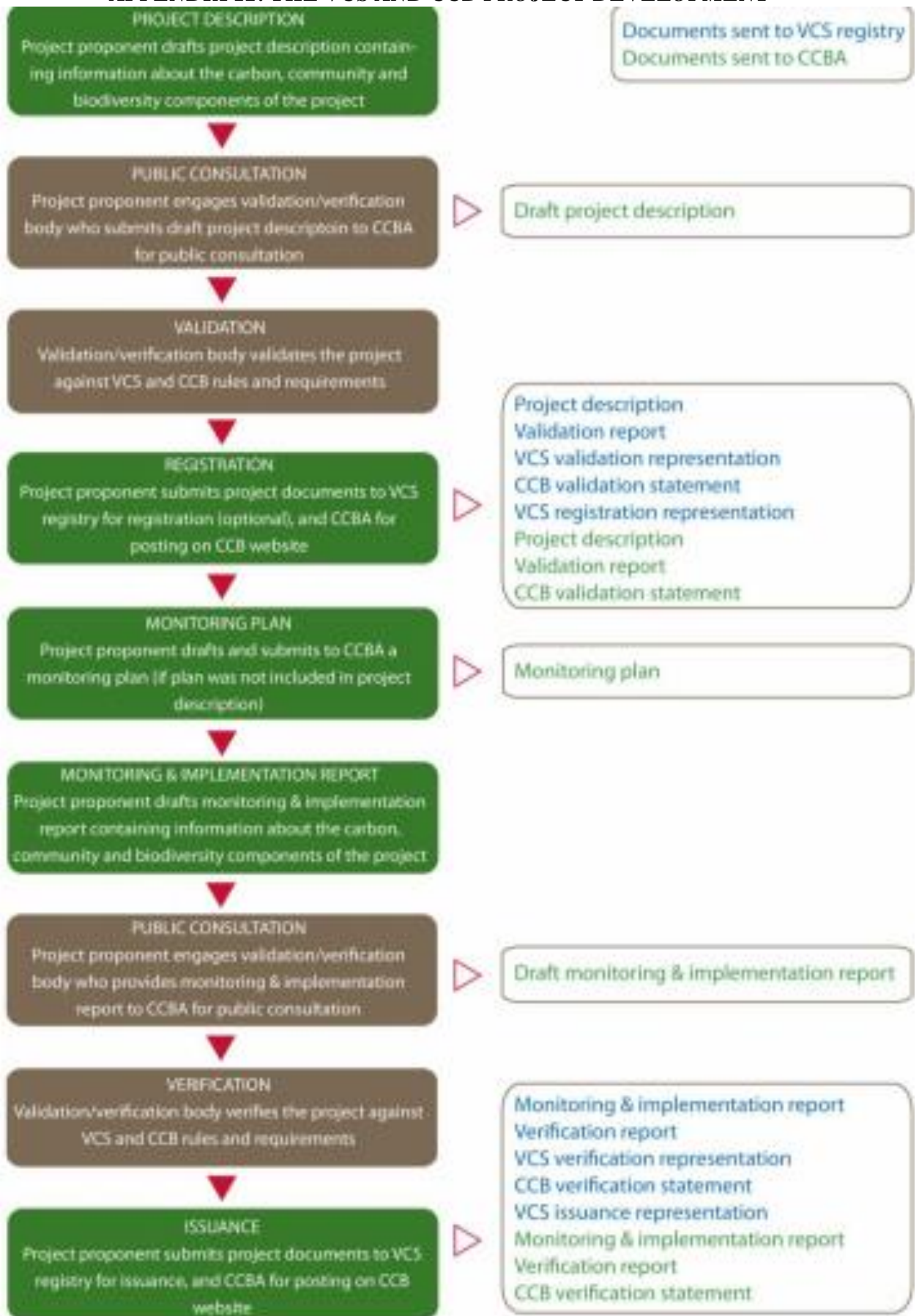
4. Verify Emission Reductions
 - After a project starts, project proponents monitor and measure GHG emission reductions or removals.
 - Information for a given monitoring period is documented in a monitoring report.
 - The monitoring report must be verified by an approved VVB.

5. Register Project and Issue VCUs
 - Projects open an account where they submit all required documents to a VCS registry operator in order to be registered on the VCS Project Database and request issuance of VCUs.

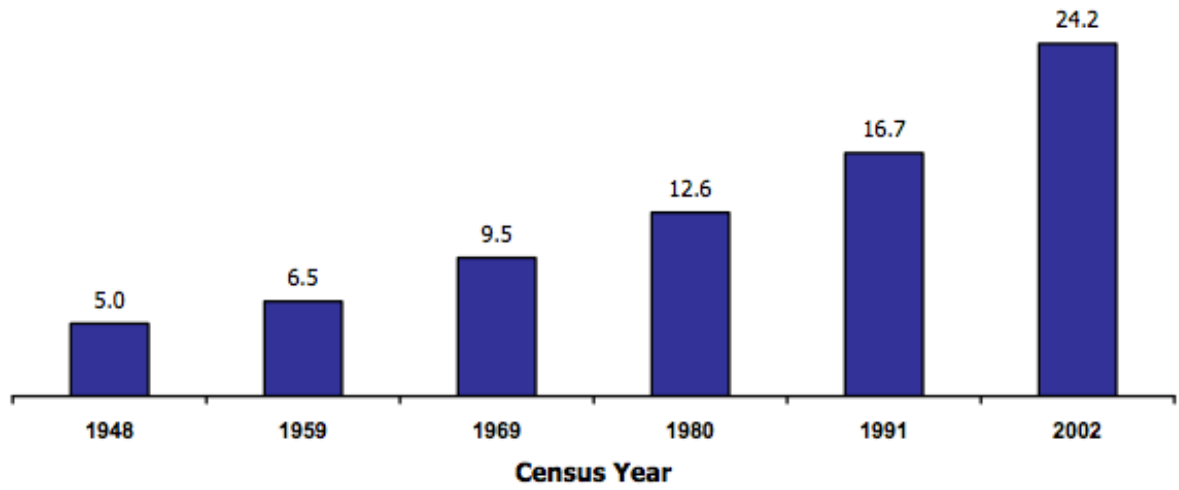
¹¹⁰ Source: Voluntary Carbon Standard – Develop a Project: <http://www.v-c-s.org/develop-project> / The VCS Project Cycle: Step-by-Step: <http://v-c-s.org/sites/v-c-s.org/files/FactSheet%20PROJECT%20CYCLE%202013%20FINAL.pdf>, 24.07.13.

- Projects can register before or after validation.
- All project information is listed publicly when projects are registered and VCUs issued.

APPENDIX 12: THE VCS AND CCB PROJECT DEVELOPMENT

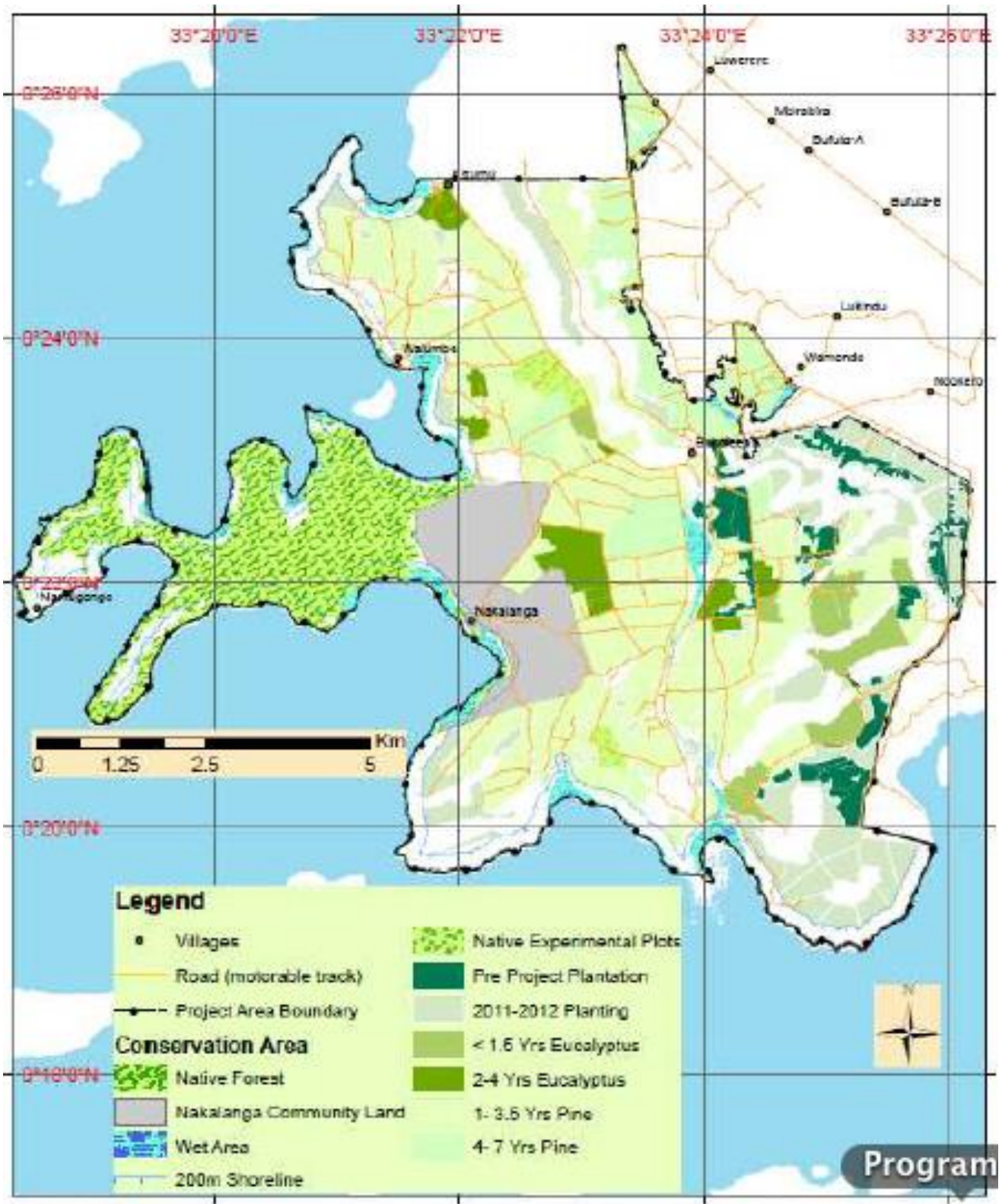


¹¹¹ Source: VCS and CCB, 2012.

APPENDIX 12: HISTORICAL POPULATION GROWTH IN UGANDA 1948 – 2002

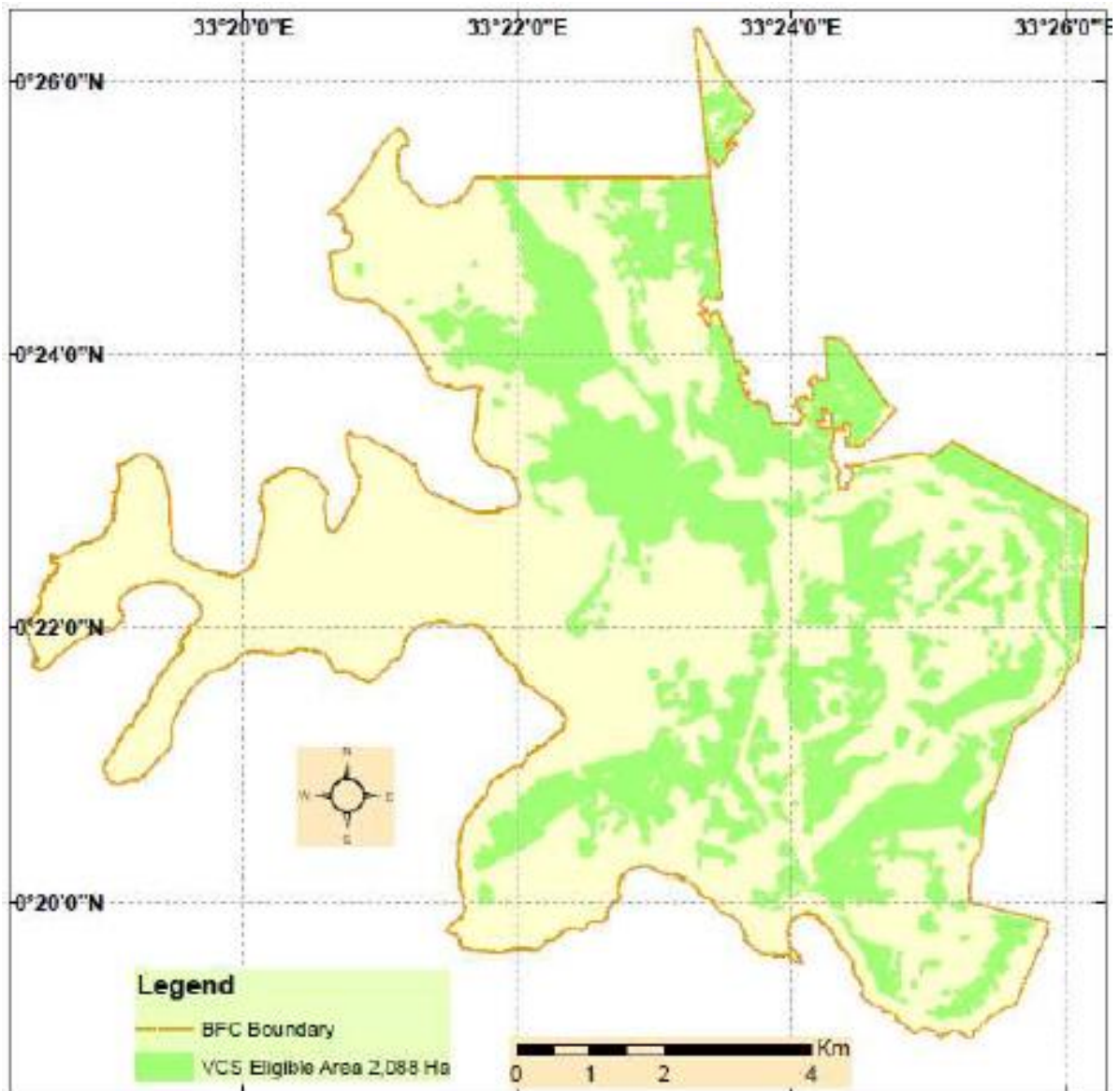
Source: UBOS 2007

APPENDIX 13: MAP OVER BUKALEBA FOREST RESERVE



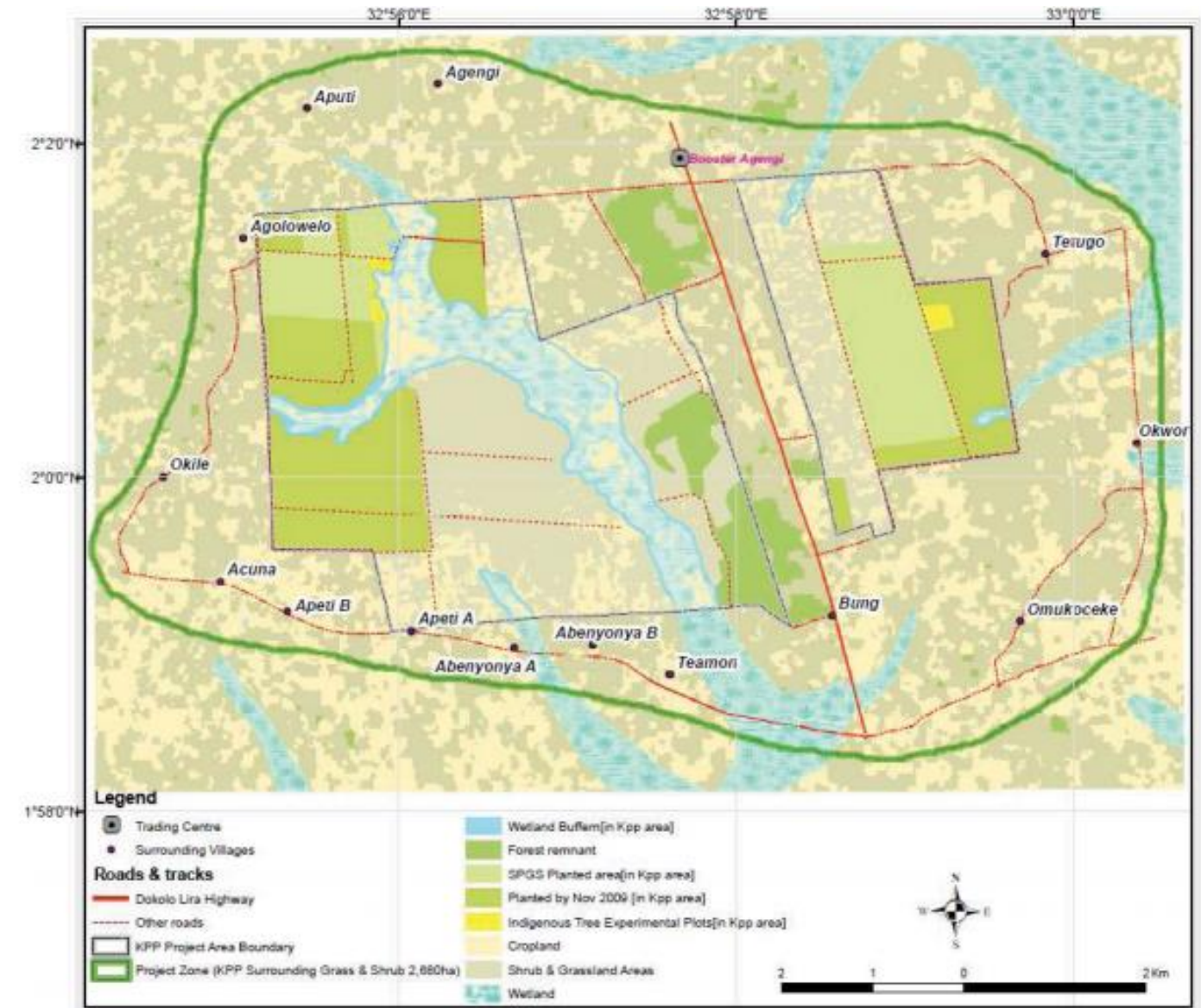
Source: VCS Project Description for Green Resources' Bukaleba Forest Reserve

APPENDIX 14: MAP SHOWING THE VCS ELIGIBLE AREA



Source: VCS Project Description for Green Resources' Bukaleba Forest Reserve

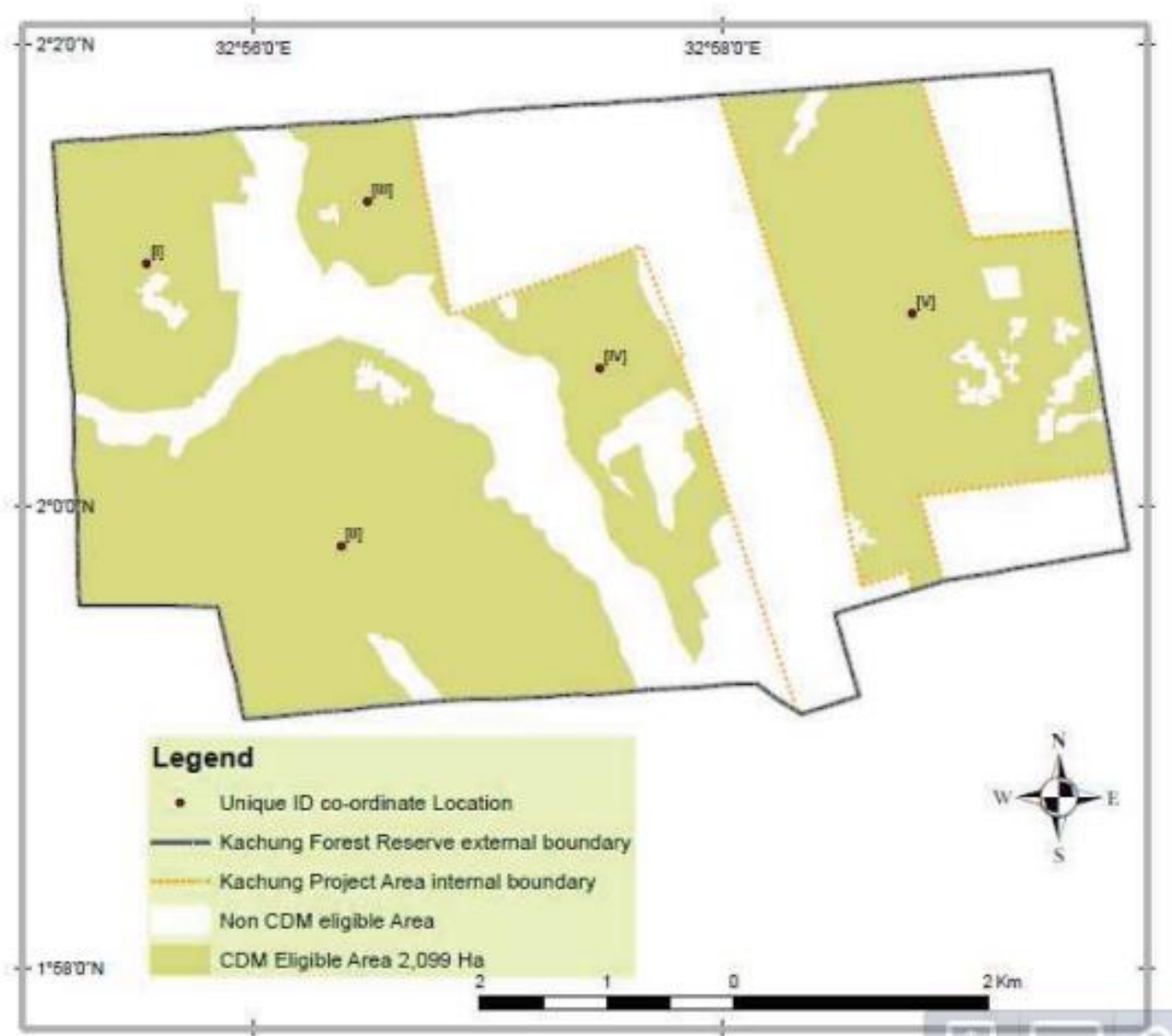
APPENDIX 15: MAP OVER KACHUNG FOREST RESERVE



Source: CCB Standards Project Design Document for Kachung

(https://s3.amazonaws.com/CCBA/Projects/Kachung_Forest_Project_Afforestation_on_Degraded_Lands/KFP_CCBA_PDD_Version_4.pdf)

**APPENDIX 16: MAP OF THE KACHUNG FOREST PROJECT AREA
SHOWING CDM ELIGIBLE AREAS**



Source: Source: CCB Standards Project Design Document for Kachung
 (https://s3.amazonaws.com/CCBA/Projects/Kachung_Forest_Project_Afforestation_on_Degraded_Lands/KFP_CCBA_PDD_Version_4.pdf)